~~REF/QR~~ D1/20.f.18. ~~030.1~~

THE

CYCLOPÆDIA;

OR,

Univerſal Dictionary

OF

ARTS, SCIENCES, AND LITERATURE.

VOL. XXXIX.

Printed by A. Strahan,
New-Street-Square, London.

THE

CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. *S. Amer. Soc.*

WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.

ILLUSTRATED WITH NUMEROUS ENGRAVINGS,

BY THE MOST DISTINGUISHED ARTISTS.

COLLEGE OF PHYSICIANS

IN THIRTY-NINE VOLUMES.

VOL. XXXIX.

LONDON:
Printed for LONGMAN, HURST, REES, ORME, & BROWN, Paternoster-Row.
F.C. AND J. RIVINGTON, A. STRAHAN, PAYNE AND FOSS, SCATCHERD AND LETTERMAN, J. CUTHELL,
CLARKE AND SONS, LACKINGTON HUGHES HARDING MAVOR AND JONES, J. AND A. ARCH,
CADELL AND DAVIES, S. BAGSTER, J. MAWMAN, JAMES BLACK AND SON, BLACK KINGSBURY
PARBURY AND ALLEN, R. SCHOLEY, J. BOOTH, J. BOOKER, SUTTABY EVANCE AND FOX, BALDWIN
CRADOCK AND JOY, SHERWOOD NEELY AND JONES, R. SAUNDERS, HURST ROBINSON AND CO.,
J. DICKINSON, J. PATERSON, E. WHITESIDE, WILSON AND SONS, AND BRODIE AND DOWDING.
1819.

030 1
1565

CYCLOPÆDIA:

OR, A NEW

UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

X, A double conſonant, and the twenty-ſecond letter in the Engliſh alphabet; which, however, begins no Engliſh word.

The *x* of the Latins, and ξ of the Greeks, are compounded of *c s*, and κ σ; whence, to this day, the letter *x* in the Engliſh and French has the ſame ſound with *c s*, or *k s*. Thus we pronounce *Alexander* exactly as if written *Alecſander* or *Alekſander*.

The Italians have no *x* at all in their language, but both ſpeak and write *Aleſſandro*. The Spaniards pronounce the *x* like our *c* before *a*; viz. *Alexandro*, as if it were *Alecandro*. The Portugueſe pronounce it like *ſh*.

In foreign words, uſed in Engliſh, we ſometimes ſoften the *x* into a double *s*; as *Bruſſels*, for *Bruxelles*, &c.

The letter is not known in the Hebrew, or other oriental languages; but in lieu of it, they write the two ſimple letters of which it is compounded. And the like do the modern Germans.

Peter Diaconus relates, that the letter X was introduced into the Roman alphabet in the time of Auguſtus; and that, before his reign, the Romans ſupplied the want of it by the letters C and S. But Mr. Aſtle obſerves, that this is a miſtake; the letter X being found in the Duilean pillar, inſcribed in the year of Rome 494, and 259 before Chriſt. Origin and Progreſs of Writing, p. 78.

X is alſo a numeral letter, and ſignifies ten; as repreſenting two V's placed one at top of the other. See V.

X *Supra denos numero tibi dat retinendos.*

When laid flat, thus ⋈, it ſignifies a thouſand; and when a daſh is added over it, $\overline{X}$, it ſignifies ten thouſand. I before X denotes the ſubtraction, and after X the addition of unit: thus, IX = 9, and XI = 11. X before L or C denotes the ſubtraction of 10 from 50, or 100: thus, XL = 40, and XC = 90.

X on the French coins denotes thoſe ſtruck at Amiens.

We often meet with the Greek letters X and P joined in this manner ☧ on ancient medals. The firſt we find are on ſome large braſs coins of the Ptolemies, kings of Egypt, where it was placed on a civil account.

Some writers have taken it for a date, and others for the initial letters of a proper name; but as no reaſons are aſſigned for either of thoſe conjectures, Mr. Ward rather ſuppoſes it an abbreviation of the word XPHMA, *money*, impreſſed on thoſe pieces, to denote their currency as money; which might be thought proper, as they have not the heads of kings ſtamped upon them, like their ſilver and gold coins; but always that of a Jupiter on the front, and an eagle perched on a thunderbolt on the reverſe.

This character was afterwards applied to a very different purpoſe by Conſtantine the Great, who made uſe of it to denote XPICTOC, both in his coins and military enſigns; in which he was followed not only by ſome ſucceeding emperors, but alſo by private perſons, who out of devotion put it on their lamps and other utenſils.

It afterwards came to be uſed merely as a critical note, to point out remarkable paſſages in manuſcripts; and then it ſtood for the initials of XPHCIMON, *uſeful;* as we learn from Iſidore, Orig. lib. i. cap. 20. See Phil. Tranſ. N° 474. ſect. 1.

X, with a P, or Greek R, in the middle of it, is alſo the monogram of the name of CHRIST, which conſtantly occurs in the catacombs or burial-places of the ancient Chriſtians, and which was the chief ornament of the Labarum or military ſtandard of Conſtantine, and the ſucceeding emperors. See LABARUM.

Printed by A. Strahan,
New-Street-Square, London.

XABEA, in *Geography*, a ſea-port of Spain, in the province of Valencia, near the coaſt of the Mediterranean; 38 miles N.N.E. of Alicant.

XABORECTORA, in *Ancient Geography*, a name given by P. Mela to Aborras, a river of Meſopotamia.

XACA, in *Geography*. See Jaca.

XACRE, a cape on the ſouth-eaſt coaſt of the iſland of Candia; 18 miles S.E. of Settia.

XAGUA Bay, a large bay on the ſouth coaſt of the iſland of Cuba. This is one of the beſt ports in the Weſt Indies, and is 15 miles in circumference, ſurrounded with mountains, which break off the force of the winds. N. lat. 22° 10′. W. long. 81° 20′.

XAINTES, Santos, or *All-Saints' Iſlands*, as having been diſcovered on that holiday by the Spaniards; three ſmall iſlands in the Weſt Indies, ſituated to the ſouth-eaſt of Guadaloupe. The moſt weſterly of them is called Terra de Bas, or the Low iſland, and the moſt eaſterly, Terra de Haut, or the High iſland. The third, which lies exactly in the middle between the other two, ſeems to be nothing more than a large barren rock, but is of uſe in aſſiſting to form a very good harbour. The iſland of Terra de Bas is about nine miles in circumference, but the other is larger. Theſe iſlands have conſtantly a freſh breeze, let the wind blow from what quarter it may: and on the Terra de Bas is a neat wooden church, with two very convenient creeks both for anchorage and landing. They are about ſix miles diſtant from Gaudaloupe, and 15 from Mariegalante. N. lat. 15° 56′. W. long. 61° 32′.

XALAPA, a conſiderable town of Mexico, or New Spain, in the fertile province of Tlaſcala, formerly famous for the fair held on the arrival of the ſtated fleets from Europe; and ſince the declared freedom of commerce, a conſiderable mart for European commodities. It is ſituated on the ſouthern ſkirts of a mountain, in a beautiful climate, the ſoil being partly clay and partly ſtony, while pure waters iſſue from a white ſand, and fertilize the country. The population conſiſts of 243 Spaniſh families, 182 Meſtizos, and 361 Indians. When north winds prevail at Vera Cruz, it always rains at Xalapa; but the climate is eſteemed very healthy. The purging powder of the country is made of the root of a plant, to which the town gives the name of Jalap; 30 miles E. of Puebla de los Angelos. N. lat. 19° 50′. W. long. 98° 26′.

XALISCO, a province of Mexico, in the audience of Guadalajara. It is waſhed by the South Pacific ocean on the ſouth and weſt; bounded on the eaſt by Guadalajara Proper and Mechoacan; and ſeparated from Chiametlan on the north, by a narrow ſtrip of land belonging to Guadalajara, and running out into the ſea. It is not above fifty leagues in extent either way. It abounds with Indian wheat and ſilver mines, but has very few cattle of any ſort. From this province is brought the oil of the infernal fig-tree, as the Spaniards call it, much uſed in medicine.

Xalisco, a town of Mexico, which gives name to a province; 9 miles N.W. of Compoſtella Nueva. N. lat. 21° 25′. W. long. 106° 26′.

XALON, a river of Spain, which riſes in a mountain near Medina Celi, and runs into the Ebro, about ſix miles above Saragoſſa.

XAMACA, a river of America, which runs into the gulf of Mexico, 18 miles from Vera Cruz.

XAMBRINA, a town of Spain, in the province of Leon; 2 miles S.E. of Tordeſillas.

XAMDELLILAH, an Arabian term, uſed as a grace or thankſgiving after meat.

The greateſt men of that nation will often call in the meaneſt, even the beggars, to eat with them; who, as ſoon as they have done, always riſe and pronounce this word, which ſignifies, God be praiſed. Pococke's Egypt, p. 183.

XAMI, a name given by ſome of the old writers to the *ceration* of the Greeks, or carob-tree. See Charnub.

XAN, in *Geography*, a river of the principality of Georgia, which runs into the Kur, 6 miles E. of Gory.

XANGA, a river of Africa, in the kingdom of Mongallo, which runs into the Indian ſea, oppoſite to the iſland of the ſame name.—Alſo, one of the Querimba iſlands in the Indian ſea, near the coaſt of Africa. S. lat. 10° 45′.

XANILA, a town of Fezzan, in the road to Egypt; 140 miles E.N.E. of Mourzouk.

XANQUE, or Guyapo, a river of Mexico, which runs into the Spaniſh Maine, 30 miles W. of Cape Camaron.

XANTEN, or Santen, a town of France, in the department of the Roer, near the Rhine; 7 miles N.E. of Gueldres.

XANTHE, in *Botany*, ſo called from ξανθος, *yellow*, in alluſion to its yellow juice.—Schreb. Gen. 710. Willd. Sp. Pl. v. 4. 877. Mart. Mill. Dict. v. 4. (Quapoya; Aubl. Guian. 897. Juſſ. 256. Lamarck Dict. v. 6. 21. Illuſtr. t. 831.)—Claſs and order, *Dioecia Monadelphia*. Nat. Ord. *Guttiferæ*, Juſſ.

Gen. Ch. Male, *Cal.* Perianth of one leaf, in five or ſix ſmall, deep, imbricated, roundiſh, concave, acute ſegments, with a pair of minute oppoſite ſcales at the baſe. *Cor.* Petals five, roundiſh, ſpreading, larger than the calyx. *Stam.* Filament one, columnar, erect; anthers five, two-lobed, forming a peltate concave diſk, full of gluten, their under ſide burſting, and diſcharging the pollen.

Female, *Cal.* like that of the male, permanent, inferior. *Cor.* as in the male. *Stam.* Filament none; anthers five, priſmatic, erect, imperfect. *Piſt.* Germen ſuperior, roundiſh, with five furrows; ſtyle none; ſtigmas five, roundiſh, thick, emarginate, ſeated on the germen. *Peric.* Capſule ſmall, globoſe or oval, with five furrows, five cells, and five valves, burſting at the furrows, their membranous partitions adhering to the central column. *Seeds* numerous, oblong, imbedded in the pulp, inſerted in a double row upon the five-angled columnar receptacle.

Obſ. It appears that one-fifth is frequently added to the parts of fructification, in the male as well as female flowers.

Eſſ. Ch. Male, Calyx in five deep ſegments. Petals five. Filament columnar. Anthers five, two-lobed, forming a peltate diſk.

Female, Calyx and Corolla like the male. Stigmas five, ſeſſile. Capſule of five cells, with many pulpy ſeeds.

1. X. *ſcandens*. Twining Xanthe. Willd. n. 1. (Quapoya ſcandens; Aubl. Guian. 898. t. 343.)—Leaves obovate, fleſhy. Capſule globoſe.—Native of the foreſts of Guiana, flowering in November. The *ſtem* is ſhrubby, with knotty branches, twining round neighbouring trees. *Leaves* oppoſite, on ſhort ſtalks, ſimple, entire, thick, and ſmooth, three or four inches long, with a thick mid-rib, and a ſhort blunt point, but no branching veins. *Panicles* at the ends of the drooping branches, compound, three-forked, ſmooth. *Flowers* ſmall, yellow; their partial ſtalks longer than the calyx. *Petals* fleſhy. *Capſule* about the ſize of a black currant, fleſhy, crowned with the black *ſtigmas* all meeting in a point. *Seeds* red. Every part of the plant, when wounded, diſcharges a tranſparent, white, viſcid, reſinous juice. The Indians call this ſpecies *Quapoy*. See Quapoya.

2. X. *par-*

2. X. *parviflora.* Small-flowered Xanthe. Willd. n. 2. (Quapoya Pana-panari; Aubl. Guian. 900. t. 344.)—Leaves elliptic-oblong. Flowers nearly ſeſſile. Capſule elliptical. —Native of the ſame country. Differs from the preceding in having thinner *leaves;* ſmaller *flowers,* with ſhorter partial ſtalks; and an oblong, thicker, yellowiſh *fruit.* The *bark* and *leaves,* if cut or broken, diſcharge a yellow glutinous juice, which, when dried, reſembles Gamboge, and is, like that ſubſtance, ſoluble in water. *Aublet.*

XANTHICA, Ξανθικα, in *Antiquity,* a Macedonian feſtival, ſo called becauſe it was obſerved in the month Xanthus, at which time the whole royal family with the army was purified. See LUSTRATION.

XANTHIUM, in *Botany,* moſt unqueſtionably the ξανθιον of Dioſcorides, book 4. chap. 138, as appears by his very apt deſcription, owes its name to the uſe made of unripe fruit by the Greeks, to dye the hair yellow. Our common Engliſh ſpecies, *X. ſtrumarium,* is evidently the identical plant of Dioſcorides, and its ſpecific name alludes to a reputed virtue of curing tumours.—Linn. Gen. 487. Schreb. 635. Willd. Sp. Pl. v. 4. 373. Mart. Mill. Dict. v. 4. Sm. Fl. Brit. 1017. Prodr. Fl. Græc. Sibth. v. 2. 234. Ait. Hort. Kew. v. 5. 268. Purſh 581. Juſſ. 191. Tourn. t. 252. Lamarck Illuſtr. t. 765. Gærtn. t. 164.—Claſs and order, *Monoecia Pentandria.* Nat. Ord. *Compoſitæ nucamentaceæ,* Linn. *Corymbiferæ anomalæ,* Juſſ.

Gen. Ch. Male flowers compound. *Common Calyx* of many imbricated, ſlender, equal ſcales, as long as the numerous florets. *Cor.* compound, uniform, equal, hemiſpherical, conſiſting of numerous, tubular, funnel-ſhaped, monopetalous, upright, five-cleft florets. *Stam.* Filaments in each floret five, united into a cylinder; anthers erect, parallel, diſtinct. *Common Receptacle* ſmall, with chaffy ſcales between the florets.

Female flowers below the male, on the ſame plant, doubled. *Cal.* Involucrum two-flowered, of two oppoſite, acutely three-lobed leaves, (their middle lobe longeſt,) beſet with hooked prickles, and cloſely enfolding, as well as united to, the germen, except the lobes, which are free. *Cor.* none. *Piſt.* Germen oval, hiſpid; ſtyles two pair, capillary; ſtigmas ſimple. *Peric.* Drupa dry, ovate-oblong, cloven at the point, clothed all over with hooked prickles. *Seed.* Nut of two cells.

Eſſ. Ch. Male, Common Calyx imbricated. Florets of one petal, funnel-ſhaped, five-cleft. Receptacle chaffy.

Female, Calyx two-leaved, two-flowered. Corolla none. Drupa dry, muricated, cloven. Nut of two cells.

Obſ. Linnæus remarks, that the fruit of *Xanthium* could ſcarcely have been well underſtood, without a previous knowledge of that of *Ambroſia.* Theſe genera in fact belong to that ambiguous tribe, whoſe habit, qualities, and in part the ſtructure of their male flowers, all aſſociate them with the compound or ſyngeneſious order; while the diſunion of their flowers, and the general nature of their female flowers, and fruit, neceſſarily refer them to the *Diclines,* or in the artificial ſyſtem of Linnæus, the claſs *Monoecia.*

1. X. *Strumarium.* Common Burweed, or Small Burdock. Linn. Sp. Pl. 1400. Willd. n. 1. Ait. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 2544. Fl. Dan. t. 970. Bigelow Boſt. 221. (Xanthium; Fuch's Hiſt. 579. Camer. Epit. 926. X. ſeu Lappa minor; Matth. Valgr. v. 2. 545. Bardana minor; Ger. Em. 809.)—Stem without thorns. Leaves heart-ſhaped; three-ribbed at the baſe.—Native of dung-hills, and rich moiſt ground, in various countries of Europe, as well as North America, flowering towards autumn. In this iſland it is of very rare occurrence, though occaſionally met with about London, and in the weſt. Dr. Sibthorp noticed the plant in many parts of Greece, where the ſoil is rich and rather wet, and found it called, by the modern Greeks, κολλητζίδα; a name alluding to its bur-like property, rather than to the quality on which its ancient appellation is founded. The *root* is annual. *Herb* branched, rough, dark green, rather fœtid, of a coarſe rank habit, with furrowed, rather hairy, *branches.* *Leaves* alternate, ſtalked, heart-ſhaped, acutely lobed, and toothed or ſerrated; their two lateral ribs marginal, for a ſmall ſpace, at the baſe, as in the great Burdock, *Arctium Lappa,* and a few other plants. *Male flowers* globular, green, few together, in axillary or terminal *cluſters,* about the upper part of the branches; *female* in axillary ſeſſile tufts. *Fruit* elliptical, double-pointed, hard, near an inch long, beſet with firm, prominent, awl-ſhaped, hooked prickles, which attach themſelves to the coats of animals, and thus ſerve to diſperſe the *ſeeds.*

2. X. *orientale.* Oriental Burweed. Linn. Sp. Pl. 1400. Willd. n. 2. Ait. n. 2? Linn. Fil. Dec. 33. t. 17. "Schkuhr Handb. v. 3. 239. t. 291."—Stem without thorns. Leaves ovate, ſlightly three-lobed, ſomewhat triple-ribbed; wedge-ſhaped at the baſe.—Native of Ceylon, Japan, and China, from which laſt country it was imported, according to the younger Linnæus, with other ſeeds for the Upſal garden, in 1761. Sir Hans Sloane is recorded by Ray as having introduced this *Xanthium* into England in 1685; but their plant ſeems to have been a ſlight variety of the firſt, figured by Moriſon, ſect. 15. t. 2. f. 2, found in America, and not anſwering to the diſtinctive characters of the preſent ſpecies, though Moriſon, and others who ſpeak of this variety, are cited by Linnæus and Willdenow. The true *X. orientale* is an annual herb, of a more ſlender habit than the *Strumarium,* and more harſh, though leſs hairy. Their eſſential differences are indicated in our ſpecific characters. The moſt remarkable ſeems to be the taper baſe of the *leaves,* in the preſent ſpecies, and the union of their three ribs, at a greater or leſs diſtance, above the inſertion of the *footſtalk.* The *fruit* is twice as large as the foregoing, with peculiarly ſtrongly hooked thorns.

3. X. *echinatum.* Compound-thorned Burweed. "Murray in Comm. Goett. for 1784, with a figure." Willd. n. 3.—"Stem without thorns. Fruit oval; its prickles hooked, crowded, compound at the baſe." Annual.—Its native country unknown. *Willdenow.* We have not ſeen either a ſpecimen or figure.

4. X. *ſpinoſum.* Spinous Burweed. Linn. Sp. Pl. 1400. Willd. n. 4. Ait. n. 3. (X. ſpinoſum, atriplicis folio; Moriſ. ſect. 15. t. 2. f. 3. X. luſitanicum ſpinoſum; Herm. Parad. 246, with a figure. Volkam. Norib. 404, with a figure. X. luſitanicum, laciniatum, validiſſimis aculeis munitum; Magnol. Hort. 208. t. 20.)—Stipulas thorny, three-cleft. Leaves lanceolate, three-lobed; hoary beneath.—Native of the ſouth of France, as well as of Italy, Spain, and Portugal. It might be raiſed here as a tender annual, and planted out in a border, were there ſufficient beauty in its copious, long, flame-coloured thorns, to entitle it to a place in the flower-garden. The *leaves* are not inelegant. Their upper ſurface is of a fine green, nearly ſmooth; the lower downy and white. The *thorns* are in fact *ſtipulas,* an inch long, very ſharp, ſtanding in pairs at the baſe of each *footſtalk,* ſeparating juſt above their origin into three ſpreading needle-like points. *Flowers* ſmall and inconſiderable. *Fruit* oval, covered with

copious, ſmall, hooked prickles. The wild plant makes a conſpicuous appearance in winter, on banks about Montpellier.

For *X. fruticoſum*, Linn. Suppl. 418, ſee Franseria.

Xanthium, in *Agriculture*, a term under which the leſſer burdock is ſometimes known by writers, and which is found to be a very troubleſome weed. See Weed.

XANTHOCHYMUS, in *Botany*, received that name, either from Dr. Roxburgh or Mr. Dryander, in alluſion to the remarkable yellow juice of its fruit; the word being compounded of ξανθος, *yellow*, and χυμος, *juice.*—Roxb. Coromand. v. 2. 51. Ait. Hort. Kew. v. 4. 420.—Claſs and order, *Polyadelphia Polyandria.* Nat. Ord. *Guttiferæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five roundiſh, unequal, obtuſe, flattiſh, ſpreading, ſlightly imbricated, permanent leaves. *Cor.* Petals five, orbicular, nearly ſeſſile, oppoſite to the calyx-leaves, and twice as long. Nectary of five broad, ſhort, abrupt, porous glands, oppoſite to the petals, alternate with the ſtamens, inſerted into the receptacle under the germen. *Stam.* Filaments twenty, united into five oblong, linear, flat bodies, alternate with the nectaries, and above twice as long; anthers ſtalked, roundiſh, of two lobes and two cells. *Piſt.* Germen ſuperior, globoſe; ſtyle ſcarcely any; ſtigmas five, ſpreading horizontally, obtuſe, deciduous. *Peric.* Berry globoſe, ſucculent, with five ovate *ſeeds*, immerſed in the pulp, ſome of which are generally abortive.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectaries five, abrupt. Stamens united into five ſets, alternate with the nectaries. Berry with from one to five ſeeds.

1. X. *pictorius.* Painter's Golden-apple. Roxb. Coromand. v. 2. 51. t. 196. Ait. n. 1.—Native of moiſt valleys, among the Circar mountains of Hindooſtan, flowering in the hot ſeaſon, and ripening fruit in November, December, and January. A large *tree*, whoſe tall trunk is covered with dark rough bark, and whoſe numerous, ſmooth, rather angular *branches* form an ample evergreen head. *Leaves* oppoſite, ſtalked, about a foot long and two or three inches broad, elliptic-oblong, acute, entire, coriaceous, ſmooth, and ſhining, with a ſtrong mid-rib, and many tranſverſe, parallel, fine, interbranching veins. *Footſtalks* an inch in length, angular, channelled, corrugated. *Stipulas* none. *Flowers* an inch in diameter, five or ſix together, in ſtalked umbels, each umbel oppoſite to a leaf, or ſituated nearly where a laſt-year's leaf has been. *Partial ſtalks* ſimple, ſmooth, near two inches long. *Petals* white. *Stamens* and *Piſtil* green. *Nectaries* and *Anthers* yellow. *Fruit* globular, drooping, ſomewhat pointed, orange-coloured, ſmooth, two inches or more in diameter. *Seeds* about the ſize and ſhape of almonds.

"The ripe apples," ſays Dr. Roxburgh, "are eaten by the natives. They are very inviting to the eye, and in taſte little inferior to many of our apples in England. I have no doubt, if meliorated by culture, they would prove a delicious fruit." The green, but full-grown, fruit yields a large quantity of a gum, very like *Gummi Guttæ*, Gamboge. The beſt way to obtain it is by cutting the apples acroſs, and to ſcrape off the juice, as it rapidly iſſues. When recent, it is of the conſiſtence of very rich cream, bright yellow, conſiderably acrid, and ſomewhat nauſeous to the taſte. In a few days it hardens, and becomes leſs acrid. It makes a pretty good water-colour, either by itſelf, as a yellow, or mixed with other colours, to form green, &c. It has no particular ſmell when burnt. A milky juice exudes from the bark of this tree when wounded, which ſoon thickens, and in thickening aſſumes a yellow tint. It has no ſmell, and, when firſt taken into the mouth, little taſte; but after a while, a ſenſe of dryneſs and acrimony extends a little way down the throat. This juice, like that obtained from the fruit, is imperfectly ſoluble in ſpirits. *Roxburgh.*

The tree above deſcribed is no very remote relation of the Mangoſteen, the moſt delicious fruit of India; ſo that Dr. Roxburgh's advice of improving it by culture may be well worthy the attention of horticulturiſts, if any be found in that part of the world where ſuch experiments are practicable. The moſt obvious would be to obtain pollen of the Mangoſteen, which, like that of many other plants, would probably bear carriage, and to impregnate with it ſome flowers of the *Xanthochymus*, whoſe progeny might thence perhaps be much altered.

XANTHON, a name given by ſome of the ancients to a ſpecies of marble of a yellowiſh-green colour, much uſed in ornamenting the inner parts of houſes; and from its equal hardneſs with the Tænarian marble, and the equal high poliſh it was capable of, ſuppoſed by the workmen to be of the ſame ſpecies.

The word *xanthon* is of very dubious meaning, but is ſuppoſed as the name of this marble to have expreſſed a green colour, as this was otherwiſe called *marmor herboſum.* See Tænarium and Herbosum *Marmor.*

XANTHORRHIZA, in *Botany*, received its name from the late M. L'Heritier; ξανθος, *yellow*, and ῥιζα, *a root*, alluding to the colour of that part. We follow Marſhall, Schreber, and Martyn, in correcting the original orthography.—Schreb. Gen. 727. Mart. Mill. Dict. v. 4. Lamarck Illuſtr. t. 854. (Zanthorhiza; L'Herit. Stirp. Nov. 79. Willd. Sp. Pl. v. 1. 1568. Ait. Hort. Kew. v. 2. 199. Purſh 212. Juſſ. 234. De Cand. Syſt. v. 1. 386. Poiret in Lamarck Dict. v. 8. 838.)—Claſs and order, *Pentandria Polygynia.* (Polygamia Monoecia; *Schreb.*) Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Candolle.

Gen. Ch. *Cal.* none; unleſs, with the French botaniſts, we take the corolla for ſuch. *Cor.* Petals five, ovate, acute, ſpreading, deciduous. Nectaries five, abrupt, two-lobed, ſpreading, inſerted into the receptacle, alternate with the petals, and about half as long. *Stam.* Filaments five to ten, awl-ſhaped, very ſhort; anthers roundiſh. *Piſt.* Germens ſeveral, ſeven to eleven, ſuperior, oblong; ſtyles awl-ſhaped, incurved; ſtigmas acute. *Peric.* Capſules as many, inflated, ovate-oblong, bluntiſh and compreſſed at the top, where they burſt, terminated obliquely by the ſtyles, each of one cell and two valves. *Seeds* ſolitary, oblong, compreſſed, ſmall, pendulous from the top of the capſule.

Obſ. Many of the flowers want either the ſtamens or piſtils.

Eſſ. Ch. Calyx none. Petals five. Nectaries five, abrupt, ſtalked. Capſules five, or more. Seeds ſolitary, pendulous.

1. X. *apiifolia.* Parſley-leaved Yellow-root. (Zanthorhiza apiifolia; L'Herit. Stirp. Nov. 79. t. 38. Willd. n. 1. Ait. n. 1. De Cand. n. 1. Purſh n. 1.)—Native of ſhady banks of rivers, from Virginia to Georgia, flowering in May. *Purſh.* Mr. Aiton ſays it was introduced, about the year 1766, by John Buſh, eſq. into the Engliſh gardens, where it is hardy, flowering in the early ſpring. Here it flowered unnoticed, or at leaſt undeſcribed, till M. L'Heritier publiſhed his magnificent and learned work. The *ſtem* is ſhrubby, buſhy, about a yard high, each branch crowned with a tuft of dark green, ſmooth, ſhining, long-ſtalked, pinnated *leaves*, whoſe *leaflets*, an inch or an inch and half long, are acute, rhomboid-lanceolate, ſharply and unequally ſerrated in their fore-part. *Flowers* in long panicled *cluſters*, from the

ſame bud as the leaves, of a dark copper-coloured purple, like *Veratrum nigrum*, and though not gay or brilliant, not inelegant, when contraſted with the foliage. The *root* and *ſtem* are internally of a bright lemon-colour. The affinity of this plant to *Cimicifuga*, *Actæa*, *Helleborus*, &c. would lead us to ſuſpect, though there is no remarkable fetor, that its properties might be active, and accordingly it ſeems that the American phyſicians have employed it ſucceſsfully in practice, as a tonic or ſtimulant. Probably its qualities may not be diſſimilar from thoſe of *Helleborus trifolius* of Linnæus; *Coptis trifolia*, Saliſb. Tr. of Linn. Soc. v. 8. 305. Purſh 390. Bigelow Am. Med. Bot. v. 1. 60. t. 5; the root of which the laſt-mentioned writer informs us is purely and intenſely bitter, ſtrengthening the ſtomach and other viſcera, and promoting digeſtion. It makes a yellow tincture, like that of Gentian in flavour and medical virtues.

XANTHORRHŒA, from ξανθος, *yellow*, and ῥεω, *to ſlow*, a name given by the writer of this to the Yellow Gum plant of New Holland, which conſtitutes a moſt diſtinct and peculiar genus. Of this Mr. Brown has made us acquainted with ſeven ſpecies.—Sm. Tr. of Linn. Soc. v. 4. 219. Brown Prodr. Nov. Holl. v. 1. 287. Ait. Hort. Kew. v. 2. 271.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Aſphodeli*, Juſſ. *Aſphodeleæ*, Brown.

Gen. Ch. *Cal.* none, unleſs the corolla be taken for ſuch. *Cor.* inferior, of one petal, in ſix deep, nearly equal, oblong, permanent ſegments; the three inner ones concave, converging at the baſe. *Stam.* Filaments ſix, inſerted into the lower part of the corolla, linear, flat, ſmooth, and naked, longer than the ſegments; anthers verſatile. *Piſt.* Germen ſuperior, ovate, with the rudiments of many ſeeds in each cell; ſtyle cylindrical, with three furrows; ſtigma ſimple. *Peric.* Capſule projecting beyond the cloſed permanent corolla, ovate, with three blunt angles, woody, almoſt horny, poliſhed, acute, of three cells, and three valves, the partitions from the middle of each valve. *Seeds* one or two in each cell, bordered, compreſſed, with a hard black ſhell; the ſcar at the baſe, naked; embryo tranſverſe; albumen ſoft and fleſhy.

Eſſ. Ch. Corolla inferior, in ſix deep ſegments, permanent. Filaments flat, linear, naked. Capſule triangular, poliſhed. Seeds one or two, compreſſed, bordered.

Mr. Brown, from whoſe examination, of the living plants, we have improved our generic deſcription above, remarks, that the ſpecies of this genus have a peculiar habit, ſo ſtriking, that where they abound, they give a ſingular character to the face of the country. The body of the *root* is ſometimes elevated into a thick, ſcarred, black *ſtem*, often divided or branched, and ſeveral feet in height, exuding a fragrant yellow reſin: in other inſtances it is very ſhort, ſcarcely riſing above the ſurface of the ground. *Leaves* very numerous, crowded, narrow, graſſy, of great length, linear, ſomewhat triangular, or two-edged, ſpreading every way; recurved at the extremity; dilated, and half-ſheathing, at the baſe; rigid and elaſtic when dry. *Flower-ſtalk* terminal, quite ſimple, round, often many feet in length, ſmooth, firm, hard, and durable. *Spike* terminal, ſolitary, cylindrical, denſe, many-flowered, reſembling a catkin, ſometimes equal in length to the ſtalk itſelf. *Flowers* ſeſſile, cloſely crowded, ſmall, white, each accompanied by numerous, imbricated *bracteas*, tapering at the baſe into a claw, the innermoſt gradually ſmalleſt. *Capſules* of a ſhining cheſnut, partly black.

"The ſtructure of the *ſeeds* agrees with *Borya*, Labill. Nov. Holl. t. 107. Brown Prodr. v. 1. 286; nor are theſe two genera very diſſimilar in foliage or infloreſcence. They are placed at the end of the *Aſphodeleæ*, becauſe of their fleſhy *albumens*, and the black cruſtaceous ſkin of their *ſeeds*." *Brown.*

1. X. *arborea*. Arboreous Yellow-gum. Br. n. 1.—"Stem arboreſcent. Leaves two-edged; triangular beyond the middle; ſtriated in front. Stalk ſcarcely the length of the very long ſpike. Bracteas and corolla beardleſs."—Native of the country near Port Jackſon, New South Wales. Each diviſion of the thick *ſtem* is crowned with a large tuft of innumerable long, ſlender, drooping *leaves*, in the centre of which the *flower-ſtalks* ſtand ſolitary. See n. 3.

2. X. *auſtralis*. Southern Yellow-gum. Br. n. 2.—"Stem arboreſcent. Leaves compreſſed longitudinally. Stalk ſhorter than the elongated ſpike. Bracteas ſubtending the tufts of flowers elongated."—Native of the iſland of Van Diemen, where it was gathered by Mr. Brown. We have ſeen no ſpecimen.

3. X. *Haſtile*. Spear Yellow-gum. Br. n. 3. Ait. n. 1. (Yellow reſin-tree; White's Voyage, 235. t. at p. 249.)—Stem very ſhort. Leaves compreſſed longitudinally. Stalk many times longer than the eighteen-inch ſpike. Bracteas, and outer ſegments of the corolla, downy at the point.—Native of New South Wales, from whence we received ſpecimens in 1790, by favour of Dr. John White. It is ſaid to have been ſent, in 1803, to Kew garden, by Philip Gidley King, eſq. A green-houſe plant, flowering in April and May. In the deſcription given by Dr. White, at the place above quoted, he evidently confounds this ſpecies and the *X. arborea;* for he ſays "it is about the ſize of an Engliſh Walnut-tree. The *trunk* grows pretty ſtraight for about fourteen or ſixteen feet, after which it branches out into long ſpiral *leaves*, which hang down on all ſides, and reſemble thoſe of the larger kinds of graſs, or ſedge. From the centre of the head of leaves ariſes a ſingle *footſtalk*, eighteen or twenty feet in height, perfectly ſtraight and erect, terminating in a *ſpike* of a ſpiral form. This large *ſtalk* is uſed by the natives for making ſpears and fiſh-gigs, being pointed with the teeth of fiſh, or other animals." The firſt part of this deſcription appears to belong to the *arborea;* the latter, regarding the *infloreſcence*, to the *Haſtile;* which might eaſily, perhaps, except by a ſcrutinizing botaniſt, be ſuppoſed different ſtages of growth, or varieties, of the ſame plant. Such a miſtake may be more eaſily accounted for than that of the great Linnæus, in combining nearly the whole genus of *Aloe* into one ſpecies. The Yellow Reſin is produced by the preſent, and ſome other, ſpecies of this genus, by ſpontaneous exudation from the trunk; promoted ſometimes, as we judge from the appearance of certain ſpecimens, by fires kindled by the ſavage natives of the country. The juice, fluid at firſt, ſoon hardens in the ſun, into a concrete brittle form, of a dull orange colour. Burnt on hot coals, it emits a fragrant ſmoke, ſmelling like a mixture of balſam of Tolu and Benzoin, approaching in ſome degree to Storax. This reſin is perfectly ſoluble in ſpirit of wine, but not in water, nor even in eſſential oil of turpentine, unleſs digeſted in a ſtrong heat. The varniſh which it makes with either is weak, and of little uſe. Dr. White found this Yellow Gum a good pectoral medicine, in many caſes. If burnt in a room, the ſcent, though pleaſant to ſome people, ſoon proves oppreſſive, and the ſmoke irritating to the lungs. Olive gum, uſed by the Italians, is preferable for fumigation.

4. X. *media*. Intermediate Yellow-gum. Br. n. 4.—"Stem rather ſhort. Leaves (longitudinally?) compreſſed. Stalk very long, many times exceeding the eighteen-inch ſpike. Bracteas and corolla beardleſs."—Obſerved by

Mr. Brown near Port Jackſon. He is not quite confident of its being a diſtinct ſpecies from the laſt.

5. X. *minor*. Leſſer Yellow-gum. Br. n. 5.—“ Stem none. Leaves triangular; flat in front; rather concave beyond the middle. Stalk many times longer than the ſpike. Bracteas ſcarcely longer than the tufts of flowers, all, like the corolla, beardleſs.”—Gathered by Mr. Brown, in New South Wales. The *ſpike* of this ſpecies meaſures from five to eight inches. *Brown.*

6. X. *bracteata*. Long-bracteated Yellow-gum. Br. n. 6. —“ Stem none. Leaves triangular; below the middle ſomewhat elevated in front; beyond it rather concave. Stalk many times longer than the ſpike. Bracteas ſubtending the tufts twice or thrice the length of the flowers, lanceolate and divaricated, all, like the corolla, beardleſs.”— From the ſame country. The *ſpike* is only from three to ſix inches in length. *Brown.*

7. X. *Pumilio.* Dwarf Yellow-gum. Br. n. 7.—“ Stem none. Leaves below the middle flattiſh, with a ſlightly elevated ridge on both ſides; beyond it triangular and channelled. Stalk many times longer than the ovate ſpike. Bracteas nearly equal, beardleſs as well as the corolla.”— Gathered by Mr. Brown, in the tropical part of New Holland. The *flower-ſtalk* itſelf is, in this ſpecies, only a foot high. *Brown.*

XANTHOXYLUM, received its name from governor Cadwallader Colden, becauſe of the yellow hue of the wood, to which ξανθος, *yellow*, and ξυλον, *wood*, alludes. We make no ſcruple to follow the example of profeſſor Martyn, in reſtoring the proper orthography; nor is it requiſite to burthen our readers with a perpetual indication of the original blunder, under every ſpecies, though that blunder has the ſanction of Linnæus, and perhaps of all the authors, except Martyn, that we may have to quote. They generally write the word *Zanthoxylum*, or *Zanthoxylon.*—Linn. Gen. 519. Schreb. 684. Willd. Sp. Pl. v. 4. 753. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 382. Purſh 209. Swartz Ind. Occ. 570. Juſſ. 374. Lamarck Dict. v. 2. 38. Illuſtr. t. 811. Gærtn. t. 68. (Fagara; Duham. Arb. v. 1. 229. t. 97. Swartz Prodr. 33.)—Claſs and order, *Dioecia Pentandria.* Nat. Ord. “ *Hederaceæ,*” Linn. rather his *Dumoſæ*. *Terebintaceis affine*, Juſſ.

Gen. Ch. corrected. Male, *Cal.* Perianth very ſmall, in three or five deep, concave, rather acute ſegments. *Cor.* Petals three or five, oval, erect, concave, thrice the length of the calyx. *Stam.* Filaments three or five, awl-ſhaped, erect, longer than the petals; anthers roundiſh, two-lobed, furrowed.

Female, *Cal.* like the male, inferior, permanent. *Cor.* like the male, deciduous. *Piſt.* Germens from two to five, roundiſh, each terminating in an awl-ſhaped ſtyle, longer than the petals; ſtigmas obtuſe. *Peric.* Capſules from one to five, ſtalked, each of one cell, and two coriaceous valves, burſting at the inner margin. *Seeds* ſolitary, roundiſh, poliſhed, pendulous from an upright briſtle-ſhaped ſtalk.

Eſſ. Ch. Male, Calyx in three or five ſmall deep ſegments. Petals three or five.

Female, Calyx like the male, inferior, permanent. Petals three or five. Capſules from one to five, of two valves, and one cell. Seeds ſolitary, pendulous.

Obſ. This genus is diſtinguiſhed from FAGARA, (ſee that article,) by having ſeparated *flowers*, either three-cleft, or five-cleft, and pendulous *ſeeds*. Botaniſts appear to have miſtaken its real character, taking the *corolla* for a *calyx*. To this error Linnæus and Duhamel led the way, and Juſſieu, Willdenow, and others, have followed them. Yet Linnæus in his *Gen. Pl.* ſubjoins to his generic deſcription a more correct ſtatement, altogether ſuperſeding the former; and Willdenow admits ſpecies from Swartz, whoſe *petals* by their preſence contradict his eſſential character. We have not ſeen living ſpecimens of *Xanthoxylum*, but the deſcriptions of Browne and Swartz leave little doubt of the correctneſs of the above characters. We are much tempted to unite the two genera in queſtion, but as they really have not been ſufficiently inveſtigated, and Gærtner ſeems to have diſcovered a diſtinctive mark of *Xanthoxylum*, in the ſtalked pendulous *ſeeds*, we leave them for future inquiry. The whole genus is ſhrubby or arboreous, with alternate, pinnate, ſometimes only ternate, entire, or ſomewhat crenate *leaves*, and cluſtered, or panicled, *flowers*. The *ſtem* is, in moſt inſtances, armed with prickles, that are ſometimes very formidable. The *wood* is hard, and ſerviceable for many purpoſes.

Sect. 1. *Stem without prickles.*

1. X. *ternatum*. Three-leaved Yellow-wood. Swartz Ind. Occ. 570. Willd. n. 1. (Fagara trifoliata; Swartz Prodr. 33.)—Prickles none. Leaves ternate, obovate, ſlightly emarginate, ſhining; dotted beneath.—Received by ſir Joſeph Banks from the iſland of Dominica. A *ſhrub*, ſix feet high, with roundiſh, ſubdivided *branches*, angular when young. *Leaves* on ſmooth, ſpreading, channelled *footſtalks*. *Leaflets* on ſmall partial ſtalks, entire, rigid, veiny; contracted at the baſe; paler beneath, and minutely dotted with black. *Cluſters* axillary, compound. *Flowers* ſmall, whitiſh. *Germens* three, contiguous, like one three-lobed germen. *Stigmas* three, ſeſſile. *Capſules* three, each of two hemiſpherical valves, with two internal, membranous, whitiſh valves. *Seeds* ſolitary, roundiſh, poliſhed. *Swartz.*

2. X. *emarginatum*. Emarginate Yellow-wood. Swartz Ind. Occ. 572. Willd. n. 2. Ait. n. 1. (Fagara emarginata; Swartz Prodr. 33. Lauro affinis, terebinthi folio alato, ligno odorato candido, flore albo; Sloane Jam. v. 2. 24. t. 168. f. 4.)—Prickles none. Leaves pinnate, ovate, emarginate, veiny. Flowers triandrous.—Native of mountains in the interior parts of Jamaica, where it is vulgarly called *Lignum rorum*, a corruption of *Lignum Rhodium*, the ſmell of every part of the ſhrub reſembling the latter when rubbed, or held near the fire. The *ſtem* is woody, branched, round. *Leaflets* about three pair, rarely with an odd one, above an inch long, veiny, rather coriaceous, and ſhining. *Cluſters* terminal, ſomewhat compound, erect. *Flowers* minute, whitiſh. *Calyx* in five deep, ovate, acute, permanent ſegments. *Petals* only three, ovate, concave, ſpreading, twice the ſize of the calyx. *Stamens* three, very ſhort. *Germen* three-lobed, with three ſeſſile *ſtigmas*. *Capſule* ſeldom more than one perfected, with two internal, as well as external, valves, and one orbicular, black, ſhining *ſeed*. *Swartz.*

3. X. *acuminatum*. Pointed-leaved Yellow-wood. Swartz Ind. Occ. 575. Willd. n. 3. (Fagara acuminata; Swartz Prodr. 33.)—Prickles none. Leaves pinnate, elliptical, pointed, coriaceous. Flowers triandrous.—Native of mountainous parts of Jamaica. A *ſhrub*, with round ſpreading *branches*. *Leaflets* three or four pair, laurel-like, ſhining. *Cymes* terminal, ſubdivided in a forked manner. *Flowers* crowded, ſmall, white. *Calyx* of three minute ovate leaves. *Petals* three, obtuſe, concave, one line and a half long. *Stamens* three, ſhorter than the *corolla*. *Fruit* globoſe, the ſize of a pepper-corn, only one *capſule*, out of three, coming to perfection.

Sect. 2. *Stem prickly.*

4. X. *punctatum*. Dotted Yellow-wood. Willd. n. 4.

“Weſt St. Croix 236.”—Stem prickly. Leaves ternate, or pinnate, oblong, finely crenate; dotted beneath.—Native of the iſland of Santa Cruz. *Willdenow*.

5. X. *ſpinoſum*. Prickly Triandrous Yellow-wood. Swartz Ind. Occ. 574. Willd. n. 5. (Fagara ſpinoſa; Swartz Prodr. 33.)—Stem prickly. Leaves pinnate, with many pair of ſeſſile, ovate, pointed leaflets; prickly beneath, as well as the branches. Flowers triandrous.—Native of dry mountainous ſituations in Jamaica. A *ſhrub*, about ſix feet high, with a round, branching, upright ſtem. *Spines* (rather we preſume *prickles*) ſcattered, prominent, needle-like, as long as the finger-nail; thoſe of the main ſtem ſtronger, and thicker at the baſe. *Leaves* a foot long, with a compreſſed *footſtalk*, round and prickly at its baſe, and, if we underſtand right, furniſhed with a pair of prickles before each pair of *leaflets*, which are nearly ſeſſile, eight or ten pair in all, ovate, with a ſhort emarginate point, veiny, rigid, ſmooth, and ſhining, very minutely crenate at the edges, their mid-rib occaſionally prickly. *Cymes* terminal, with minute, white, crowded *flowers*. *Calyx* with three ovate acute ſegments. *Petals* three, ovate, larger than the calyx. *Filaments* ſcarcely any. *Anthers* ovate, converging. *Germen* in three diſtinct lobes. *Stigmas* three, ſeſſile, obtuſe. *Fruit* not obſerved. *Swartz*.

We have been more full in our deſcriptions of Dr. Swartz's four ſpecies, that the reader may compare their characters with *Fagara*. Nothing is ſaid of their *flowers* being ſeparated, or dioecious.

6. X. *Clava Herculis*. Great Prickly Yellow-wood. Linn. Sp. Pl. 1455, excluding the ſynonym of Duhamel. Amœn. Acad. v. 3. 16. Willd. n. 6. Ait. n. 2. Swartz Obſ. 375. (X. ſpinoſum, lentiſci longioribus foliis, euonymi fructu capſulari; Cateſb. Carolin. v. 1. t. 26, according to Linnæus. X. aculeatum, fraxini ſinuoſis et punctatis foliis; Pluk. Phyt. t. 239. f. 4.)—Stem with broad angular prickles. Leaflets ovate, pointed, crenate; nearly equal at the baſe: common footſtalk prickly. Flowers terminal, panicled.—Native of woods in the Weſt Indies and Carolina, flowering in March and April. It is marked by Mr. Aiton as a green-houſe plant, cultivated ever ſince Miller's time, flowering in April and May. The *trunk* is woody, often, according to Swartz, 30 or 40 feet high, armed with very powerful *prickles*, which are thick at their baſe, angular and ſharp at the point. *Leaves* a foot long, pinnate, as in all the following ſpecies; their common *footſtalks* armed with ſcattered ſtraight prickles, one-third of an inch long: *leaflets* about ſeven pair, on ſhort partial ſtalks, unequally divided by their ſmooth mid-rib, and ſomewhat falcate, an inch and a half or two inches long, bordered with ſhallow unequal notches, ſmooth and rather ſhining. *Cluſters* terminal, compound. *Flowers* polygamous, there being ſome united ones, though not perfecting ſeed, on one tree, and others entirely female, on another. The *former* have a minute five-toothed *calyx*. *Petals* five, thrice as long, ovate, erect, or a little incurved. *Filaments* five, twice the length of the petals, and inſerted between them. *Anthers* oblong, cloven at the baſe. *Germen* roundiſh, abortive, with five awl-ſhaped erect *ſtyles*, and ſimple *ſtigmas*. The *female flowers* have a five-toothed *calyx*; five concave *petals*; no *ſtamens*. *Germens* five, united into a roundiſh body. *Styles* none. *Stigma* peltate, ſlightly convex, a little elevated, with five furrows. *Capſules* five, combined, or one of five lobes, each lobe having two valves, and containing a roundiſh, black, ſhining *ſeed*. Our deſcription of the fructification is taken from Dr. Swartz. The *leaves* bear but a ſlight reſemblance to the Maſtick-tree, or any other ſpecies of *Piſtacia*, being decidedly crenate.

7. X. *aromaticum*. Aromatic Yellow-wood. Willd. n. 7. (Euonymo adfinis aromatica, ſive Xanthoxylon ſpinoſum, fraxinellæ foliis cheuſanicum; Pluk. Amalth. 78. t. 393. f. 2.)—Stem with oppoſite prickles. Leaflets ovato-lanceolate, ſerrated; unequal at the baſe: common footſtalk prickly. Panicles terminal.—Native of Chuſan. “A *ſhrub* with ſtraight prickles. *Leaflets* two, three, or four pair, pointed, one inch and a half long, marked with pellucid dots; rounded near the baſe, at the upper edge; contracted at the lower. *Common footſtalk* beſet with ſtrong, nearly oppoſite, prickles.” *Willdenow*, from a dried ſpecimen, without *flowers*. Plukenet ſays, “the fruit is a ſingle, round, rough, or warty *capſule*, taſting ſtrongly of camphor, lined with a white, ſmooth, inſipid membrane, containing a black poliſhed *ſeed*, with a hollow whitiſh ſcar, in which lies the thread connecting the ſeed with its capſule.” This very accurate deſcription determines the genus. He adds, that the Chineſe uſe this fruit inſtead of pepper.

8. X. *rhoifolium*. Stomach-leaved Yellow-wood. Lamarck n. 2. Willd. n. 8. (Euonymo affinis aromatica, ſive Xanthoxylum ſpinoſiſſimum, fraxini anguſtiore folio punctatum; Pluk. Amalth. 76. t. 392. f. 1.)—Stem prickly. Leaflets lanceolate, finely ſerrated; nearly equal at the baſe: common footſtalk downy and prickly. Panicles axillary.—Brought from the iſlands of Chuſan, like the preceding. The *leaves* are a foot long. *Leaflets* nine to eleven pair, with an odd one, each three inches in length, pointed, dotted; ſlightly downy beneath. *Footſtalk* ſometimes without prickles. *Willdenow*. Plukenet's figure repreſents the *panicle* much like the preceding, but lateral. The *capſules* ſeem to be one, two, or three from each *flower*.

9. X. *juglandifolium*. Walnut-leaved Yellow-wood. Willd. n. 9. (X. americanum, ſive Herculis arbor aculeata major, juglandis foliis alternis parùm ſinuoſis; Pluk. Phyt. t. 239. f. 6?)—Stem prickly. Leaflets oblong, pointed, obſcurely ſerrated; unequal at the baſe: common footſtalk ſomewhat prickly. Panicles terminal.—Native of Hiſpaniola and Nevis. *Leaves* pinnate, with an odd one; *leaflets* alternate, coriaceous, two or three inches long, marked with diſtant, ſcarcely viſible, pellucid dots; their edges entire to the naked eye, but under a magnifier appearing furniſhed with cloſe diſtant ſerratures; contracted near the baſe, at the upper edge; rounded at the lower, rather downy beneath. *Common footſtalk* beſet with a few ſhort ſcattered prickles. *Panicles* terminal, much branched, denſe, downy. *Capſules* four or five, rather downy, pointed. *Seeds* black.

10. X. *rigidum*. Rigid Yellow-wood. Willd. n. 10.—“Stem prickly. Leaflets elliptical, entire, emarginate, pointed; their veins hairy beneath; mid-ribs and footſtalks prickly.”—Native of South America. *Humboldt and Bonpland*. *Leaflets* four pair, coriaceous, on very ſhort ſtalks; the upper ones largeſt, two inches long; lower but half an inch; their baſe rather unequal; ſometimes having a ſhort, obtuſe, crenate point; their upper ſide poliſhed, reticulated with veins; under paler, with one long, reddiſh, awl-ſhaped prickle on the mid-rib of each, of which there are ſeveral on the common ſtalk. *Flowers* not ſeen. *Willdenow*.

11. X. *hermaphroditum*. Cayenne Yellow-wood. Willd. n. 11. (Fagara pentandra; Aubl. Guian. v. 1. 78. t. 30.)—Stem prickly. Leaflets elliptic-oblong, pointed, entire; nearly equal at the baſe: common footſtalk without prickles. Panicles terminal, repeatedly compound. Flowers

united.—Gathered by Aublet, in the foreſts of Cayenne, flowering in May, and bearing fruit in Auguſt. A *tree*, whoſe *trunk* is 40 or 50 feet high, and two feet and a half in diameter, with a prickly bark. The *wood* is white, hard, and compact. *Leaflets* about five pair, nearly ſeſſile, ſmooth; the largeſt ſix inches long, and an inch and a half broad. *Panicles* large and much branched, compoſed of numerous, ſmall, white *flowers*, having *ſtamens* and *piſtils* in the ſame individual. *Capſules* three, four, or five from each flower, reddiſh, each containing a black, ſhining, oily *ſeed*. Theſe *capſules* have a pungent aromatic flavour, and the Creoles call them negro's pepper.

12. X. *fraxineum*. Aſh-leaved Yellow-wood, or Common Tooth-ache Tree. Willd. n. 12. Arb. 413. Ait. n. 2. Purſh n. 1. (X. Clava Herculis β; Linn. Sp. Pl. 1455. X. ramiflorum; Michaux Boreal.-Amer. v. 2. 235. Fagara fraxini folio; Duham. Arb. v. 1. 229. t. 97.)—Stem prickly. Leaflets ovate, very minutely ſerrated; equal at the baſe. Umbels axillary.—Native of ſhady woods, near rivers, from Canada to Virginia and Kentucky, flowering in April and May. A tincture of the bark and capſules is recommended in rheumatiſm and the tooth-ache, whence its Engliſh name. *Purſh.* A large deciduous ſhrub, whoſe *branches* are armed with ſharp, conical, compreſſed, brown prickles, very broad at the baſe. *Leaflets* four or five pair, with an odd one, an inch and a half long, on ſhort partial ſtalks; contracted at each end; more or leſs diſtinctly crenate, or bluntly ſerrated; ſmooth above; ſoft and downy beneath. Their common *footſtalk* is deſcribed without prickles; but in our ſpecimens it is always furniſhed with ſome, and occaſionally with very numerous ones. The *flowers* are ſmall, yellowiſh-green, in little denſe *umbels*, juſt above the ſcars of laſt year's footſtalks, accompanied by a tuft of downy young leaves. The mode of infloreſcence abundantly diſtinguiſhes this ſpecies from all the reſt. It is hardy in our gardens, flowering in March and April, before the leaves appear. The bark is uſed in America, as a powerful ſudorific and diuretic, whence its uſe, as above-mentioned, in rheumatic diſorders. This is the ſpecies moſt popularly taken for *X. Clava Herculis*, as appears by the herbarium of Jacquin, purchaſed formerly by ſir Joſeph Banks, and even by that of Linnæus. The two ſpecies, neverthele ſs, are widely different.

13. X. *tricarpum*. Three-grained Yellow-wood. Michaux Boreal.-Amer. v. 2. 235. Purſh n. 2. Ait. n. 4. —Stem prickly. Leaflets ſtalked, oblong-oval, pointed, very ſmooth, finely ſerrated; oblique at the baſe: common footſtalk prickly. Capſules three, ſeſſile.—In the woods of Carolina and Florida, flowering in July. *Michaux*, *Purſh.* Introduced into the Engliſh gardens in 1806, by Mr. John Lyon. A hardy ſhrub. *Aiton.*

14. X. *heterophyllum*. Various-leaved Yellow-wood. (Macqueria Commerſoni; Juſſ. 374, under Xanthoxylum.) —Young branches prickly; their leaves with very numerous ſerrated leaflets, on prickly common ſtalks: old ones unarmed, their leaves of ſeven entire leaflets, on unarmed common ſtalks. Panicles axillary. Capſules ſolitary.—Gathered in the iſle of Bourbon, by Commerſon, ſome of whoſe ſpecimens are in our poſſeſſion. Nothing can be more paradoxical than the appearance of this ſhrub. We muſt rely on its diſcoverer for the accuracy of his ſpecimens, as the two branches, ſo very different in appearance, are not connected together; though we cannot doubt their generical identity. The young *branch* is ſlender, covered with innumerable, ſharp, aſcending prickles, of various ſizes, a line long at moſt. *Leaves* alternate: *common footſtalk* of each five or ſix inches long, round, ſtraight, channelled, beſet with numerous prickles, like thoſe of the branch, but ſmaller: *leaflets* from 40 to 60, or more, oppoſite or alternate, ovate, bluntiſh, ſmooth, crenate or bluntly ſerrated, one quarter or one-third of an inch in length, of a fine green, paler beneath, marked with pellucid dots; their mid-ribs bearing one or two prickles at the back. The older or flowering *branches* are ſtout, rugged, unarmed, leafy at their extremities only. *Leaves* alternate, rather crowded, altogether deſtitute of prickles, each conſiſting of three pair of obovate, bluntly pointed, entire, coriaceous, veiny, ſmooth *leaflets*, with an odd one; the lowermoſt ſmalleſt: *common footſtalk* channelled, ſmooth. *Panicles* compound, rather ſhorter than the leaves; their ſtalks unarmed, compreſſed, and angular. *Capſules* only one, perfected in each flower, brown, the ſize of a pepper-corn, rugged, full of pellucid dots lodging a pungent aromatic camphorated oil, and very bitter. *Seed* black, poliſhed, with a bivalve elaſtic *tunic*, or lining of the capſule.

For *X. trifoliatum*, Linn., ſee Panax *Aculeatum*.

XANTHURUS Indicus, in *Ichthyology*, the name of a fiſh called by the Dutch *geel-ſtardt*.

It is of the ſize and ſhape of the bream; its jaws are armed with ſtraight and very ſharp teeth, which ſtand almoſt ſtraight out; its back is yellow, and its tail very ſtrongly tinged with that colour; its belly is of a blueiſh-white; its head brown, and its fins of a fine red. It is caught with hooks among the rocks on the ſhores of the Eaſt Indies, and is a very wholeſome and well-taſted fiſh. Ray.

XANTHUS, in the *Natural Hiſtory of the Ancients*, the name of an iron-ore of the hæmatites or blood-ſtone kind, and uſually accounted a ſpecies of it, and called by others *Elatites*.

It was of a pale yellowiſh-white, or the colour of the French pale yellow ochre, uſed by our painters; but like all other ferruginous bodies it became red by burning.

Theophraſtus gives us expreſsly the etymology of the name, obſerving that it was called ſo from its colour; the Dorians calling a yellowiſh-white ξανθος, *xanthus*.

Xanthus, in *Ancient Geography*, a famous river of Aſia Minor, in the Troade. According to Pliny, it had its ſource in mount Ida, and diſcharged itſelf at the port of the Achæans into the Helleſpont, after having joined the Simois.—Alſo, a river of Aſia Minor, in Lycia, which had its ſource in mount Taurus, and watered the towns of Xanthus and Patara, and ran into the Mediterranean, near the laſt of theſe places. This river was anciently called Sirbes, according to Strabo, and he ſays that the temple of Latona was ſituated ten ſtadia above its mouth, and ſixty ſtadia farther was the town of Xanthus.

Xanthus, or *Xanthopolis*, a town of Aſia Minor, and the largeſt in Lycia. It was ſituated ſeventy ſtadia from the mouth of the river on its bank. Pliny reckons fifteen miles from this town to the mouth of the river. Under Appian, the inhabitants of Xanthus were ſuch enthuſiaſts for liberty, that when it was taken by Brutus they burnt it, and preferred death to ſubmiſſion to the conqueror. He adds, that the ſame circumſtance occurred with regard to Harpalus, general of Cyrus the Great, and Alexander the Great. It ſubſiſted in the time of Strabo.—Alſo, a town of the iſle of Leſbos.

XANTIPPE, in *Biography*. See Socrates.

XANTON, in *Geography*, a town of France, in the department of the Vendée; 5 miles E. of Fontenay-le-Comte.

XANXUS, in *Natural Hiſtory*, a name given by ſome authors to a large ſpecies of ſea-ſhell, ſomewhat like that with which the Tritons of old were painted. It is found in great abundance near Ceylon, and is uſed there in medicine as an alkali and abſorbent in the ſame caſes in which we give the teſtaceous powders.

XAPARACO, in *Geography*, a town of Mexico, in the province of Mechoacan; 85 miles W.N.W. of Mechoacan.

XARAMA, a river of Spain, which runs into the Tagus, a little below Aranjuez.

XARAYES, or ZARAYOS, *Laguna de Los*, a ſuppoſed lake of Braſil, formed by the river Paraguay; about 108 miles in length, and 21 in breadth. This is merely an inundation of the river, and exploded as a lake. S. lat. 17° 45′.

XATHOS, in *Ichthyology*, a name given by Appian to the fiſh called by the generality of authors the *erythrinus*, or *rubellio*.

XATIVA, now ST. FELIPE, in *Geography*. See ST. *Felipe*.

XAVIER, a town of Spain, in Navarre, the native place of the celebrated miſſionary of that name; 3 miles E. of Sangueſa.

XAVIER. See SABI.

XAVIER *Gogo*, a town of Africa, in the country of Whidah; 12 miles N.N.E. of Sabi.

XAVIER, *Saint*. See SAINT *Xavier*.

XAVIER *Zante*, a town of Africa, in the country of Whidah; 14 miles N.W. of Sabi.

XAUXA, a town of Peru, in the biſhopric of Guamanga, containing two churches; 90 miles E. of Lima. S. lat. 12°. W. long. 75° 30′. See JAUJA.

XAUXA, a river of South America, which riſes in the Andes, about 75 miles N. from Atun Xauxa, and uniting with the Apurimac, forms the Ucayale.

XAUXAVA, a town of Morocco, on a river, and at the foot of a mountain, both of the ſame name; 15 miles N. of Morocco.

XEBEC, in *Sea Language*, a ſmall three-maſted veſſel, navigated in the Mediterranean ſea, and on the coaſts of Spain, Portugal, and Barbary. The fore and main maſts are called block-maſts, being ſhort, and formed ſquare at the head, to receive ſheaves, to reeve the jeers, &c. The mizen-maſt is fitted with a top-maſt, &c. ſimilar to a ſmall Engliſh ſhip, and which has been lately added, to keep them better to the wind. The xebecs have no bowſprit, but a ſort of boomkin, woulded and confined to the prow, nearly horizontal (ſee GALLEY), to the outer end of which lead the bow-lines. The fore-maſt rakes much forward, has no ſtay, and the ſhrouds ſet up, ſimilar to the runners in Engliſh cutters or ſloops, to toggles fixed in the ſides. Theſe ſhrouds are eaſily ſhifted when the veſſels go about. The main-maſt is nearly upright, and rigs as the fore-maſt. Each maſt carries a latteen-ſail, the largeſt ſide of which is bent to a yard that hoiſts by a purrel round the maſt, at about one-third its length; the yards are worked at the lower end by bow-lines, and the ſail extended by a ſheet at the clue. The upper lee-yard-arm is worked by a brace, and the ſtrain ſupported by vargs nearer the maſt. The mizen-maſt carries a latteen-ſail, ſimilar to the main and fore maſt. Veſſels with latteen-ſails will lie one point nearer the wind than a ſquare-rigged veſſel. Xebecs, particularly in France, have been rigged ſimilar to polacres; but they never ſail ſo well as they did in their primitive ſituation.

The xebec, generally equipped as a corſair, is conſtructed with a narrow floor, to be more ſwift in purſuit of the enemy; and of a great breadth, to enable her to carry a great force of ſail for this purpoſe, without danger of overturning. As theſe veſſels are uſually very low built, their decks are formed with a great convexity from the middle of their breadth toward the ſides, in order to carry off the water, which falls aboard, more readily by their ſcuppers. But as this extreme convexity would render it difficult to walk thereon at ſea, particularly when the veſſel rocks by the agitation of the waves, there is a platform of grating along the deck from the ſides of the veſſel toward the middle, on which the crew may walk dry-footed, whilſt the water is conveyed through the grating to the ſcuppers.

When a xebec is equipped for war, ſhe is occaſionally navigated in three different methods, according to the force or direction of the wind. Thus, when the wind is fair, and nearly aſtern, it is uſual to extend ſquare ſails upon the main-maſt, and frequently upon the fore-maſt; and as thoſe ſails are rarely uſed in a ſcant wind, they are of an extraordinary breadth. When the wind is unfavourable to the courſe, and yet continues moderate, the ſquare yard and ſails are removed from the maſts, and laid by, in order to make way for the large latteen yards and ſails, which ſoon after aſſume their place; but if the foul wind increaſes to a ſtorm, theſe latter are alſo lowered down and diſplaced, and ſmall latteen yards, with proportional ſails, are extended on all the maſts. The xebecs, which are generally armed as veſſels of war by the Algerines, mount from ſixteen to twenty-four cannon, and carry from three hundred to four hundred and fifty men, two-thirds of whom are generally ſoldiers. Falconer.

XEBEROS, in *Geography*, a town of South America, in the audience of Quito; 40 miles S.W. of La Laguna.

XEJUI, a river of Paraguay, which runs into the Paraguay.

XEKIAS, in *Biography*, a name given by the Chineſe and Japaneſe to an Eaſtern philoſopher of mythological origin and character, called alſo Buddas among the Indians, Somonacodom in Siam, and after his death Föe or Fotoki, who faſcinated the whole northern and eaſtern region of Aſia, as well as part of the ſouthern, with his pantheiſtic doctrine. It is probable, as ſome have ſaid, that he lived about 600 years before Chriſt; and having firſt appeared in the ſouthern part of India, on the borders of the Indian ocean, diſſeminated his philoſophy by means of his diſciples to all India. It is ſaid that he ſpent twelve years in ſolitude, when he was inſtructed by the Tolopoin, called by the ancients "hylobii," *i. e.* ſylvan hermits; and that in his 30th year he devoted himſelf to contemplation, and attained to the intuitive knowledge of the firſt principles of all things, from which he took the name of Föe, which ſignifies, "ſomething more than human." His myſtical philoſophy was delivered to his innumerable diſciples under the veil of allegory. The Japaneſe add, that in his contemplations, during which his body remained unmoved, and his ſenſes unaffected by any external object, he received divine revelations, which he communicated to his diſciples.

Buddas, or Xekias, in his eſoteric doctrine, taught the difference between good and evil; the immortality of the ſouls of men and brutes; different degrees of rewards and puniſhments in a future world; and the final advancement of the wicked, after various migrations, to the habitations of the bleſſed. Amidas, who, according to the Chineſe, is Xekias himſelf, preſides in theſe habitations, and is the mediator, through whoſe interceſſion bad men obtain a mitigation of their puniſhment. Theſe dogmas are contained in an ancient book, called Kio, which all the Indians beyond the Ganges, who follow the doctrine of Xekias, receive as ſacred, and which is illuſtrated by innumerable commentaries.

The doctrine which Xekias delivered towards the cloſe of his life to his eſoteric diſciples was very different. Vacuum, or void, was, according to his inſtruction, the principle and end of all things, ſimple, infinite, eternal, but deſtitute of power, intelligence, or any other ſimilar attribute; and that to be like this principle, by extinguiſhing all paſſion and affection, and remaining abſorbed in the moſt profound contemplation, without any exerciſe of the reaſoning faculty, is the perfection of happineſs. The firſt principle in this ſyſtem cannot be pure nihility, which admits of no properties; probably, it is Firſt Matter, without variable qualities, whence all things are ſuppoſed to ariſe, which is not to be perceived by the ſenſes, but contemplated as the latent divinity, infinitely diſtant from the nature of viſible things, yet the origin of all ſubſtances. The emanations from this fountain became, in the popular theology, objects of the groſſeſt ſuperſtition and idolatry.

The doctrine of Föe, or Xekias, was embraced by innumerable diſciples. Among theſe, one of his moſt eminent ſucceſſors was Tamo, a Chineſe, who was ſo entirely devoted to contemplative enthuſiaſm, that he ſpent nine whole years in profound meditation, and was on this account deified.

According to the Bramins, Xekias had neither father nor mother; and as no Indian city claims the honour of his birth, he was probably a foreigner, who migrated to the ſouthern part of India from ſome neighbouring maritime country, perhaps from Lybia; whither he came with ſome Egyptian colony, and who had been inſtructed in the Egyptian myſteries. It is not improbable, that at the time when Cambyſes conquered Egypt, and diſperſed almoſt the whole nation, this impoſtor might have paſſed over into India, and propagating his doctrine among an ignorant and ſuperſtitious people, became an object of univerſal veneration. Brucker's Philoſ. by Enfield, vol. ii. Appendix. See Boodh, Brachmans, China, Japan, &c.

XEL, in the *Materia Medica of the Ancients*, a name given to the fruit *ſel.*

XELSA, in *Geography*, a town of Spain, anciently a Roman colony, called Julia Celſa.

XELVA. See Chelva.

XENDAY, a town of Japan, in the iſland of Niphon; 115 miles N.N.E. of Jedo. N. lat. 39°. E. long. 141° 52′.

XENEXTON, a word uſed by Paracelſus, to expreſs a ſort of amulet to be worn about the neck, to preſerve people from infection in the plague.

XENIA, Ξηνια, q. d. *gifts*, in ſome *Ancient Cuſtoms*, were gifts, or preſents, made to the governors of provinces, by the inhabitants thereof.

The word occurs pretty frequently in charters of privileges; where *quietos eſſe à xeniis* denotes an exemption from making ſuch preſents to kings and queens, upon their travelling through ſuch precincts.

Xenia, in *Geography*, a townſhip of Ohio, in the county of Greene, with 1429 inhabitants.

XENIL, a river of Spain, which riſes in Grenada, and runs into the Guadalquivir, about three miles below Ecija.

XENINEPHIDEI, a word uſed to expreſs a ſort of imaginary ſpirits, mentioned by the adepts, as delighting to diſcover the occult qualities of bodies to men.

XENISMI, Ξενισμοι, in *Antiquity*, ſacrifices offered at the Athenian feſtival Anaceia.

XENOCRATES, in *Biography*, a famous Grecian philoſopher, was born at Chalcedon, in the firſt year of the 96th Olympiad (B.C. 396), and attached himſelf at firſt to Æſchines, but afterwards became a follower of Plato, and ſucceeded Speuſippus in the chair of the old academy (B.C. 339). His temper was gloomy, his aſpect ſevere, and his manners were little tinctured with urbanity. Plato took pains to correct theſe obliquities of his diſpoſition and character; and as he highly reſpected his maſter, he probably improved by his inſtruction, ſo that he was reckoned as one of his moſt eſteemed diſciples. Xenocrates was held in ſuch eſtimation among the Athenians for his virtues, and eſpecially his integrity, as well as his wiſdom, that in a public trial his ſimple aſſeveration was accepted inſtead of an oath, which was uſually required; and that even Philip of Macedon found it impoſſible to corrupt him. Dreading his influence, and the temptation of a bribe, he declined all private intercourſe with the Macedonian ſovereign, and was honoured by him with this teſtimony; that of all perſons who had come to him on embaſſies from foreign ſtates, Xenocrates was the only one whoſe friendſhip he was not able to purchaſe. On occaſion of being employed as an ambaſſador to the court of Antipater, for the redemption of ſeveral Athenian captives, he waved the honour of accepting the invitation of this prince to ſit down with him at ſupper, in the words of Ulyſſes to Circe, cited from Homer's Odyſſ. (l. x. v. 383); thus tranſlated,—

> " What man, whoſe boſom burns with gen'rous worth,
> His friends enthrall'd, and baniſh'd from his ſight,
> Would taſte a ſelfiſh, ſolitary joy?"

The patriotic ſpirit expreſſed in this appropriate paſſage gratified Antipater ſo much, that he immediately releaſed the priſoners. As another example of his moderation, it is alleged, that when Alexander, wiſhing to mortify Ariſtotle, on account of ſome accidental pique, ſent Xenocrates a magnificent preſent of 50 talents; he accepted only 30 minæ, returning the reſidue to the donor with this meſſage; that the whole ſum was more than he ſhould have been able to ſpend during his whole life. In this inſtance, he alſo manifeſted a ſuperiority to that kind of jealouſy and revenge which might have actuated meaner minds, when it is conſidered that Ariſtotle had inſtituted a ſchool in the Lyceum, in oppoſition to the academy over which Xenocrates preſided. In the uſe of food he was ſingularly abſtemious; his chaſtity was invincible by the ſeducing arts of Phryne, a celebrated Athenian courteſan; and his humanity was teſtified by the ſhelter which he afforded to a ſparrow that was purſued by a hawk, and fled into his boſom, where he allowed it to remain till its enemy was out of ſight, alleging that he would never betray a ſuppliant. In the employment of his time, he allotted a certain portion of each day to its proper buſineſs, one of which he devoted to ſilent meditation. His high ſenſe of the importance and utility of mathematical ſtudies was ſufficiently evinced by his refuſing to admit into his academy a young man who was ignorant of geometry and aſtronomy, becauſe he was deſtitute of the handles of philoſophy. Upon the whole, Xenocrates was eminent, both for his purity of morals, and his acquaintance with ſcience; and he ſupported the reputation of the Platonic ſchool by his lectures, his writings, and his conduct. His life was prolonged to the third year of the 116th Olympiad (B.C. 314), or the 82d year of his age, when he accidentally fell in the dark into a reſervoir of water.

His philoſophic tenets were Platonic; but in his lectures he adopted the language of the Pythagoreans. In his ſyſtem, unity and diverſity were principles in nature, or gods; the former being the father, and the latter the mother of the univerſe. The heavens he repreſented as divine, and the ſtars as celeſtial gods; and beſides theſe divinities, he taught that there are terreſtrial demons, of a middle order between the gods and men, partaking of the nature both of mind and body, and, like human beings, capable of paſſions, and liable to diverſity of character. He probably conceived with Plato, that the ſuperior divinities were ideas, or intelligible forms, proceeding immediately from the Supreme Deity, and the inferior gods, or demons, to be derived from the ſoul of the world, and, like that principle, compounded of a ſimple and a diviſible ſubſtance, or of that which always remains the ſame, and that which is liable to change. Diogen. Laert. Plut. de Virt. Mor. De Iſ. et Oſir. De Anim. Gent. Cicero de Nat. Deor. Brucker's Hiſt. Phil. by Enfield, vol. i.

XENODOCHUS, formed of ξενος, *ſtranger*, and δεχομαι, *I receive*, an eccleſiaſtical officer of the Greek church, the ſame with the hoſpitaler, or a perſon who takes care of the reception and entertainment of ſtrangers.

St. Iſidore, a prieſt and ſolitary, ſurnamed *Xenodochus*, lived in the fourth century. He was thus called, becauſe entruſted with that office in the church of Alexandria.

XENOPAROCHUS, formed of ξενος, *ſtranger*, and παροχος, of παρεχω, *I furniſh*, among the *Romans*, an officer who provided ambaſſadors with all kinds of neceſſaries, at the public expence.

XENOPHANES, in *Biography*, the founder of the Eleatic ſect, was born at Colophon, about the 56th Olympiad (B.C. 556); and having left his country, took refuge in Sicily, where he gained a ſubſiſtence by reciting, in the court of Hiero, elegiac and iambic verſes, which he had written againſt the theogonies of Heſiod and Homer. From Sicily he removed to Magna Græcia, where he became a celebrated preceptor in the Pythagorean ſchool, without adhering ſtrictly to the doctrines of Epimenides, Thales, and Pythagoras. His life was prolonged to the advanced age of 100 years, that is, till the 81ſt Olympiad (B.C. 456), during 70 years of which he occupied the Pythagorean chair of philoſophy. In Enfield's Philoſophy of Brucker we have the following ſummary of the doctrine of Xenophanes:— In metaphyſics, he taught, that if ever there had been a time when nothing exiſted, nothing could ever have exiſted. That whatever is, always has been from eternity, without deriving its exiſtence from any prior principle; that nature is one and without limit; that what is one is ſimilar in all its parts, elſe it would be many; that the one infinite, eternal, and homogeneous univerſe, is immutable and incapable of change; that God is one incorporeal eternal being, and, like the univerſe, ſpherical in form; that he is of the ſame nature with the univerſe, comprehending all things within himſelf; is intelligent, and pervades all things; but bears no reſemblance to human nature either in body or mind.

In phyſics, he taught, that there are innumerable worlds; that there is in nature no real production, decay, or change; that there are four elements, and that the earth is the baſis of all things; that the ſtars ariſe from vapours, which are extinguiſhed by day, and ignited by night; that the ſun conſiſts of fiery particles collected by humid exhalations, and daily renewed; that the courſe of the ſun is rectilinear, and only appears curvilinear from its great diſtance; that there are as many ſuns as there are different climates of the earth; that the moon is an inhabited world; that the earth, as appears from marine ſhells, which are found at the tops of mountains, and in caverns far from the ſea, was once a general maſs of waters; and that it will at length return into the ſame ſtate, and paſs through an endleſs ſeries of ſimilar revolutions.

The doctrine of Xenophanes concerning nature is ſo obſcurely expreſſed by thoſe who have tranſmitted an imperfect account of it, that it has been miſunderſtood and miſrepreſented. Some have confounded it with the atheiſtical ſyſtem of Spinoza; by others it has been accommodated to the ancient doctrine of emanation; and others have maintained its ſimilarity to the Pythagorean and Stoical notions of the ſoul of the world. The truth ſeems to have been, according to Brucker's ſtatement, that he held the univerſe to be one in nature and ſubſtance; diſtinguiſhing in his conception between the matter of which all things conſiſt, and that latent divine force, which he conſidered not as a diſtinct ſubſtance, but an attribute, and yet neceſſarily inherent in the univerſe, and the cauſe of all its perfection. This view of his notion is conſiſtent with the language he uſed, and with the account of his doctrine, preſerved by Sextus Empiricus, that God is of the ſame nature with the univerſe; τὸν Θεὸν συμφυῆ τοῖς πᾶσι. When he aſſerted that there is no motion in nature, it is probable that he underſtood the term motion metaphyſically, meaning merely that there is no ſuch thing in nature as paſſing from nonentity to entity, or the reverſe. Accordingly, the ancients more generally applied the term motion to a change of nature than to change of place. Brucker is of opinion that the notion aſcribed to Xenophanes concerning the nature and origin of the celeſtial bodies, as meteors daily renewed, muſt have been founded on a miſconception and miſrepreſentation of his opinion on the ſubject. See ELEATIC *Philoſophy*.

XENOPHILES, an able Greek muſician, who profeſſed the philoſophy of Pythagoras, and who lived at Athens, where he arrived at the great age of 105. It is Lucian who gives this account of his extraordinary longevity from Ariſtoxenus.

XENOPHON, the ſon of Gryllus, an Athenian, was diſtinguiſhed as a philoſopher, commander, and hiſtorian. His engaging appearance whilſt he was a youth induced Socrates to admit him into the number of his diſciples. Under his tuition he made rapid progreſs in that kind of wiſdom for which his maſter was ſo eminent, and which qualified him for all the offices of public and private life. Having accompanied Socrates in the Peloponneſian war, and manifeſted his valour in defence of his country, he afterwards entered into the army of Cyrus as a volunteer; but his enterpriſe againſt his brother proving unfortunate, Xenophon, after the death of Cyrus, adviſed his fellow-ſoldiers to attempt a retreat into their own country rather than to ſurrender themſelves to the victor. His advice was regarded, and he was choſen as their commander. In the exerciſe of this duty he acquired by his prudence and firmneſs a high degree of honour; and the memorable adventure is related by himſelf in his "Retreat of the Ten Thouſand." Having joined Ageſilaus, king of Sparta, after his return into Greece, and fought with him againſt the Thebans in the celebrated battle of Chæronea, he diſpleaſed the Athenians by this alliance; and he was publicly accuſed for his former engagement in the ſervice of Cyrus, and condemned to exile. Thus ignominiouſly treated, the Spartans took him under their protection, and provided for him a comfortable retreat at Scilluns, in Elis. In this aſylum he enjoyed the pleaſures of domeſtic life with his wife and two children for ſeveral years, and availed himſelf of the leiſure that was thus afforded him by writing thoſe hiſtorical works which have rendered his name immortal. On occaſion of a war between the Spartans and Eleans, he was obliged to abandon this agreeable retreat, and to join his ſon, who was ſettled at Lepreus. From hence he afterwards removed with his whole family to Corinth, where, in the ſecond year of the

105th Olympiad (B.C. 359), his life terminated, at the age of about 90. As a philoſopher, he was an ornament to the Socratic ſchool by his integrity, piety, and moderation; and in his whole military conduct, he was diſtinguiſhed by an admirable union of wiſdom and valour. As a writer, he has preſented to ſucceeding ages a model of purity, ſimplicity, and harmony of language, expreſſing ſentiments truly Socratic. By his wife Phiteſia he had two ſons, Gryllus and Diodorus; the former of whom ended his life with military glory in the battle of Mantinea. The news of his ſon's death was communicated to him whilſt he was offering ſacrifice; and upon receiving it, he took the crown from his head, uttering with a ſigh theſe memorable words, "I knew that my ſon was mortal:" but when he heard that he had fought bravely, and died with honour, he again put on the crown, and finiſhed the ſacrifice. As an hiſtorian, he may be conſidered in his "Hellenics" as the continuator of Thucydides, and as having brought down the affairs of Greece to the battle of Mantinea. His "Cyropædia," or "Inſtitution of Cyrus," is generally regarded as a work of fiction rather than of real hiſtory, exhibiting, under the name of the elder Cyrus, the picture of a perfect prince, according to his own conception of the character. His "Anabaſis" (or Aſcent) is an account of that memorable expedition of the younger Cyrus, in which he himſelf appears ſo conſpicuous. This work appeared under the name of Themiſtogenes of Syracuſe, to whom Xenophon himſelf aſcribes it; nevertheleſs it has been univerſally aſcribed to Xenophon: but if this be the caſe, it muſt have been written from memory, long after the events, which are differently related by Diodorus. Among his political works we may enumerate his accounts of "The Republic and Laws of Sparta;" "Of the Republic of Athens and its Revenues;" his "Praiſe of Ageſilaus;" and his "Hiero, or Dialogue on Tyranny." Of a miſcellaneous claſs, he wrote a treatiſe on "Oeconomics;" "On Hunting;" and "On the Office of Maſter of the Horſe." The character of Xenophon, pourtrayed in his writings, ſeems to have exemplified virtue and humanity, kind and generous feelings, and a conſiderable degree of piety blended with ſuperſtition. In his Anabaſis he exhibits a ſingular degree of credulity and regard to celeſtial warnings, which, in his view of them, governed his conduct, and were miraculouſly verified by the event. For his preference of the Spartan to the Athenian government and manners, derogating from his patriotiſm, the only apology is his baniſhment. His ſtyle has been always admired for its purity, ſimplicity, and clearneſs; and his works are reckoned amongſt the moſt popular of the Greek claſſics, and have paſſed, collectively and ſeparately, through ſeveral editions. Laertius. Ælian. Hiſt. Var. Fabr. Bib. Græc. vol. ii. Brucker's Philoſ. by Enfield, vol. i.

XENOXUA, in *Geography*, a town of European Turkey, in Macedonia; 36 miles S.E. of Akrida.

XEQUETEPEQUE, a town of Peru, in the government of Truxillo, on the Paſca Mayo; 55 miles N. of Truxillo.

XERANTHEMUM, in *Botany*, from ξηρος, *dry*, and ανθος, *a flower*, a name well adapted to expreſs the dry and durable nature of the flowers of the preſent genus, one of the tribe popularly denominated Everlaſting Flowers.—Linn. Gen. 420. Schreb. 551, excluding *Xeranthemoides* of Dillenius. Willd. Sp. Pl. v. 3. 1901. Mart. Mill. Dict. v. 4, the firſt ſection only. Sm. Prodr. Fl. Græc. Sibth. v. 2. 172. Ait. Hort. Kew. v. 5. 20. Tourn. t. 284. Juſſ. 179, excluding *Eliehryſum* of Tournefort. Lamarck Illuſtr. t. 692. f. 1. Gærtn. t. 165.—Claſs and order, *Syngeneſia Polygamia-ſuperflua*. Nat. Ord. *Compoſitæ nucamentaceæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* imbricated; ſcales numerous, elliptic-lanceolate, ſcarioſe, permanent, the inner ones much longer than the diſk, coloured, forming a radiant crown to the whole compound flower. *Cor.* compound, ſomewhat unequal; florets of the diſk very numerous, all perfect, tubular, funnel-ſhaped, much ſhorter than the calyx, in five equal ſpreading ſegments; thoſe of the circumference fewer, female, tubular, ſomewhat two-lipped, with five unequal ſegments. *Stam.* (in the perfect florets) Filaments five, capillary, very ſhort; anthers forming a cylinder rather longer than the corolla. *Piſt.* (in the ſame florets) Germen ſhort; ſtyle thread-ſhaped, longer than the ſtamens; ſtigma cloven: in the female florets, *Stam.* none. *Piſt.* Germen and ſtyle as in the perfect florets; ſtigma ſimple, club-ſhaped. *Peric.* none, except the calyx ſcarcely at all altered, except being cloſed. *Seed* in both kinds of florets alike, oblong; down a row of taper-pointed narrow ſcales. *Recept.* flattiſh, clothed with linear acute ſcales, rather longer than the florets.

Eſſ. Ch. Receptacle ſcaly. Down of taper-pointed ſcales. Calyx imbricated, its inner ſcales forming a coloured ſpreading radius.

Obſ. Gærtner has long ago obſerved, what indeed no one could overlook, that the eſſential character of this genus, as given by Linnæus, anſwers to his firſt ſpecies only, *X. annuum*. This ſtands in the *Syſt. Veg.* making a ſection by itſelf, characterized by a chaffy receptacle; whereas the other ſections, "with a naked receptacle," receive all the numerous ſpecies beſides, and directly contradict the generic character, "*receptaculum paleaceum*." Gærtner, Juſſieu, and Willdenow, have properly corrected this overſight, as we have ſhewn under Elichrysum. The true *Xeranthemum*, therefore, would be left with a ſolitary ſpecies, ſufficiently well marked indeed to be ſo diſtinguiſhed, as far as the Linnæan ſpecies go. But our great maſter is proved to have confounded ſeveral together, under his *X. annuum*. Willdenow diſtinguiſhes three ſpecies, two of which we cannot ſeparate, but we ſhall ſubjoin a fourth. They were all known to Tournefort, who indeed divides them ſtill further, miſtaking double or white flowered varieties as ſpecies. The *root* of the whole genus is annual. *Herb* erect, rigid, alternately branched, clothed with fine, white, cloſe, cottony down, eaſily rubbed off. *Leaves* alternate, ſeſſile, lanceolate, acute, undivided, entire; tapering at the baſe. *Flowers* ſolitary, on long, terminal, ſlightly ſcaly, ſtalks. Outer ſcales of the *calyx* roundiſh, membranous and ſhining, at leaſt at the edges; inner oblong, ſpreading while in flower, purple or browniſh, occaſionally white, very brilliant and ornamental.

1. X. *annuum*. Purple Xeranthemum, or Everlaſting Flower. Linn. Sp. Pl. 1201. Willd. n. 1. Ait. n. 1. Prodr. Fl. Græc. n. 2045. Jacq. Auſtr. t. 388. Mill. Illuſtr. t. 67. Mill. Ic. t. 279. (X. flore ſimplici, purpureo, majore; Tourn. Inſt. 499, with perhaps the five following of that author. X. incanum non fœtens, flore majore; Moriſ. ſect. 6. t. 12. f. 2. Ptarmica auſtriaca; Cluſ. Hiſt. v. 2. 11. Ger. Em. 607. πταρμικη of Dioſcorides, according to Dr. Sibthorp.)

β. Linn. Sp. Pl. 1201. (X. inapertum; Willd. n. 2. Ait. n. 2; excluding the ſynonym of Moriſon. X. capitulis inapertis; Hall. Enum. 709. t. 23. X. n. 122; Hall. Hiſt. v. 1. 52. Ptarmica Imperati; Ger. Em. 606, no figure. Jacea oleæ folio, minore flore; Bauh. Pin. 272.)

Outer calyx-ſcales roundiſh-elliptical, awned, ſmooth at the keel; inner lanceolate, ſpreading. Crown of the ſeed lanceolate, ſhorter than the calyx.—Native of dry hilly ground in Auſtria, Hungary, France, Italy, and Greece; β is found in Switzerland, Spain, and Germany. This ſpecies is a hardy annual, common in our gardens, ever ſince the time of Gerarde and Lobel, flowering in July and Auguſt. The firſt variety, and eſpecially the ſemidouble kind, figured by Philip Miller in his *Icones*, is preferred for cultivation. The flowers with their ſtalks, dried quickly, preſerve their ſhining purple colour very long, and make part of the winter decorations of a chimney-piece; but for this purpoſe, the back of every coloured ſcale of the calyx ſhould be drawn, while freſh, over the edge of a blunt knife, to keep the flower open after it is dried. The *ſtem* is erect, branching, bearing linear-lanceolate, white, cottony *leaves*, and numerous *flowers*, an inch or more in diameter. The outer *calyx-ſcales* are membranous and ſhining, pale, quite ſmooth, each with a red or browniſh mid-rib, moſt conſpicuous upwards, and terminating in a ſmall awn-like point.

In the variety β the *flowers* are of a ſmaller diameter, and the *calyx* ſpreads leſs; but we do not find that its outer ſcales are more acute, though ſomewhat variable in that reſpect; the inner are leſs ſtrikingly purple, and turn browner as they fade. This variety we have from the Valais, as the undoubted plant of Haller, ſent by the late Mr. Davall. Both kinds have a pleaſant aromatic ſcent, different from the ſtrong odour of the following.

2. X. *cylindraceum*. Cylindrical Xeranthemum. Sm. Prodr. Fl. Græc. n. 2046. (X. orientale, flore minimo, calyce cylindraceo; Tourn. Cor. 38. X. oleæ folio capitulis ſimplicibus, incanum, fœtens, flore purpuraſcente minore; Moriſ. v. 3. 43. ſect. 6. t. 12. f. 1.) — Outer calyx-ſcales elliptical, pointleſs, woolly at the keel; inner lanceolate, erect.—Native of Germany and Aſia Minor. Gathered by Dr. Sibthorp on the Bithynian Olympus, or in its neighbourhood. Seeds of this ſpecies were given to Mr. Davall by profeſſor Lachenal at Baſle, for the common *X. annuum*, as figured by Haller; but on ſeeing the real plant of that author, above deſcribed, from the country of the Valais, he allowed them to be diſtinct. Mr. Davall firſt detected the true ſpecific difference, in the woolly ſcales of the *calyx*, which, moreover, want the red mid-rib of the preceding ſpecies. Moriſon indeed deſcribes this mid-rib, which proves that he confounded *X. annuum* β, as many other people have done, with our *cylindraceum;* for Mr. Davall obſerved the ſtrong diſagreeable ſmell in his ſpecimens, by which Moriſon characterizes the plant before us.

3. X. *orientale*. Oriental Xeranthemum. Willd. n. 3. Ait. n. 3. (X. annuum γ; Linn. Sp. Pl. 1201. X. orientale, fructu maximo; Tourn. Cor. 38. X. oleæ folio, capitulis compactis; Moriſ. v. 3. 44. ſect. 6. t. 12. f. 4. Jacea oleæ folio, capitulis compactis; Bauh. Pin. 272. J. incana, folio oleæ; Dalech. Hiſt. 1193. Lob. Ic. 545. f. 1.)—Outer calyx-ſcales roundiſh, membranous; inner ovate, pointed, erect. Crown of the ſeed ovate, awned, longer than the calyx.—Native of Armenia and Syria. The *leaves* of this ſpecies appear to be broader and more elliptical than either of the foregoing. But its moſt ſtriking difference is viſible in the ovate ſcales, forming the crown of the *ſeeds*, each of them ending in a long point, far overtopping the upright radiant ſcales of the *calyx*. We have never ſeen a ſpecimen, but the figures above cited render the plant ſufficiently intelligible. Willdenow deſcribes the *flowers* the ſize of *X. annuum*, or larger. Surely Lamarck's t. 692. f. 2. cannot be intended for this plant! We know nothing anſwerable to that figure.

Xeranthemum, in *Gardening*, contains plants of the herbaceous, flowering, annual kinds, in which the ſpecies cultivated are, the annual xeranthemum, or common eternal flower (X. annuum); the reflexed-leaved eternal flower (X. retortum); the golden eternal flower (X. ſpecioſiſſimum); the ſilvery eternal flower (X. ſeſamoides); the proliferous eternal flower (X. proliferum); the leafy-flowered eternal flower (X. veſtitum); and the imbricated eternal flower (X. imbricatum). As to the ſpecies of Xeranthemum, ſee the preceding article.

The firſt is an herbaceous flowering plant, of which there are varieties with large white flowers, with double white flowers, with double purple flowers, and with double violet-coloured flowers.

Method of Culture.—In the firſt ſort and varieties, the culture is readily effected by ſowing the ſeeds in pots of light freſh mould, in the autumn or ſpring, or at other ſeaſons for a ſucceſſion, plunging them in a moderate hot-bed, to bring forward the plants. In the ſpring they may alſo be ſown in patches where they are to remain, or in beds to be afterwards removed. When the plants have a few inches growth, they ſhould be pricked out in rows a foot apart on beds, or into the borders, clumps, or other places where they are to grow. They ſhould afterwards be kept clean from weeds, and have occaſional waterings immediately after pricking out, and afterwards in dry weather.

The other ſorts are raiſed by planting cuttings of the young ſhoots in the ſummer, in pots filled with light mould, giving them a little water and ſhade; or, which is better, plunging them into a hot-bed, and covering them with hand-glaſſes. When they are become firmly eſtabliſhed in the autumn, they ſhould be carefully removed into ſeparate pots, being replaced in the hot-bed till re-rooted, after which they ſhould have the management of other ſhrubby green-houſe plants.

The firſt ſort produces a fine effect in the borders, clumps, &c. while growing, as well as in pots when the flowers are taken off; and the other ſorts afford variety in green-houſe collections, among other potted plants of the ſame kind.

XERASIA, in *Medicine*, the name of a diſeaſe, a ſpecies of alopecia, in which the hair falls off through a dryneſs of the part, and want of due nouriſhment.

Xerasia, in *Animals*, denotes a certain kind of diſeaſed ſtate, which conſiſts in a dryneſs of the hairs, cauſed by the want of due and ſufficient nouriſhment and ſupport, from which they decay and fall off. It is met with in ſuch animals as have been ſtarved, and kept and fed in a ſtinted manner only on poor ſorts of food. It is to be removed by a better and more full kind of fodder, and other ſorts of keep, and by being turned into a good ſalt-marſh paſture. See Surfeit.

XEREQUARO, in *Geography*, a town of Mexico, in the province of Mechoacan; 45 miles N.E. of Mechoacan.

XERES, a town of South America, in Paraguay, now in ruins. S. lat. 20° 5′.

Xeres *de Badajos*, or *Xeres de los Caballeros*, a town of Spain, in Eſtremadura; 72 miles N.N.W. of Seville. N. lat. 38° 17′. W. long. 6° 52′.

Xeres *de la Frontera*, a town of Spain, in the province of Seville, on the Guadalete; near which a battle was fought between the Moors and Goths, in the year 712, in which Roderick, the laſt king of the Goths, loſt his life. The environs are celebrated for that excellent wine corruptly called ſherry. The beſt and richeſt ſort of ſherry is called "pagarette," from the Spaniſh word *pago*, a diſtrict, and particularly applied to this vintage. In one aranzado (an acre of vineyard) they plant 1800 vines at regular diſtances.

tances. It is reckoned a good year if it gives three butts *per* acre, middling if two, and bad if but one: ſome years, however, it yields four or five. The number of inhabitants is eſtimated at 40,000, of whom one-twentieth, Mr. Swinburne ſays, are religious; 15 miles N.N.E. of Cadiz. N. lat. 36° 41′. W. long. 6° 15′.

Xeres *de la Frontera*, a town of Mexico, in the province of Zacatecas, with a garriſon of Spaniards to protect the mines; 25 miles S. of Zacatecas.

Xeres *de Guadiana*, a town of Spain, in the province of Seville, near the frontiers of Portugal; 74 miles W. of Seville.

Xeres *Nueva*, a town of South America, in the province of Venezuela.

Xeres. See Chuluteca.

XERICA, a town of Spain, in the province of Valencia; 7 miles N.W. of Segorbe.

XERIFF, in *Commerce*, a money of account in Morocco, which is divided into eight paels.

XERITO, in *Geography*, a ſmall river of Spain, which runs into the Alagon.

XEROCHLOA, in *Botany*, from ξηρος, *dry*, and χλοα, *a graſs*.—Brown Prodr. Nov. Holl. v. 1. 196.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx two-flowered, of two unequal valves, parallel to the hollow of the receptacle, and half ſunk therein; the outer valve ſmalleſt. Corolla of both flowers longer than the calyx, of two valves, awl-ſhaped, membranous, awnleſs. Stamens in the outermoſt flower. Styles in the inner one, combined at the baſe. Nectary none. Seed encloſed in the inner, paper-like, valve of the corolla.

This genus conſiſts of perennial, ruſhy, dry, ſmooth graſſes. *Leaves* awl-ſhaped, ſtraight and ſtiff, with a very ſhort *ſtipula*. *Stem* terminated by alternate ſheaths, each containing from two to four ſhort *ſpikelets*, of few *flowers*. *Xerochloa* is akin to *Apluda*, whoſe character requires correction. *Brown*.

1. X. *imberbis*. Beardleſs Xerochloa. Br. n. 1.—Spikelets awl-ſhaped, ſlightly curved. Inner valve of the male flowers ſmooth.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. X. *barbata*. Bearded Xerochloa. Br. n. 2.—Spikelets lanceolate, ſtraight. Inner valve of the male flowers bearded.—Native of the ſame country. *Brown*.

XERODES, in *Animals*, a term which is applied, and which ſerves to expreſs any ſort of tumour that is attended with the property of exſiccation or dryneſs. See Tumour.

XEROMYRON, formed of ξηρος, *dry*, and μυρον, *ointment*, a word uſed by the ancients to expreſs what they do at other times call in expreſs words a dry ointment. It was a compoſition of warm aromatic drugs, or of other things fit for external uſe, but without the fatty ingredients, by which they were uſually reduced into the form of ointments.

XEROPHAGY, Ξηροφαγια, formed of ξηρος, *dry*, and φαγω, *I eat*, among the *Ancients*, the feeding only on dry victuals, which was the practice of the athletæ.

In the firſt ages of the church, ſome, not contented with ſimple faſting, added the xerophagy thereto; abſtaining not only from fleſh and wine, but alſo from all freſh, ſucculent, and vinous fruits. And ſome even brought themſelves to bare bread and water.

Tertullian, in his book De Abſtinentia, cap. 9. ſpeaks of the xerophagia as a thing commendable in time of perſecution.

XEROPHTHALMIA, Ξεροφθαλμια, compounded of ξηρος, *dry*, and οφθαλμος, *eye*, a kind of ophthalmia, in which the eyes itch, and are red, but without ſwelling or watering.

XEROPHYLLUM, in *Botany*, from ξηρος, *dry*, and φυλλον, *a leaf*, a genus founded by Michaux upon *Helonias aſphodeloides* of Linnæus.—Michaux Boreal.-Amer. v. 1. 210. Willd. Enum. 402.—We confeſs ourſelves unable to make out any ſufficient reaſon for this meaſure, either in the author's deſcription, or in the plant itſelf. Mr. Purſh probably was equally puzzled; for he has not even cited the *Xerophyllum* of Michaux, as a ſynonym under the above *Helonias*. It ſeems the baſes of the *ſtamens* are dilated in the *aſphodeloides*, more than in other ſpecies of Helonias. See that article.

XEROPHYTA, ſo named by Juſſieu, from ξηρος, *dry*, and φυτον, *a plant*, alluding to the arid habit of this little ſhrub.—Juſſ. Gen. 50. Willd. Sp. Pl. v. 2. 15. Lamarck Illuſtr. t. 225.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Bromeliæ*, Juſſ.

Gen. Ch. *Cal.* none. *Cor.* of one petal, ſuperior: limb in ſix deep ovate-oblong, acute, permanent ſegments; the three outer ones narroweſt, ſpinous-pointed, ſtouteſt, externally glandular. *Stam.* Filaments ſix, inſerted into the lower part of each ſegment, thread-ſhaped, very ſhort, equal; anthers erect, linear, half as long as the corolla. *Piſt.* Germen inferior, turbinate; ſtyle one, ſhort; ſtigma tumid, oblong, undivided. *Peric.* Capſule oval, rough, crowned with the faded corolla, with three cells, and many *ſeeds*.

Eſſ. Ch. Corolla in ſix deep ſegments, permanent; three outermoſt narroweſt, ſpinous-pointed. Stamens inſerted into the baſe of each ſegment. Stigma club-ſhaped. Capſule inferior, of three cells, with many ſeeds.

1. X. *pinifolia*. Fir-leaved Xerophyta. Willd. n. 1.—Gathered by Commerſon, in Madagaſcar. A hard rigid ſhrub, whoſe *ſtem* is round, alternately branched; the wood formed of parallel tubes, as in the generality of the monocotyledonous tribe: *branches* quarter of an inch in diameter, thickly clothed with the imbricated, deeply furrowed, permanent ſheaths of the laſt year's foliage, each crowned with the reflexed baſe of a leaf, by which the whole branch aſſumes a ſingular ſcaly appearance. *Leaves* alternate, two inches, or more, in length, linear, rigid, channelled, ſtriated, with thick entire edges, and a pungent ſpinous point; their baſe ſheathing, fibrous, and ſomewhat woolly. *Flowers* terminal, one or two at the end of each branch, on ſimple ſtalks, an inch long, rough, like the *germen*, with minute prominent glands, of which ſome traces are alſo found on the backs of the three outward ſegments of the *corolla*. The colour, of the inner ſegments at leaſt, appears reddiſh. Each *flower* is about half the ſize of a ſnowdrop. Nothing is known of the ripe *fruit*, in which perhaps ſome better marks, than have hitherto been given, may be found, to diſtinguiſh the eſſential characters of this genus from thoſe of Hypoxis. See that article.

XEROPKIN, in *Commerce*, a ſilver coin of Goa, in the Eaſt Indies, which is worth 3*s.* 1½*d.* ſterling, nearly.

XEROTES, in *Botany*, ξηροτης, *dryneſs*, a name choſen by Mr. Brown to expreſs the arid ruſhy habit of this genus, in preference to *Lomandra*, by which it is deſignated in the work of M. Labillardiere. This latter appellation, formed of λωμα, *a border*, or rather *fringe*, and ανηρ, *a male*, is deſigned to indicate the occaſionally bordered anthers. It might perhaps have been allowed to remain, as well as many other names which are liable to ſome exception, though the anthers are not properly fringed. — Brown Prodr. Nov. Holl. v. 1. 259. (Lomandra; Labill. Nov. Holl. v. 1. 92.) — Claſs and order, *Dioecia Hexandria*.

Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Junceæ*, Brown.

Gen. Ch. Male, *Cal.* Perianth of ſix regular, ovate, coloured leaves; the three innermoſt, or perhaps all the ſix, connected at the baſe. *Cor.* none, unleſs the calyx be ſo called. *Stam.* Filaments ſix, very ſhort, inſerted into the baſe of each leaf of the calyx; anthers orbicular, peltate. Some rudiments of a *piſtil.*

Female, *Cal.* Perianth of ſix ſeparate, permanent leaves. *Cor.* none. *Stam.* imperfect. *Piſt.* Germen ſuperior, ovate, with three furrows; ſtyles three, ſhort, combined at the baſe; ſtigmas obtuſe. *Peric.* Capſule cartilaginous, coated, of three cells and three valves, with partitions from the centre of each valve. *Seeds* ſolitary, peltate.

Eſſ. Ch. Male, Calyx of ſix leaves; three innermoſt combined at the baſe. Corolla none. Anthers peltate.

Female, Calyx of ſix ſeparate, permanent leaves. Styles three. Capſule ſuperior, coated, of three cells; valves with central partitions. Seeds peltate, ſolitary.

This New Holland genus conſiſts of perennial herbs, of a dry rigid texture, and a peculiar aſpect, reſembling the *Junci* and *Calamariæ*. *Root* fibrous. *Stem* none, or generally very ſhort; ſometimes divided, and clothed with ſheathing foliage. *Leaves* graſſy, linear, either flat or channelled, rarely thread-ſhaped; their baſe dilated, membranous, half ſheathing; their extremity ſometimes toothed. *Flowers* terminating the *ſtem*, or radical *ſtalk*, either panicled, racemoſe, ſpiked, or capitate. Inner leaves of the *calyx* often different from the outer in texture or ſize. When the *flowers* are ſeſſile, they are inveſted with imbricated membranous *bracteas;* the male ones are ſometimes ſtalked, without *bracteas*. Bark of the *capſule* at length ſeparating, and occaſionally a little pulpy. In ſome ſpecies, the ſkin of the *ſeed* adheres ſo looſely, as to reſemble a diſtinct tunic. The *embryo* is longitudinal, ſtraight, in the bottom of a cartilaginous *albumen*. *Xerotes* is allied in many points to the PALMÆ. See that article. *Brown.*

Sect. 1. *Female flowers in ſolitary heads. Leaves entire at the extremity.*

1. X. *flexifolia*. Spiral-leaved Xerotes. Br. n. 1. (Dracæna obliqua; Thunb. Dracæn. 6. t. 1. f. 2.)—Stem ſomewhat branched. Leaves ſhorter than the branches, two-ranked, twiſted; their edges rough with minute teeth; their points withering, acute. Male ſpikes interrupted, ſomewhat branched longer than the leaves. — Native of New South Wales, from whence ſpecimens were ſent us by Dr. White. The *ſtem* is about a foot high; woody at the baſe; more or leſs branched above, clothed with numerous, narrow, ſmooth, ſtriated *leaves*, an inch or an inch and a half long, ſpreading in two directions; their ſheathing baſes imbricated, and bordered with a long, thin, torn, ſtipulaceous membrane at each ſide. *Male flowers* ſmall, whitiſh, in long, moſtly branched, rigid-ſtalked *ſpikes* or *cluſters*, ſeparated into little whorl-like tufts, accompanied by brown ſcaly *bracteas*. *Female flowers* rather larger, in round ſolitary heads, terminating ſhort leafy branches in the forks of the ſtem.

2. X. *mucronata*. Pointed Xerotes. Br. n. 2.—“ Stem ſomewhat branched. Leaves ſhorter than the branches, but longer than the male ſpikes, two-ranked, ſtraight, or ſlightly twiſted; their points withering, acute; their margins roughiſh, with very minute teeth; dilated and entire at the baſe.”—Gathered by Mr. Brown, near Port Jackſon, New South Wales, as well as the foregoing.

3. X. *collina*. Hill Xerotes. Br. n. 3.—“ Leaves taller than the ſtem, narrow and ſtraight; rough with marginal teeth; withering and very acute at the point; dilated and jagged at the baſe. Head of female flowers ſeſſile.”—Found by Mr. Brown, on the ſouthern coaſt of New Holland.

4. X. *glauca*. Glaucous Xerotes. Br. n. 4. — “ Leaves taller than the ſtem, narrow and ſtraight; withering and bluntiſh at the point; rough with marginal teeth; dilated and jagged at the baſe. Tufts of flowers in the male ſpikes ſeſſile.”—Gathered on the ſouth coaſt of New Holland by Mr. Brown.

5. X. *leucocephala*. White-headed Xerotes. Br. n. 5. —“ Male, as well as female, flowers capitate. Receptacle woolly. Leaves narrow, ſmooth-edged, longer than the perfectly ſimple ſtalk, bearing one or two heads of flowers. Stem ſhort.”—Gathered by Mr. Brown, in the tropical part of New Holland.

Sect. 2. *Female flowers racemoſe or ſpiked: male ones racemoſe or panicled; partial ſtalks ſcattered; flowers drooping.*

6. X. *pauciflora*. Few-flowered Xerotes. Br. n. 6.—“ Flowers few in the male cluſter, in diſtant whorls. Leaves very narrow, acute and ſmooth; dilated and entire at the baſe; ſhorter than the divided ſtem.”—Found by Mr. Brown, near Port Jackſon, New South Wales.

7. X. *filiformis*. Thread-ſhaped Xerotes. Br. n. 7. (Dracæna filiformis; Thunb. Drac. 4. t. 1. f. 1.)—Leaves thread-ſhaped, ſemicylindrical, elongated; flattened in front; rough-edged; finely ſtriated at the back; round at the point. Male cluſter ſcarcely branched. Stem ſhort.—Gathered near Port Jackſon, New South Wales, by Dr. White, and Mr. Brown. The *root* is woody. *Stem* ſcarcely any. *Leaves* ſeveral, a ſpan or more in length, erect, rigid, very ſlender; flattened and whitiſh in front, with a green, ſtriated, central furrow; convex at the back. We do not find that the point is always, as Mr. Brown ſays, round or cylindrical. *Cluſters* much ſhorter than the leaves, branched in our ſpecimens, as in Thunberg's figure, erect, lax, with rough ſtalks. *Flowers* ſcattered, or in pairs, drooping, whitiſh, ſmall; the outer ſegments of the *calyx* ſmaller, and more membranous than the inner. *Bracteas* awl-ſhaped, acute, at the baſe of the *partial ſtalks*. Mr. Brown notices three varieties: α, male perianth nearly globular, twice the length of the partial ſtalk: β, male perianth nearly globular; partial ſtalk longer than that part, or the bracteas: γ, male perianth turbinate; partial ſtalk ſhorter than it, or the bracteas. The *leaves* ſeem variable in breadth and flatneſs.

8. X. *tenuifolia*. Fine-leaved Xerotes. Br. n. 8. — “ Leaves thread-ſhaped, elongated; channelled in front; deeply ſtriated at the back. Male cluſters ſomewhat divided, their branches alternate. Stem ſhort.” — Obſerved by Mr. Brown, on the ſouthern coaſt of New Holland.

9. X. *gracilis*. Slender Xerotes. Br. n. 9.—“ Leaves very long and narrow, channelled; ſtriated beneath; flat and entire at the point. Male panicles lax, alternately branched; partial ſtalks ſolitary. Stem ſhort.”—Found by Mr. Brown at Port Jackſon.

10. X. *denticulata*. Small-toothed Xerotes. Br. n. 10. — “ Leaves elongated, thread-ſhaped, compreſſed, channelled, with two or three terminal teeth. Male cluſters ſimple or divided. Stem ſhort.”—Gathered by Mr. Brown at Port Jackſon. We have ſome ſpecimens which anſwer to this deſcription, in the teeth of their *leaves*, but they ſeem nearly akin to *X. filiformis* to be ſeparated from that ſpecies, and they exactly accord with Thunberg's *fig.* 1, drawn from a dried ſpecimen. We are not, however, certain of their being Mr. Brown's *denticulata*.

11. X. *laxa*. Looſe-flowered Xerotes. Br. n. 11.— “ Leaves elongated, linear, flat, entire at the point. Male

panicles looſe, with whorled branches, and diſtant cluſters; partial ſtalks ſolitary, ſhorter than the nearly globular perianth, but longer than their minute bractea."—Gathered by Mr. Brown, in the ſame country with the two laſt.

Sect. 3. *Flowers either ſpiked or panicled, their branches and tufts oppoſite or whorled. Male perianths ſeſſile, imbricated with bracteas. Capſule ſmooth. Leaves toothed at the end.*

12. X. *rigida.* Rigid Xerotes. Br. n. 12. Ait. Epit. 376. (Lomandra rigida; Labill. Nov. Holl. v. 1. 93. t. 120.)—Stem very ſhort. Stalks and ſpikes much ſhorter than the foliage. Leaves two-ranked, cartilaginous; convex beneath; abrupt, with two marginal teeth, at the end; ſmooth at the edges; dilated and entire at the baſe.—Gathered by Mr. Brown in the ſouthern part of New Holland. M. Labillardiere found it in Van Lewin's land. *Root* woody. *Leaves* a ſpan in length, full a quarter of an inch in breadth, ſpreading in two directions, thick, rigid, ſmooth; greatly dilated, and bordered with a membrane, at the baſe; ſingularly abrupt, and three-pointed, at the end. *Common flower-ſtalk* terminal, thick, ſharply two-edged, ſometimes triangular, ſmooth. Tufts of *flowers* one above another, not numerous, forming an interrupted, branched, upright ſpike; each tuft accompanied by ſeveral unequal, lanceolate, acute *bracteas*. Three alternate *ſtamens*, according to Labillardiere, are longer than the reſt, and bear cloven, not bordered, *anthers*.

13. X. *montana.* Mountain Xerotes. Br. n. 13.—"Stem none. Leaves elongated, linear, flat, membranous, ſmooth-edged; their ſharp point with two very ſhort lateral teeth. Female ſpike undivided, many times ſhorter than its ſtalk."—Found by Mr. Brown, near Port Jackſon.

14. X. *fluviatilis.* River Xerotes. Br. n. 14.—"Stem none. Leaves elongated, narrow, channelled, ſmooth-edged, two or three toothed, with an acute ſinus, at the extremity. Female ſpikes ſimple or divided. Bracteas rather rigid, twice as long as the tufts of flowers."—Gathered by Mr. Brown in the ſame country, but, as appears by the name, in the vicinity of rivers.

15. X. *longifolia.* Long-leaved Xerotes. Br. n. 15. Ait. Epit. 376.—Stem none. Leaves elongated, linear, coriaceous, erect; irregularly toothed at the point; rough-edged. Panicles lanceolate, rather denſe, with oppoſite branches. Flower-ſtalk flattiſh. Anthers uniform.—Gathered near Port Jackſon, by Mr. Brown; at the Cape of Van Diemen, by M. Labillardiere. The *leaves* are a foot and a half long, ſomewhat ſtriated; dilated at the baſe, and bordered in that part with a membrane, which at length ſeparates, and becomes torn. *Stalk* from nine to twelve inches high, two-edged. *Flowers* more numerous and crowded than in *X. rigida*, n. 12, with long taper-pointed *bracteas*. *Capſule* ovate, acute, thrice as long as the calyx, cheſnut-coloured; pale yellow at the baſe; its coat ſeparating in irregular fragments.

16. X. *Hyſtrix.* Porcupine Xerotes. Br. n. 16.—Stem none. Leaves elongated, linear, lax, ſmooth-edged; ſomewhat toothed at the extremity. Stalk rather convex on both ſides. Male panicles repeatedly compound, with whorled branches. Bracteas leafy, rigid, ſpinous-pointed.—Sent from the neighbourhood of Port Jackſon, among the firſt botanical communications from thence, by Dr. White. It has alſo been gathered there by Mr. Brown. We have ſeen the living plant in ſome garden near London, poſſibly at Kew, and were much ſtruck with the delightful fragrance of its copious panicles of male flowers, reſembling the ſcent of *Craſſula coccinea*, *Meſembryanthemum noctiflorum*, or a Bergamot Pear. Yet it does not occur in *Hort. Kew.* The *leaves* are a foot and a half or two feet long, ſpreading. *Flower-ſtalks* of the male plant numerous, erect, two-edged, though convex at each ſide, from one to one and a half feet high, ſomewhat zigzag occaſionally, each bearing a flattiſh *panicle*, from ſix to fourteen inches long, compoſed of numerous triangular *branches*, from four to eight in a whorl, beſet with numerous tufts, or whorls, of ſeſſile *flowers*, accompanied by ſeveral chaffy, inner *bracteas*, and ſubtended by about three long, ſpreading, external ones, with needle-like points. The *flowers*, and whole *panicle*, are of a delicate ſtraw-colour, with a tinge of brown about the *calyx* or *anthers*. We have not ſeen the female plant. This ſpecies well deſerves a place in the green-houſe, for the ſingularity of its appearance, as well as for its fine ſmell.

17. X. *arenaria.* Sand Xerotes. Br. n. 17.—"Stem none. Leaves elongated, linear, ſmooth-edged, jagged and toothed at the end. Male panicle ſimple, with oppoſite branches. Tufts of flowers globoſe. Bracteas awl-ſhaped, reflexed. Flowers obtuſe."—Diſcovered in the tropical part of New Holland, by Mr. Brown.

Sect. 4. *Male panicle whorled. Flowers ſtalked, in drooping tufts. Capſule rugged. Leaves entire at the point.*

18. X. *diſtans.* Diſtant-flowered Xerotes. Br. n. 18.—"Stem none. Leaves very long, channelled, very rough at the edges. Male panicle with undivided branches, and diſtant tufts of flowers. Partial ſtalks ſhorter than the calyx."—Native of the tropical part of New Holland. The male *panicles* are a foot long; *calyx* about a line and a half. *Brown.*

19. X. *media.* Intermediate Xerotes. Br. n. 19.—"Stem none. Leaves very long, channelled, ſmooth-edged. Branches of the male panicle undivided. Flowers five or ſix in each tuft; their partial ſtalks ſcarcely ſo long as the very ſhort calyx. Female ſpike divided in the lower part, each branch bearing one head of flowers."—From the ſame country as the laſt. *Calyx* only one-third of a line in length; male *panicle* ſix inches. *Brown.*

20. X. *decompoſita.* Compound Xerotes. Br. n. 20.—"Stem none. Leaves very long, channelled, ſmooth-edged. Male panicle repeatedly compound. Tufts of few flowers. Partial ſtalks hardly ſo long as the calyx."—Found alſo in the tropical part of New Holland. Male *panicles* a foot long. *Brown.*

21. X. *multiflora.* Many-flowered Xerotes. Br. n. 21.—"Stem none. Leaves very long, channelled; ſmooth at the back and edges. Male panicle with undivided branches, each bearing from one to three many-flowered tufts. Partial ſtalks longer than the calyx."—Found by Mr. Brown in the ſame country as the four preceding ſpecies.

22. X. *æmula.* Rough-long-leaved Xerotes. Br. n. 22.—"Stem none. Leaves very long, channelled, erect; rough at the back and edges. Male panicle with undivided branches, each bearing from one to three many-flowered tufts. Partial ſtalks longer than the calyx."—Found by Mr. Brown, in the country near Port Jackſon, New South Wales. The roughneſs of the *leaves* ſeems chiefly to diſtinguiſh this ſpecies from the laſt. We have ſeen no ſpecimens of either.

23. X. *Bankſii.* Bankſian Xerotes. Br. n. 23.—"Cauleſcent. Leaves two-ranked, flat, rough-edged. Female panicle denſe, about the length of its two-edged ſtalk; branches quadrangular, very ſhort."—Gathered by ſir Joſeph Banks, in the tropical part of New Holland, where it was not found by Mr. Brown.

Sect. 5. *Flowers of each ſex in a cylindrical catkin-like ſpike.*

24. X. *haſtilis.* Spear-ſtalked Xerotes.—"Stem none. Spike very long. Stalk round. Leaves elongated."—Gathered by Mr. Brown, on the ſouthern coaſt of New Holland. The habit of this ſpecies appears, by the above characters, to differ widely from the reſt of its genus, rather approaching a Xanthorrhœa. See that article.

XEROTRIBIA, formed of ξηρος, *dry*, and τριβω, *I rub*, a term uſed by authors to expreſs a dry friction, a rubbing of ſome affected part with the hand or otherwiſe, to recall the warmth and circulation.

XERTE, in *Geography*, a river of Spain, which paſſes by Placentia, and runs into the Alagon.

XERTIGNY, a town of France, in the department of the Voſges; 7 miles E. of Epinal.

XERUMENHA, or Jerumenha, or *Gerumenha*, a town of Portugal, in Alentejo; 10 miles S. of Elvas. N. lat. 38° 35′. W. long. 6° 58′.

XERXENA, in *Ancient Geography*, a country of Aſia, on the confines of Leſſer Armenia, of which it makes a part. Strabo.

XERXES, in *Biography*, was the ſon of Darius I. by Atoſſa, the daughter of Cyrus; and on the death of his father, ſucceeded to the crown of Perſia, in the year 485 B.C. Having in the ſecond year of his reign ſubdued the revolted Egyptians, and committed them to the government of his brother Achæmenes, he determined to renew the invaſion of Greece, in which Darius had been diſappointed; and for the ſucceſs of his expedition, he formed an alliance with the Carthaginians, on condition of their making an attack on the Greek colonies in Italy and Sicily, ſo that they might not have it in their power to aſſiſt the mother-country. His preparations were immenſe, and occupied ſeveral of the firſt years of his reign. Having provided a large navy, he formed a project of cutting a canal through mount Athos, of ſufficient breadth to admit two galleys a-breaſt; and to this undertaking, which ſome have regarded as a fiction, he devoted three years. He alſo conſtructed a bridge of boats acroſs the Helleſpont, in order to convey his army from Aſia to Europe; and as the firſt bridge which had been laid was demoliſhed by a ſtorm, he not only manifeſted his childiſh rage by ordering 300 laſhes to be inflicted on the ſea, and a pair of fetters to be thrown into it, but his tyrannical and cruel diſpoſition by beheading thoſe to whom the conduct of the work had been committed. The number of ſea and land forces which he employed in this expedition is ſaid to have amounted to two millions and a half, to which we may add as many more attendants. When he aſcended a high tower at Abydos, and took a view of the immenſe number that covered the ſea and ſurrounding plain, his pride and triumph are ſaid to have given way to tears, when the reflection occurred, that the brevity of human life was ſuch as not to allow one of this countleſs hoſt to ſurvive the lapſe of 100 years. Without detailing the events of this diſaſtrous expedition, which are the proper ſubjects of hiſtory, we ſhall merely mention that it terminated in the defeat of Xerxes's navy at Salamis, and the ſubſequent overthrow and diſperſion of Mardonius's army of 300,000 men; and ſpecify ſome traits of the diſpoſition and character of this ambitious deſpot. For his ignominious treatment of Leonidas, we refer to his article. Upon his taking poſſeſſion of Athens, he wreaked his vengeance on the buildings and the temples, and diſpatched a ſpecial meſſenger to his uncle Artabanus, to inform him of this inglorious triumph. Having erected a throne on a lofty mountain, in order to view the expected victory at Salamis, the event produced ſuch conſternation, that he ſuddenly left Mardonius and the army, and haſtened to the Helleſpont, where finding his bridge ſhattered by ſtorms, but ſtill haunted with terror, he intruſted himſelf in a fiſhing-boat, and haſtened to Sardes; but when Mardonius was defeated, and all his hopes of conquering Greece were fruſtrated, he quitted Sardes, after having given orders for the demolition of all the temples in the Greek cities of Aſia, and proceeded with all poſſible expedition to the Perſian frontier. The other traces of his diſgraceful expedition were the records of the cruelties and debaucheries exerciſed by himſelf and his family. So much at length did Xerxes become the object of contempt and hatred, that a conſpiracy was formed among his own guards, which terminated in his murder during ſleep, in the 21ſt year after his acceſſion, B.C. 465. Herodotus. Diodorus. Anc. Un. Hiſt.

XESTA, Ξεστες, an Attic meaſure of capacity, anſwering to the Roman ſextary.

XESTES, an ancient Greek liquid meaſure, which is = 2 cotyli. See Measure.

XIAMETLA, in *Geography*, a town of Mexico, in the province of Xaliſco; 30 miles S.E. of Purification.

XIASSI, a town of the duchy of Warſaw; 20 miles S.S.E. of Poſen.

XIBACA, a town of Japan, in the iſland of Niphon; 120 miles S.W. of Meaco.

XICOCO, called alſo *Sikoko*, and *Sikokf*, an iſland of Japan, about 90 miles in length, and about half as many in breadth, divided into ſeveral provinces, ſituated near the ſouth-weſt extremity of Niphon, from which it is ſeparated by a ſtrait, full of ſmall iſlands, and to the north-eaſt of Ximo. It has ſeveral convenient harbours, and many towns within the country. N. lat. 33° 30′. E. long. 132°.

XICONA. See Xixona.

XILCA. See Chilca.

XILOA. See Quiloa.

XILOCA, a river of Spain, which riſes in the ſouth part of Aragon, about 7 miles N.E. of Albaracin, and at Calataiud changes its name to Xalon.

XILOTEPEC, a town of Mexico, in the province of Guaſteca; 90 miles S.S.W. of Panuco.

XILVAN, a town of the principality of Georgia; 20 miles N. of Gory.

XIMABARA, a town of Japan, on the ſouth coaſt of the iſland of Ximo, on a gulf to which it gives name; 33 miles E. of Nangaſaki. N. lat. 32° 45′. E. long. 132° 7′.

XIMAGUINO, a town of Japan, in the iſland of Xicoco; 10 miles S. of Awa. N. lat. 33° 50′. E. long. 130° 30′.

XIMENA, a town of Spain, in the province of Seville. Near this town Craſſus is ſaid to have concealed himſelf in a cave, till Marius and Cinna were overthrown by Sylla; 24 miles E. of Medina Sidonia.

XIMENES, Francis, *Cardinal*, in *Biography*, was born in 1437, in Old Caſtile, and educated at Alcala and Salamanca. Renouncing preferments which he obtained in his youth, he aſſumed the habit of St. Francis, in a monaſtery of the Obſervantines, one of the moſt rigid orders of monks in the Romiſh church. Diſtinguiſhed by his auſterities and devotional practices, he became confeſſor to queen Iſabella; and ſtill retaining his cuſtomary modes of living, he ſo far engaged her reſpect and attachment, that he was nominated by her to the archbiſhopric of Toledo, the richeſt benefice in Europe next to the papal ſee; but his real or affected reluctance to accept this high preferment could be overcome only by the authority of the pope. In this elevated ſtation he maintained his ſtrict adherence to the rigours of the order to which he belonged, and ſo far from relaxing in his ſeverities, he indulged them to the extreme of ſelf-mortification and penance. Having thus acquired a complete maſtery over his own paſſions, and poſſeſſing political talents in a very high degree, he was thought peculiarly fitted to exerciſe dominion over others; and accordingly Ferdinand and Iſabella entruſted him with a principal ſhare in the adminiſtration. When a ſtrong party was formed among the Caſtilians to deprive Ferdinand of the authority as regent, devolved upon him by the will of the queen, he was deſerted by every perſon of diſtinction except Ximenes and two nobles; and after he had reſigned it to the archduke Philip, he again acquired it upon Philip's death in 1506, by the influence of Ximenes. In 1507 Ximenes was created a cardinal by pope Julius II.; and in the following year he undertook the conqueſt of Oran, and of other places on the coaſt of Barbary, with an armament, the expence of which he offered to defray out of his own revenues, and he ſucceeded in this enterpriſe. Such was Ferdinand's confidence in the abilities and integrity of the cardinal, that when he was dying in 1516, he appointed him regent of Caſtile until the arrival of his grandſon Charles. Although he was then in his 79th year, he took an active part in ſecuring the throne to Charles, though in his own judgment he diſapproved the king's conduct, who in his aſſumption of power contended the declared opinion of the Cortes. With no leſs firmneſs and inflexibility, he proſecuted a plan for extending the royal authority, which the nobility had very much circumſcribed. The meaſures which he adopted for this purpoſe excited violent oppoſition, but he perſiſted, and ultimately ſucceeded. During his adminiſtration he was alſo engaged in two foreign wars; one for the preſervation of the kingdom of Navarre, in which he was ſucceſsful, and another againſt Horuc Barbaroſſa, who advanced himſelf from the condition of a corſair to the ſovereignty of Algiers and Tunis, in which the Spaniards were totally defeated. When Charles was prevailed upon by Ximenes to viſit Spain, the cardinal took a journey towards the coaſt to meet his majeſty; but being diſabled to proceed by the attack of a diſorder, ſuppoſed to be the effect of poiſon, he requeſted an interview with the king; but Charles having conceived prejudices againſt him, returned a cold anſwer, with permiſſion for his retirement to his dioceſe, that he might finiſh his days in tranquillity. In a few hours after the receipt of this letter, he expired November 1517, at the age of 80 years.

Ximenes was held in high eſtimation by his ſuperſtitious countrymen, under a deluſive idea that he poſſeſſed the gift of prophecy, and a power of working miracles. But his more unequivocal claims to their reſpect were founded on his extraordinary talents and learning, his liberal patronage of literature, and the munificence of his public charities, to which he devoted the immenſe revenues of his archbiſhopric. At Alcala he built the magnificent college of St. Ildefonſo, endowed with forty-ſix profeſſorſhips, and conducted under excellent regulations. Here he printed the Complutenſian Polyglott, (ſee POLYGLOTT,) the Mozarabic liturgy, and the theological works of Toſtatus. Here he alſo eſtabliſhed a ſplendid monaſtery for the education of indigent females of quality, which ſerved as a model for that of St. Cyr, under Lewis IV. The granaries which he conſtructed remained without decay for centuries; and upon the whole he was juſtified in declaring on his death-bed, that to the beſt of his knowledge he had not miſapplied a crown of his revenue. Robinſon's Charles V. vol. ii.

XIMENES, in *Geography*, a town of Spain, in the province of Leon; 10 miles S. of Aſtorga.

XIMENESIA, in *Botany*, Cavan. Ic. v. 2. 60. Ait. Hort. Kew. v. 5. 85, a genus which can by no means be ſeparated from PALLASIA. (See that article, n. 3.) Nothing can be more trifling as a generic, or even ſpecific diſtinction, than the difference between the ſyngeneſious orders of *Polygamia-ſuperflua*, and *P. fruſtranea*, of the Linnæan ſyſtem, provided the form of the *florets* be alike. The *piſtil*, of which rudiments are found in ſeveral genera of the latter, may occaſionally become perfect, as it does now and then in *Helianthus*, and this overſets the diſtinction.

XIMENIA, owes its name to Plumier, who conſecrates this genus to the memory of the Rev. Father Francis Ximenes, a Spaniſh monk, one of the twelve Franciſcan friars who firſt preached Chriſtianity to the Mexicans. Being well ſkilled in the language of the country, he collected a great ſtore of information concerning the properties and medical uſes of the plants and animals of New Spain, and eſpecially of Mexico; whence he compoſed a work, printed in four books, at Mexico, in 1615, which is quoted with approbation by De Laet, in many parts of his own publication. It is ſome conſolation to find any of theſe apoſtles turning their minds to the ſtudy of their Maker's works; as we cannot ſuppoſe ſuch to have been contaminated with that infernal ſpirit, which renders the whole hiſtory of the Spaniards in America a foul reproach to humanity, and to Chriſtianity itſelf, ſo proſtituted or ſo miſunderſtood!—Plum. Nov. Gen. 6. t. 21. Linn. Gen. 190. Schreb. 255. Willd. Sp. Pl. v. 2. 338. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 2. 352. Juſſ. 259. Lamarck Illuſtr. t. 297. Poiret in Lam. Dict. v. 8. 804.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Aurantia*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very ſmall, in four pointed, permanent ſegments. *Cor.* Petals four, oblong; hairy internally; their lower half erect, forming a tube; their upper part revolute. *Stam.* Filaments eight, erect, ſhort; anthers erect, longer than the filaments. *Piſt.* Germen ſuperior, oblong; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma obtuſe. *Peric.* Drupa nearly ovate. *Seed.* Nut ſolitary, roundiſh.

Eſſ. Ch. Calyx four-cleft. Petals four; hairy internally; revolute at the upper part. Drupa ſuperior. Nut ſolitary.

Obſ. Plumier's figure repreſents but three *petals*. Linnæus has left a note, that his correſpondent Allamand found but ſeven *ſtamens*. Swartz and Jacquin deſcribe eight.

1. X. *americana*. Thorny Ximenia. Linn. Sp. Pl. 497. Hort. Cliff. 483. Willd. n. 1. Ait. n. 1. Swartz Obſ. 149. (X. multiflora; Jacq. Amer. 106. t. 177. f. 31. X. aculeata, flore villoſo, fructu luteo; Plum. Ic. 260. t. 261. f. 1. Heymaſſoli ſpinoſa; Aubl. Guian. 324. t. 125? and H. inermis; *ibid.* 325?)—Branches ſpinous. Leaves oblong. Stalks many-flowered.—Native of the neighbourhood of Carthagena, as well as of Hiſpaniola, flowering in September and October, and ripening fruit in December. *Jacquin.* Of the rocky ſhores of Hiſpaniola, flowering in July. *Swartz.* We believe Linnæus never ſaw any ſpecimen of this, except in Cliffort's herbarium. That before us was given to the younger Linnæus by ſir Joſeph Banks. Though Miller might have the plant at Chelſea in 1759, it would now probably be vainly ſought for in any collection. The *ſtem* is either ſhrubby or arboreous. Young *branches* ſpinous, round, ſtriated. *Leaves* two or three together, in alternate tufts, from buds of many years' duration, ſtalked, elliptic-oblong, obtuſe with a minute point, rarely emarginate, entire, ſingle-ribbed, ſmooth on both ſides, about two inches long. *Footſtalks* quarter of an

inch long, ſmooth. *Thorns* lateral, erect, longer than the footſtalks, awl-ſhaped, ſtout, but ſparingly produced. *Flower-ſtalks* axillary, or rather from the ſame bud as the leaves, not half their length, deflexed, round, divided into from three to five ſmooth, ſingle-flowered partial ſtalks. *Calyx* ſpreading quadrangular. *Petals* four, whitiſh, ſhaggy from the baſe almoſt to the apex, on the inſide; ſmooth externally. *Fruit* the ſize of a ſmall apple, yellow when ripe. Jacquin ſays the pulp is ſweetiſh, eaten by children and negroes, and that the ſmell of the *flowers* is extremely ſweet, as well as powerful, ſomething like burnt frankincenſe. Aublet compares them to cloves. His figure, if it belongs to the ſame plant as our's, is very faulty; but we rather preſume it muſt be a ſpecies nearly akin, whoſe *flowers* are really axillary, and, like the *fruit*, only one-third the ſize of the Linnæan plant; their *petals* finely downy, not ſhaggy, all over their inner ſurface. Still, without ſeeing a ſpecimen, we dare not deſcribe it as diſtinct.

2. X. *elliptica*. Elliptical Ximenia. Forſt. Prodr. 27. Willd. n. 2.—"Thorns none. Leaves elliptic-lanceolate. Stalks many-flowered."—Found by Forſter in New Caledonia. This is known only by the above characters, which are not ſo diſcriminative as could be wiſhed, the *thorns* being variable in the original ſpecies, and in the plant of Aublet.

3. X. *inermis*. Jamaica Ximenia. Linn. Sp. Pl. 497. Willd. n. 3. (Amyris? arboreſcens, foliis ovatis glabris, vetuſtioribus confectis; petiolis ſubmarginatis; floribus ſolitariis; Browne Jam. 209.)—"Thorns none. Leaves ovate. Stalks ſingle-flowered." — Native of Jamaica. Browne deſcribes it as a buſhy *tree*, not above eight or nine feet high; its *trunk* about four and a half inches in diameter. *Leaves* oval, not above an inch long, ſtanding very thick upon the ſmaller branches. *Petals* hairy on the inſide towards the baſe. *Drupa* ovate-oblong.

M. Poiret deſcribes, in Lamarck's Dictionary, a plant by the name of *X. ferox*, n. 3, which we can ſcarcely refer to this genus; the *flowers* being five-cleft; *petals* linear, ſmooth on both ſides; and *ſtamens* prominent. This is a ſpinous *ſhrub*, found in Hiſpaniola, with nearly orbicular, coriaceous *leaves*, above an inch long, and either ſolitary or umbellate axillary *flowers*. The *thorns* are three or four inches long, very ſharp, ſometimes leafy.

Juſſieu ſpeaks of a *X. ægyptiaca*, as deſcribed in the *Species Plantarum* of Linnæus, though omitted ſubſequently in his *Syſtema*. We are unable to diſcover this, and Juſſieu, like Caſpar Bauhin, unhappily omits to cite pages. We do, however, find in Linnæus's copy of Plumier's *Genera Plantarum*, which once belonged to the French botaniſt Iſnard, a note of the latter under *Ximenia*, that "the *Agihalid* of Alpinus, *Pl. Ægypt.* 38, appears to belong to this genus." The rude wooden cut does indeed countenance ſuch an opinion, eſpecially the *flowers;* but the author compares the *fruit* to that of *Sambucus Ebulus*, deſcribing it moreover as bitteriſh and aſtringent. Now *Sambucus* has nothing in common with *Ximenia*. The plant of Alpinus, which was brought from Ethiopia, may be a thorny *Lycium*, but we cannot refer it to any known ſpecies.

XIMO, or Kiusiu, in *Geography*, an iſland of Japan, and ſecond in ſize and eminence, ſituated to the S.W. of Niphon, from which it is divided by a narrow channel. Its circumference is ſuppoſed to be upwards of 300 miles, excluſive of the bays and creeks. It has conſiderable numbers of cities and towns, with ſome good harbours. N. lat. 32° 40′ to 34°. E. long. 130° 50′ to 133° 30′.

XIMONOSEQUI, a ſea-port town of Japan, on the S.W. coaſt of Niphon, with a good harbour, capable of containing 300 veſſels. It is a place of trade, and ſurrounded with walls. N. lat. 33° 56′. E. long. 132° 20′.

XINGU, a river of South America, which riſes ſomewhere near S. lat. 17°, and is firſt called "Paranatinga;" it afterwards takes a northerly courſe of about 900 miles, and runs into the Amazons river, 20 miles E. of Paru, in the government of Para.

XIPHIAS, Ξιφιας, the name of the *ſword-fiſh;* which ſee. This fiſh is cut in pieces by the Sicilians, and ſalted. The proceſs was anciently performed particularly at the town of Thurii, in the bay of Tarentum, and hence the fiſh was called "Tomus Thurianus." (Plin. l. 32. c. 11.) Beſides the Xiphias Gladius, deſcribed under the article Sword-*Fiſh*, Dr. Shaw has enumerated ſome other ſpecies, ſuch as the following:—

Platypterus, or ſword-fiſh with extremely broad back-fin, and very long ſharp-pointed thoracic appendages; the *Guebecu* of Marcgrave, and *Scomber gladius* of Black. This ſpecies, in the appearance of the long and ſharp-pointed proceſs of the upper jaw, is nearly allied to the common ſword-fiſh, but in other reſpects materially differs from it. It is found twenty feet in length, and ſometimes much longer. Its general colour is a ſilvery blueiſh-white, except on the back, head, tail, and fins, which in the living animal are of a deep blue. The ſtrength of this fiſh is ſuch, that it pierced the bottom of an Eaſt Indian ſhip with ſuch force as completely to imbed its ſnout almoſt to its baſe; and if it had not been killed by the violence of the effort, but had been able to withdraw its ſnout, the ſhip muſt have been leaky, and thus have foundered. This power of transfixing veſſels is mentioned by Pliny. This fiſh is found not only in the Braſilian and Eaſt Indian ſeas, but alſo in the Northern ocean; and it is ſaid to be a great enemy to whales, with which it has frequent combats. Dr. Black ſays, that when this ſpecies does not exceed four feet in length, it is conſidered as an eatable fiſh; but when it exceeds that length, it is too coarſe.

Makaira, the blackiſh ſword-fiſh with ſnout of middling length, and two bony tubercles on each ſide of the tail. This is a ſpecies lately diſcovered, and deſcribed by Cepede under the title of "Makaira." This fiſh was caſt on the iſle of Rhé, near Rochelle in France. Its length was 330 French centimetres, and its weight 365 kilogrammes; its colour was blackiſh. It was eaten by many of the inhabitants of Rochelle, and found to be tolerable food, though ſomewhat dry; the fleſh was white. The "round-ſnouted ſword-fiſh" is alſo deſcribed by Cepede, from the ſword or ſnout preſerved, with the fore-part of the head, in the Paris Muſeum. Shaw's Zoology, vol. iv. part i.

Xiphias is alſo uſed to expreſs a fiery meteor, in form of a ſword. See Acontias.

Xiphias, in *Aſtronomy*. See Dorado.

XIPHIDIUM, in *Botany*, from ξιφος, *a ſword*, alluding to the ſword-ſhaped leaves. The name occurs in Pliny, and was adopted by Loefling for the preſent genus, which Linnæus, in publiſhing Loefling's papers, ſunk in Ixia (ſee that article); but ſubſequent writers have reſtored it, the *germen* being ſuperior, and the *corolla* of ſix ſeparate *petals*. —Schreb. Gen. 37. Willd. Sp. Pl. v. 1. 248. Vahl Enum. v. 2. 162. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 1. 107. Aubl. Guian. 33. Swartz Ind. Occ. 79. t. 2. Juſſ. 59. Lamarck Illuſtr. t. 36.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Iridibus affine*, Juſſ. *Hæmodoraceæ*, Brown?

Gen. Ch. *Cal.* none. *Cor.* inferior, of ſix petals, regular, permanent; the three outer ones largeſt. *Stam.*

Filaments three, linear, oppoſite to the three inner petals; anthers ovate. *Piſt.* Germen ſuperior, globoſe; ſtyle thread-ſhaped; ſtigma ſimple. *Peric.* Capſule at firſt fleſhy, then dry, roundiſh, with three furrows, and three cells. *Seeds* numerous, roundiſh, pointed, inſerted into a fleſhy, central, nearly globular, receptacle.

Eſſ. Ch. Corolla regular, of ſix petals. Capſule ſuperior, of three cells, with many ſeeds.

Obſ. The regularity of the *flower* readily diſtinguiſhes this genus from Wachendorfia. See that article.

1. X. *floribundum.* Many-flowered Xiphidium. Swartz Prodr. 17. Ind. Occ. 80. Vahl n. 1. (X. albidum; Lamarck Illuſtr. v. 1. 131. X. album; Willd. n. 1. Ixia; Linn. in Loefl. It. 179.)

β. X. cæruleum; Aubl. Guian. 33. t. 11. Willd. n. 2. Ait. n. 1.—Native of South America, as well as of Tobago and St. Kitt's. Mr. Maſſon is recorded by Dr. Swartz as having gathered the white-flowered kind, α, at the foot of ſome hills, near Sandy Point, in the laſt-mentioned iſland: β was found in Guiana, by Aublet. We have a ſpecimen of the latter from Miller's herbarium, gathered in ſome part of South America. The *root* is perennial, ſomewhat creeping, jointed. *Stem* a foot or more in height, round, ſimple, as thick as the little finger; leafy in the lower part; more or leſs minutely hairy. *Leaves* numerous, alternate, ſeſſile, ſomewhat ſheathing, ſword-ſhaped, pointed, entire, or minutely ſerrated, ſtriated with numerous longitudinal ribs. *Cluſter* compound, terminal, erect, of many ſpreading, ſimply racemoſe, branches, more or leſs hairy, with a very minute *bractea* under each partial flower-ſtalk. *Flowers* not half an inch in diameter. Three outer *petals* green, and often downy at the back; white or blue in front, as the three inner ones are on both ſides.

Swartz and Vahl have united the two ſuppoſed ſpecies of other authors. The latter aſſerts the blue-flowered variety to be ſometimes entirely ſmooth in its *leaves* as well as *flowers.*

XIPHILINUS, John, in *Biography*, was born at Trebizond, in the 11th century, and having paſſed the earlier period of his life in a monaſtery on mount Olympus, was advanced to the patriarchate of Conſtantinople, which office he held till his death in 1075. Beſides a ſermon printed in the Bibliotheca Patrum, he is reputed by ſome to be the author of an "Abridgment of the Hiſtory of Dion Caſſius," in Greek, written faithfully, which was printed at Paris in 1592, fol.

XIPHION, or Xiphium, in *Botany*, ξιφιον of Dioſcorides, ſo called from the ſword-ſhaped leaves, appears evidently, by the account of that ancient writer, to be *Gladiolus communis*, Linn. Sp. Pl. 52, our Common Cornflag. *Xiphium* nevertheleſs is retained by Linnæus as the ſpecific name of a common, but very elegant and fragrant bulbous *Iris*, with blue and yellow flowers. To this it ſeems he was led by Tournefort, who applies the name of *Xiphion* to the whole tribe of bulbous-rooted ſpecies of *Iris*, of which he makes a ſeparate genus, characterized by the root. This is rather unfortunate, as the Linnæan *Iris Xiphium* has rather awl-ſhaped than ſword-like *leaves.*

XIPHOIDES, Ξιφοειδες, in *Anatomy*, a cartilage placed at the bottom of the *ſternum*, called alſo *enſiformis.*

It is about an inch long, and ſhaped like the point of a ſword. Whence its appellation, from ξιφος, *ſword*, and ειδος, *figure.*

XIPHONIÆ Promontorium, in *Ancient Geography*, a promontory of Sicily, near port Xiphonius.

XIPHOS, Ξιφος, among the Athenians, a capital puniſhment, by beheading with the ſword.

XIPIXAPA, in *Geography*, a town of South America, in the audience of Quito; 80 miles N.W. of Guayaquil.

XIQUACAN, a town of Mexico, in the province of Mechoacan; 50 miles S.E. of Zacatula. N. lat. 18° 4'. W. long. 102° 34'.

XIQUENA, a town of Spain, in the province of Murcia; 15 miles W.N.W. of Lorca.

XIQUITO, a town of Japan, in the iſland of Ximo; 16 miles S. of Naka. N. lat. 32° 20'. E. long. 133° 13'.

XIR, a word uſed by the chemiſts to expreſs mercury.

XISINUM, a word uſed by ſome of the chemical writers to expreſs vinegar.

XIVERT, in *Geography*, a town of Spain, in Valencia; 7 miles N.W. of Segorbe.

XIVRY le Franc, a town of France, in the department of the Moſelle; 9 miles S. of Longwy.

XIXONA, a town of Spain, in Valencia. In the neighbourhood of this town a great number of perſons are employed annually to collect the drug called Kermes, and a ſmall diſtrict, called *de la Grana*, produces ſome years to the value of 30,000 dollars; 13 miles N. of Alicant. N. lat. 38° 32'. W. long. 0° 42'.

XIZABRAS, mountains of South America, in the province of Venezuela.

XOANA, in *Ancient Geography*, a town of India, on this ſide of the Ganges.

XOCHIOCOTZO, in *Botany*, a name uſed by ſome authors for the tree which produces the liquid amber, and is called the ſweet gum by the inhabitants of the Weſt Indies.

XOCHITENACATL, in *Ornithology*, a name given by ſome to the toucan, or American great-beaked magpye.

Xochitenacatl *Alia*, the name of a bird deſcribed by Nieremberg, of the nature of the toucan, or Braſilian magpye.

It is of the ſize of a pigeon; its beak is large and thick, and is black and pointed; its wings and tail are variegated with black and white; it has a large black mark reaching from its back to the breaſt; the anterior part of the wings is yellow, the reſt of its body of a pale colour, and the legs and feet brown. It always is found among the ſweet-flowering trees, and is not uncommon in many parts of South America. Ray.

XOCOTLAN, or Xocutlan, in *Geography*, a town of Mexico, in the province of Xaliſco; 15 miles S.W. of Purification.

XOCOXOCHITL, the Indian name of the clove-berry-tree, or the *caſſia caryophyllata*, the bark of which is uſed in medicine.

XODRACE, in *Ancient Geography*, a town of India, on this ſide of the Ganges. Ptolemy.

XOES, an iſland of the Mediterranean, on the coaſt of Egypt, near the mouth of the Nile, called "Xebenniticum;" and alſo a town of the ſame name. Steph. Byz.

XOIS, a town of Egypt, in the Nome, denominated Xoites Nomos. Ptolemy.

XOLA, in *Geography.* See Sooloo.

XOLO. See Gilolo.

XOMOTL, in *Ornithology*, the name of an American bird, of which the Indians are very fond, making a part of their garments of its feathers.

Nieremberg has given a ſhort account of it. It is a web-footed fowl; its back and the upper part of its wings are black, and its breaſt is brown. When it is angry, it raiſes up the feathers of its head in form of a creſt. Ray.

XORULLO, or Jorullo, *Volcano of*, in *Geography*, a baſaltic cone of New Spain, which appeared above ground on the 15th of September 1759, and which is at this day 249 fathoms or 1494 feet above the ſurrounding plain. It is ſituated in the province of Mechoacan, at the diſtance of eight leagues from Paſquaro the capital, towards the S.W.; the volcano of Colima being in the ſame direction, but at a greater diſtance. A delicious and fertile vale, eight leagues in length from N. to S., and three in breadth, was called Xorullo by the Indians, a word in their language ſignifying *paradiſe;* but upon the eruption of the volcano, this valley aſſumed an infernal aſpect, blackened with perpetual ſmoke, covered with deformed rocks and aſhes, the trees conſumed, the earth full of deep breaks and openings, and now forming a hill of conſiderable height, crowned with a volcano. A rivulet which fertilized the valley is now ſo hot as to burn men and animals who attempt to paſs it, which is peculiarly inconvenient, as it is in the direct road to the copper-mines in this quarter. Before this cataſtrophe, there were conſtantly heard horrible ſubterraneous noiſes, and earthquakes were felt, which excited conſternation in the inhabitants.

XOXOUHQUITICPATLI, an American name of a ſtone of the jaſper kind, and of a beautiful green, but uſually pale, and ſometimes with a mixture of grey, and variegated in ſeveral places with ſpots of a deeper green.

It is found among the ſeveral kinds of *lapis nephriticus*, with which that country abounds, and moſt of which the Indians celebrate for their virtues againſt diſeaſes; they are not, however, acquainted with any medicinal virtues of this ſpecies.

XV. VIR, *Quindecimvir*. See Quindecimvir.

Authors, and eſpecially antiquaries, make uſe of ſuch abbreviations, which they borrow from medals, and other monuments of antiquity, where thoſe names are ſo expreſſed.

XUAREZIA, in *Botany*, according to De Theis, is a genus dedicated, in the *Flora Peruviana*, p. 20, to Gaſpar Xuarez, a Spaniſh botaniſt, who has devoted himſelf to the ſtudy of the plants of Italy.

XUCAHA, or Xucaahi, the name of a plant much famed for its virtues among the ancient Arabians, but unknown at this time.

XUCAR, in *Geography*, a river of Spain, which riſes in New Caſtile, and runs into the Mediterranean, 20 miles S. of Valencia.

XUCHES, or Zuchis, in *Ancient Geography*, a town of Africa, in Libya. Steph. Byz.

XULI, in *Geography*, a town of Peru, in the dioceſe of La Paz, near the weſt coaſt of lake Titicaca, chiefly inhabited by Indians, and governed by Indian magiſtrates; 100 miles N.N.W. of La Paz. S. lat. 16° 25'. W. long. 70° 6'.

Xuli, a ſmall iſland in the Pacific ocean, near the coaſt of Peru. S. lat. 16° 50'.

XULLA, or Xulloe, an iſland in the Eaſt Indian ſea, about 42 miles long, and from 10 to 15 broad. The Engliſh ſome years ſince formed a ſettlement in this iſland, but from the badneſs of the ſoil, and ſome other circumſtances, they were induced to abandon it, and remove to Balambangan, on the coaſt of Borneo. S. lat. 1° 53'. E. long. 125°.

XULLABELLA, an iſland in the Eaſt Indian ſea, about 25 miles long, and 6 broad. S. lat. 2° 15'. E. long. 126° 12'.

XULLAMANGOLA, an iſland in the Eaſt Indian ſea, about 30 miles long, and 10 broad. S. lat. 1° 54'. E. long. 125° 42'.

XUN, a city of China, of the ſecond rank, in Se-tchuen; 150 miles S.W. of Pao-king. N. lat. 30° 18'. E. long. 103° 20'.

XUNDALE, a town of South America, in the province of Popayan; 8 miles S.W. of Sante Fe de Antioquia.

XUQUI. See Jugui.

XUTHIA, in *Ancient Geography*, a country of Sicily. Diod. Sic. It is repreſented as a town by Steph. Byz.

XUXUY, in *Geography*, a town of La Plata, which chiefly trades in cattle, ſold to the miners of Potoſi, and brought in conſiderable number to the great fair of Salta; but now in a declining ſtate. See Jujuy.

XYLAGIUM, a name given by ſome authors to the lignum ſanctum, or guaiacum.

XYLANDER, William, in *Biography*, whoſe family name was *Holtzmann*, was born in indigent circumſtances at Augſburg, in 1532, and enabled by public liberality to ſtudy at Tubingen and Baſil, in the latter of which places he took the degree of M.A. in 1556. In 1558 he was invited to undertake the Greek profeſſorſhip at Heidelberg; where, with all the diſadvantages of penury, he purſued his literary labours, and acquired an amplitude of erudition, which comprehended the learned languages, hiſtory, poetry, muſic, philoſophy, and phyſics. The works by which he is chiefly known are Latin tranſlations, (with notes,) of Dion Caſſius, Plutarch, Strabo, and Cedrenus. His life was prematurely terminated in conſequence of hard ſtudy, in 1576, at the age of 44 years. Moreri.

XYLARIA, in *Botany*, from ξυλον, *wood*, a name given by ſome cryptogamic botaniſts to the firſt ſection of the genus Sphæria in Perſoon. (See that article.) The idea appears to have been ſuggeſted by the old name of *Hypoxylon*, belonging to one of the ſpecies. But it may alſo apply to the woody and durable texture of that and ſome others of the ſame ſection.

XYLENOPOLIS, the *Town of the Woods*, in *Ancient Geography*, a town of India, at one of the mouths of the river Indus, according to Pliny, who reports that it was built by Alexander. M. D'Anville thinks that this town is the ſame with Hyala. It ſubſiſted in the time of Pliny.

XYLINA, Ixil, a town of Aſia, in the Colchide, and country of the Lazii. It was ſituated on the right bank of the Acinaſis, near its mouth in the Euxine ſea, north of Chordyla.

XYLINE, a town of Cappadocia, in Cappadocian Pontus. Ptol.

XYLINES, a people of Africa, in Libya interior, E. of the Agangines, from the foot of mount Arvalle, as far as mount Arangas. Ptol.

XYLO-ALOE, compounded of ξυλον, *wood*, αλοη, *aloes*, in *Medicine*, the lignum aloes; called alſo *agallochum*. See Aloe, and Calambac.

XYLO-BALSAMUM, Ξυλοϐαλσαμον, compounded of ξυλον, *wood*, and βαλσαμον, *balſam*, a name which naturaliſts, &c. give to the wood of the tree, which yields that precious gum known to the Latins by the name of *opobalſamum*, and, among us, by the name of *balſam*, or *balm of Gilead*.

We have branches of this tree brought from Cairo. They are very ſtraight, brittle, unequal, and full of knots; their bark is reddiſh without, and greeniſh within. The wood is whitiſh, and full of pith; and, when broken, yields an agreeable ſmell, reſembling that of the balſam.

The *xylo-balſamum* is reputed good to ſtrengthen the brain and ſtomach, and to expel poiſon.

XYLOCARACTA, or XYLOCRACTE, in the *Materia Medica*, a name by which ſome authors have called the carob, or ſiliqua dulcis, the ſweet pipe-tree.

This was called by ſome of the Greek writers *xyloceraton*, the tree bearing pods, and from a corruption of this name the other has been formed.

XYLOCARPASUM, in *Natural Hiſtory*, a name given by ſome authors to a poiſonous kind of wood.

It was the wood of that tree whoſe gum was called *carpaſum* and *opocarpaſum*.

XYLOCARPUS, in *Botany*, from ξυλον, *wood*, and καρπος, *fruit*, alluding to the woody texture of the ſeed-veſſel.—"Koenig in Naturf. v. 20. 2." Schreb. Gen. 253. Willd. Sp. Pl. v. 2. 329. Mart. Mill. Dict. v. 4. Poiret in Lamarck Dict. v. 8. 806.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Tribilatæ*, Linn. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, club-ſhaped, coriaceous, ſomewhat coloured, with four roundiſh teeth. *Cor.* Petals four, ovate-oblong, rather coriaceous, widely ſpreading, twice the length of the calyx. Nectary erect, ovate, inflated, ſomewhat fleſhy, with eight marginal ſegments. *Stam.* Filaments no other than the eight ſegments of the nectary, linear, obtuſe, emarginate, ſhorter than the petals; anthers eight, attached to the inner ſide of the filaments, and of the ſame length, linear-oblong, abrupt. *Piſt.* Germen ſuperior, ovate, ſmooth, ſlightly rugged at the baſe; ſtyle very ſhort and thick; ſtigma abrupt, broad, bordered, its margin furrowed, its diſk furrowed croſs-wiſe, and perforated. *Peric.* Drupa large, globoſe, dry, with a thick coat; externally ſmooth, marked with four or five furrows; internally woody and fibrous. *Seeds.* Nuts eight, ten, or more, angular, unequal, irregular; their outer ſkin ſoft, and rather ſilky; inner woody and fibrous; kernel in ſome degree woody, brittle, with a prominent embryo.

Eſſ. Ch. Calyx oblong, with four teeth. Petals four. Nectary inflated, with eight teeth bearing the anthers. Drupa ſuperior, dry, woody, with four or five furrows. Nuts numerous, angular, irregular.

1. X. *Granatum*. Indian Wooden-pomegranate. Koenig as above. Willd. n. 1. (Granatum littoreum; Rumph. Amboyn. v. 3. 92. t. 61. *Cadul gaha* of the natives of Ceylon. *Candalanga* in the Tamul language.)—Native of muddy thickets on the ſea-ſhores of Amboyna, Ceylon, and other parts of the Eaſt Indies, among *Rhizophora* trees, flowering in November, and bearing fruit in January and February. A *tree* varying greatly in ſize, ſometimes little more than a ſhrub; its wood elegantly veined, but ſo twiſted and knotty, that no large handſome pieces can be procured. The *trunk* is erect, with a hard, deeply cracked bark; the *head* denſe, roundiſh, or oblong. Larger *branches* ſcattered; ſmaller generally oppoſite, numerous, clothed with a greyiſh bark. *Leaves* oppoſite, ſtalked, ſpreading, oblong, obovate, or elliptical, acute, entire, rather larger than thoſe of an apple-tree; dark-green, ſmooth and ſhining on the upper ſide; veiny beneath, with a prominent mid-rib. *Footſtalks* ſhort, roundiſh, ſpreading, a little curved, rugged, of a cheſnut-brown. *Cluſters* ſcattered or axillary, ſtalked, rather ſpreading, ſhorter than the leaves; their ſubdiviſions oppoſite, or three-forked, with round, ſmooth, red, tough, naked ſtalks; the ultimate ones ſhorter than the *flowers*, which are ſmall, yellowiſh, or dirty white. Their *nectary* ſomewhat reſembles a Lily of the Valley, but theſe flowers have no ſmell. The *fruit* is larger than a pomegranate, ſometimes the ſize of a child's head of three years old, and contains from eight or ten to twenty angular unequal nuts, bigger than cheſnuts, which do not appear to be uſed as food. There is a very remarkable diſproportion between the magnitude of the *flowers* and *fruit*. Rumphius, from whom, as well as from Koenig, we take our deſcription, hints that the *flowers* are perhaps dioecious. It is certain that moſt of thoſe, ſo numerous in each cluſter, muſt be abortive, or there would not be room to perfect the *fruit*.

XYLOCASIA. See CASSIA.

XYLOCOCCUM, in the *Materia Medica*, a name given by ſome of the later Greek writers to the carob-tree, or ſiliqua dulcis.

XYLOCOLLA, a word uſed by ſome of the ancient writers to expreſs what was more uſually called *taurocolla*, glue made of the ears and genitals of a bull.

XYLOCOPIA, Ξυλοκοϖια, among the Greeks, a puniſhment with a cudgel. See FUSTIGATION.

XYLODON, in *Botany*, from ξυλον, *wood*, and οδον, *a tooth*, an appellation given by Perſoon to the third ſection of his genus SISTOTREMA, Syn. Fung. 550. (See that article.) The *lamellæ* of that genus, (which is intermediate, as he juſtly ſays, between *Boletus* and *Hydnum*, though, in our opinion, moſt akin to the latter,) are of a firm, woody, and durable nature, and divided into many compreſſed irregular teeth.

XYLOGLYCON, a name given to the carob, or ſiliqua dulcis, by ſome of the old Greek writers.

The word expreſſes a ſweet or ſweet-fruited tree.

XYLOIDES, or HYLOIDES, a term uſed by many of the ancient writers to diſtinguiſh thoſe plants which had woody ſtalks, though they never grew up to any conſiderable ſize; ſuch as the garden-thyme, marjoram, and the like.

XYLOMA, ſo called from the firm or woody ſubſtance of the whole fungus, and the jagged or radiating margin of one of the moſt common ſpecies, *X. acerinum*; the word being apparently compoſed of ξυλον, *wood*, and λωμα, *a fringe*, or *border*.—Perſ. Syn. Fung. 103. Obſ. Mycol. v. 2. 100. —Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi Angiocarpi*.

Eſſ. Ch. Flat, nearly orbicular. Receptacle various, hard, ſomewhat fleſhy internally; either remaining cloſed, or burſting unequally.

Sect. 1. *Compound. Several receptacles combined. Rather large.*

1. X. *ſalicinum*. Sallow-leaf Xyloma. Perſ. n. 1. "Diſp. Meth. 5. t. 2. f. 4."—Thick, tuberculated; internally cartilaginous, and white at the baſe.—Frequent on the leaves of *Salix caprea*. This, according to Perſoon, is generally cloſed, but he has found it in the ſpring, as delineated in the work quoted, breaking, in the upper part, into ſeveral portions, like the ſhell of a tortoiſe, from whoſe interſtices the fine powdery *ſeeds* flew off like ſmoke. The breadth of the whole fungus is about half an inch; its colour black.

2. X. *andromedæ*. Marſh-roſemary Xyloma. Perſ. n. 2. —"Oblong, thickiſh, with rib-like elevations, poliſhed."—Found in ſummer on the leaves of *Andromeda polifolia*, which hence appear as if pitch had been dropped upon them. Sometimes each fungus is as long as the whole leaf; ſometimes only half as long. Its thickneſs is conſiderable with regard to the ſize. The lower *ſtratum* is white and firm, as in the foregoing.

3. X. *acerinum*. Maple Xyloma. Perſ. n. 3. (Sphæria maculiformis; Ehrh. Crypt. n. 219. Beitr. v. 7. 101.)—Dilated, ſomewhat orbicular, thin, flat, black, ſlightly corrugated towards the centre.—Frequent on the leaves of

Acer platanoides, and *A. campeſtre*, in the autumn. It conſiſts of numerous, black, opaque, inſeparable patches, ſcattered over the upper ſide of the leaf, each about a quarter or one-third of an inch in diameter; the margin ſometimes variouſly and elegantly notched, or fringed, and always circumſcribed by a very ſtriking yellow, or tawny, diſcoloration of the leaf. Perſoon ſays he has obſerved the ſurface of this ſpecies, though uſually almoſt even and uniform, cracking into waved bordered fiſſures. We can ſee ſomething of this in a ſpecimen from profeſſor Schrader.

4. X. *punctatum*. Sycamore Xyloma. Perſ. n. 4. Obſ. Mycol. v. 2. 100. — Dilated, thin, imperfectly orbicular, ſomewhat convex, black. Receptacles unequal, aggregate, parallel, oblong, blunt, ſuperficial.—Frequent on the fading or fallen leaves of *Acer Pſeudoplatanus*, which are rarely without this paraſite in autumn and winter. The patches are from half an inch to an inch wide, cloſely united with the leaf, ſlightly convex above, and rather concave at the under ſide, which is ſomewhat blackened by them, eſpecially at the circumference of each. The wrinkles, or *receptacles*, are ſhaped like the clefts of an OPEGRAPHA (ſee that article); but much more ſhallow, as well as more uniform in colour.

5. X. *ſtellare*. Starry Xyloma. Perſ. n. 5. Obſ. Mycol. v. 2. 100.—"Thin, pitchy; the margin fringed with radiating fibres."—Found by Perſoon, on the leaves of *Phyteuma ſpicatum*, though rarely. About half an inch broad, more or leſs, of a handſome appearance, with an uniform ſmooth diſk, very black; the marginal fringe either black, or greyiſh. No diſtinct *receptacles* have yet been noticed.

6. X.? *rubrum*. Red Xyloma. Perſ. n. 6. Obſ. Mycol. v. 2. 101.—"Aggregate, orbicular, ſomewhat confluent, red."—Generally found in autumn on the leaves of *Prunus domeſtica*, rarely on *P. ſpinoſa*. At firſt ſight the red colour of this ſpecies, all the others being black, cauſes it to be taken for an *Œcidium*, or *Uredo;* but on examination the internal ſubſtance proves to be ſolid, uniform, ſcarcely containing diſtinct *receptacles*, or *ſeed-veſſels;* its genus, however, is reckoned by Mr. Perſoon as very doubtful. The patches are each from two to four lines broad, rather thick, with darker-coloured ſuperficial dots, viſible only with a microſcope. *Perſoon.*

Sect. 2. *Simple. Receptacles ſolitary, ſcattered; generally rounded, like a Peziza; or dot-like. Smaller.*

7. X. *pezizoides*. Cup-like Xyloma. Perſ. n. 7. (Peziza comitialis; Sowerb. Fung. t. 118. P. viridis; Bolt. Fung. t. 109. f. 1.)—Rather crowded, orbicular, black; opening at length, with an upright, ſomewhat crenate, border, and a pale olive or greeniſh diſk.—Found on fallen leaves of oak in December; more rarely, and in leſs perfection, on thoſe of beech. The ſpecimens are pretty uniform in ſize, larger than muſtard-ſeed, cloſely attached to the ſurface of the leaf; the border of each ſometimes pale, ſometimes black, unleſs Sowerby and Bolton deſcribe two different ſpecies.

8. X. *ſphærioides*. Dot-like Xyloma. Perſ. n. 8.—"Scattered, dot-like, ſoftiſh, with an open diſk, and a collapſed inflexed border."—On the leaves of *Salix caprea*. This at a diſtance reſembles *Sphæria punctiformis;* but under a magnifier it looks like ſome *Peziza*, with a criſped margin. The outſide is black; the diſk, rarely all diſplayed, is paler.

9. X. *hyſterioides*. Oblong Xyloma. Perſ. n. 9. "Ic. et Deſcr. Fung. t. 10. f. 3, 4."—"Elliptical, ſhining, ranged nearly parallel."—On the fallen leaves of Hawthorn, in the ſpring. Each plant is one-third of a line long, ovate, or elliptical, of a ſhining black; ſolid within. A longitudinal line ſeems to mark the place where it finally burſts.

10. X. *ſalignum*. Willow Xyloma. Perſ. n. 10. ("Sphæria ſaligna; Ehrh. Crypt. n. 299.")—"Aggregate and rather crowded, orbicular, thin, with a ſomewhat convex diſk."—On the leaves of *Salix caprea*, occupying nearly their whole ſurface. Each individual is from one-third to one-half a line broad.

11. X. *populinum*. Aſpen Xyloma. Perſ. n. 11.—"Aggregate, flattened, variouſly ſhaped, ſmooth, opaque, black."—Found on the old leaves of *Populus tremula*, in the ſpring. About a line broad; the diſk here and there greyiſh.

12. X. *concentricum*. Concentric Xyloma. Perſ. n. 12. Obſ. Mycol. v. 2. 101.—"Simple. Receptacles ſmall, orbicular, depreſſed, ſomewhat conical, concentrical, of a ſooty grey."—On half-decayed leaves of *Populus tremula*, forming circular patches, near an inch broad. *Receptacles* like ſmall ſcattered dots, at firſt black, afterwards ſooty or greyiſh, burſting finally at the ſummit.

13. X. *fagineum*. Beech Xyloma. Perſ. n. 13. "Diſp. Meth. Fung. 52."—"Minute, crowded, of a ſhining black, orbicular, plaited, a little depreſſed."—Found on the under ſide of fallen and dried leaves of Beech, in the form of crowded black dots.

14. X. *alneum*. Alder Xyloma. Perſ. n. 14.—"Minute, ſcattered, roundiſh, plaited."—This ſpecies is met with in ſummer, upon Alder-leaves, while they are ſtill green. It conſiſts of a few black diſtant dots.

Theſe minute productions are neceſſarily very obſcure in their characters and economy. The preſent genus is marked by its internal ſolidity, of a corky or woody ſubſtance, having nothing of a gelatinous nature, nor are there any diſtinct round capſular receptacles, as in SPHÆRIA. See that article.

XYLOMELUM, ſo called by the writer of this, from *ξυλον*, *wood*, and *μηλον*, *an apple*, in alluſion to the hardneſs and form of the fruit, which procured it, when firſt diſcovered, the appellation of the wooden pear.—Sm. Tr. of Linn. Soc. v. 4. 214. Mart. Mill. Dict. v. 4. Brown Prodr. Nov. Holl. v. 1. 387. Tr. of Linn. Soc. v. 10. 189. Ait. Hort. Kew. v. 1. 212.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Cal.* none. *Cor.* Petals four, regular, equal, linear; externally hairy; a little dilated and concave at the tip; revolute ſoon after expanſion. Nectary four glands at the baſe of the germen. *Stam.* Filaments four, very ſhort, inſerted rather above the middle of each petal, and becoming prominent by its recurvation; anthers linear, inflexed, of two lateral parallel lobes, with a membranous edge; imperfect in ſome of the flowers. *Piſt.* Germen ſuperior, roundiſh; ſtyle erect, rigid, the length of the petals, deciduous; ſtigma vertical, club-ſhaped, obtuſe, often ſmall and abortive. *Peric.* Follicle woody, very thick, ovate, of one excentric ſmall cell, and burſting into two divaricated half valves, at the point. *Seeds* two, roundiſh, compreſſed, each with a terminal, oblong, rather oblique, membranous wing, as long as the follicle.

Eſſ. Ch. Petals four, bearing the petals above the middle, regular, revolute. Nectariferous glands four. Stigma club-ſhaped. Style deciduous. Follicle woody, of one excentric cell, with two winged ſeeds.

1. X. *pyriforme*. Wooden-pear. Brown n. 1. (Bankſia pyriformis; Gærtn. v. 1. 220. t. 47. f. 1. Lamarck Illuſtr. v. 1. 242. t. 54. f. 4. White's Voyage 224. t. 21. Hakea pyriformis; Cavan. Ic. v. 6. 25. t. 536.)—Gathered on the eaſtern coaſt of New Holland, near Port Jackſon, by the firſt ſettlers in that colony. We received ſpecimens from Dr. White,

Dr. White, in 1789 and 1793. Mr. Brown ſays it grows on ſtony hilly ground. This, the only known ſpecies, is a tree, with oppoſite branches ; downy and ruſty when young. *Leaves* oppoſite, ſtalked, five inches long, lanceolate, acute at each end, entire, rather coriaceous, ſmooth, with one rib, and many prominent reticulated veins ; pale and yellowiſh beneath ; clothed, when they firſt come out, with denſe, deciduous, ruſty down : thoſe of young plants, according to Mr. Brown, are toothed. *Footſtalks* flattiſh, an inch long, ſmooth. *Stipulas* none. *Spikes* axillary, oppoſite, catkin-like, cylindrical, denſe, much ſhorter than the leaves, many-flowered, ſhaggy with ruſty down. *Flowers* ſeſſile, hardly an inch long, in pairs, each pair accompanied with one ſmall downy *bractea ;* all of them abortive, except the lowermoſt, ſo that from ſpecimens ſeen in fruit only, the flowers were judged to be ſolitary. The *fruit* is ovate, or inverſely pear-ſhaped, very hard, even, downy, two or three inches in length. *Seeds* and their wings brown. Mr. Brown remarks, that the greater part of the *flowers*, having a ſmall *ſtigma*, and no *germen*, are neceſſarily abortive. Many of the *anthers* too have, as above-mentioned, an imperfect appearance ; but having never ſeen living flowers, we cannot tell whether this be an original defect, or merely owing to their having long ago performed their office. It is poſſible that the ruſty hue of the flowers and young leaves, ſo rich and beautiful in our ſpecimens, may partly, if not altogether, be owing to drying. This plant, though procured for Kew garden, by ſir Joſeph Banks, in 1789, appears never yet to have bloſſomed there.

XYLON, is ſo well deſcribed by Pliny, book 19. chap. 1, as to leave no doubt of its being our Cotton. (See GOSSYPIUM.) He ſays it ſerved to make the choiceſt garments of the Egyptian prieſts. Dr. J. R. Forſter, the famous botaniſt and circumnavigator, publiſhed in 1776 a moſt learned little volume, to prove Cotton the true *Byſſus* of the ancients. See alſo Matth. Valgr. v. 1. 376.

XYLON, Ξυλον, among the Athenians, a puniſhment inflicted, by putting the offender into the ſtocks.

XYLOPHYLLA, in *Botany*, very expreſſively named by Linnæus, after Rumphius, from ξυλὸν, *wood*, and φυλλον, *a leaf*, in alluſion to the hardneſs and rigidity of its foliage, which indeed ſerves the purpoſe of both leaves and flower-ſtalks.—Linn. Mant. 147. Schreb. Gen. 200. Willd. Sp. Pl. v. 1. 1500. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 336. Juſſ. 387. Poiret in Lamarck Dict. v. 8. 812. Lamarck Illuſtr. t. 855. Gærtn. t. 108. (Phyllanthus ; Browne Jam. 188.)—Claſs and order, *Monoecia Monadelphia*. (Pentandria Trigynia ; *Browne, Linn. Schreb. Willd.*) Nat. Ord. *Tricoccæ*, Linn. *Euphorbiæ*, Juſſ.

Gen. Ch. Male, *Cal.* Perianth in ſix deep regular ſegments ; the three innermoſt largeſt. *Cor.* Petals none, unleſs the calyx, or its inner ſegments, be taken for ſuch. Nectary of ſix globular glands. *Stam.* Filaments united into a very ſhort column ; anthers three or ſix, roundiſh ; two-lobed.

Female, on the ſame plant, and in the ſame ſituation, as the male. *Cal.* and Nectary as in the male. *Piſt.* Germen ſuperior, ſeſſile, roundiſh ; ſtyles three, ſhort, ſpreading ; ſtigmas three-cleft. *Peric.* Capſule roundiſh, with three furrows, three cells, and ſix elaſtic valves. *Seeds* two in each cell, roundiſh.

Eſſ. Ch. Male, Calyx in ſix deep ſegments ; three of them interior. Petals none. Nectary of ſix globoſe glands.

Female, Calyx and Nectary like the male. Styles three. Stigmas three-cleft. Capſule of three cells, with ſix elaſtic valves. Seeds two in each cell.

Obſ. Dr. Sims, in Curt. Mag. 1021, has juſtly indicated this genus as too near PHYLLANTHUS (ſee that article) ; where the *ſeeds* are erroneouſly ſaid to be ſolitary. Whether the difference between their *nectaries* be permanent, we have not ſeen enough to determine. At any rate, theſe two genera muſt ſtand next to each other, in the Linnæan artificial ſyſtem, as well as in every natural one.

1. X. ? *longifolia*. Long-leaved Sea-ſide Laurel. Linn. Mant. 221. Willd. n. 1. Swartz Obſ. 112. (Xylophyllos ceramica ; Rumph. Amboyn. v. 7. 19. t. 12.)—Leaves linear, alternately toothed. Flowers ſolitary at each tooth.—Found only on the lofty, ſtony, cold mountains of the iſland of Ceram. The *trunk* is ſhrubby, ſcarcely ſo thick as a man's arm, dividing above it into many round *branches*, as thick as the finger. Theſe end in numerous, alternate, drooping, long, linear, acute *leaves*, or perhaps winged branches, with blunt alternate teeth, uſually an inch diſtant from each other. The *flowers* are ſolitary, nearly ſeſſile, at each notch. Of their ſtructure nothing is known ; nor of the *fruit*, except what Rumphius relates, and this, as Dr. Swartz obſerves, does not agree with the genus before us, Linnæus having merely adopted this remarkable plant as a *Xylophylla*, on account of its habit, which is ſtriking enough. Rumphius ſays, " the *calyx* reſembles a ſmall clove, and is red, bearing a roundiſh-oblong *fruit*, reſembling a Bay-berry, or the *Abrus* of Alpinus, (and Linnæus,) green, hard, with a ſmall point. When opened, a ſmall *nucleus* is found, reſembling a grain of rice, fixed on the ſtalk, and taſting ſweet, like a Filberd, being encloſed in a white ſkin." It is very unlikely that the kernel of any ſpecies of this genus ſhould be eatable.

2. X. *latifolia*. Broad-leaved Sea-ſide Laurel. Linn. Mant. 221, excluding the ſynonym. Willd. n. 2. Ait. n. 1. Swartz Obſ. 113. Curt. Mag. t. 1021. (Geneſiphylla aſplenifolia ; L'Herit. Sert. Angl. t. 39. Phyllanthus n. 1. Browne Jam. 188. Hemionitidi affinis, americana epiphyllanthos, &c. ; Pluk. Phyt. t. 36. f. 7.)—Leaves rhomboid, crenate ; notches crowded, each bearing one or more ſtalked flowers.—Native of lime-ſtone rocks, near the ſea-ſide, in the Weſt Indies. Mr. Waller is recorded in Hort. Kew. as having firſt ſent this elegant and ſingular ſhrub to his friends in England, in 1783. If we miſtake not, the marquis of Rockingham, who died in 1782, received it from Mr. Waller ſome time before ; the original having been long one of the dowager marchioneſs's fineſt plants. It flowers in a ſtove copiouſly in Auguſt and September. The *ſtem* is four or five feet high, with a round buſhy head. *Leaves* a foot long, alternate, ſtalked, alternately pinnate ; *leaflets* twelve or more, nearly ſeſſile, one and a half or two inches long, ovate-rhomboid, acute, hard and rigid, erect, ſtriated, ſmooth ; entire towards the baſe. *Flowers* copious, ſmall, green, on ſimple crimſon ſtalks ; thoſe of the female flowers much the longeſt. Both *ſtamens* and *piſtil* ſometimes occur in the ſame flower, according to Dr. Swartz.

3. X. *Arbuſcula*. Lanceolate-leaved Sea-ſide Laurel. Swartz Prodr. 28. Willd. n. 3. (Phyllanthus ſpecioſa ; Jacq. Coll. v. 2. 360. Ic. Rar. t. 616. Swartz Ind. Occ. 1107. Schneev. Ic. t. 30 ?)—Leaves pinnate, lanceolate, pointed, crenate ; notches crowded, each bearing one or more ſtalked flowers.—Native of the ſloping ſides of lofty mountains, in the ſouth part of Jamaica. *Swartz.* We can diſcern no real ſpecific difference between this and the laſt. The *leaves* indeed are narrower, more elongated and leſs falcate, but thoſe characters vary. Dr. Swartz

lays a ſtreſs on the *flowers* being polygamous in *latifolia*, monoecious in *Arbuſcula;* but nothing is more variable than this circumſtance. It is difficult to ſay which of the two Schneevoght's figure repreſents.

4. X. *falcata.* Sickle-leaved Sea-ſide Laurel. Swartz Prodr. 28. Willd. n. 4. Ait. n. 2. Andr. Repoſ. t. 331. (Phyllanthus Epiphyllanthus; Linn. Sp. Pl. 1392. Ph. americana planta, flores e ſingulis foliorum crenis proferens; Comm. Hort. v. 1. 199. t. 102.)—Leaves ſcattered, linear-lanceolate, ſomewhat falcate, diſtantly toothed. Flowers nearly ſeſſile, many together at each tooth.—Native of the Bahama iſlands. Cultivated for above 120 years paſt in the ſtoves of England and Holland, flowering in July and Auguſt. The *ſtem* is five or ſix feet high, ſhrubby, with round *branches.* *Leaves* not pinnate, with a flat ſtalk, as in the two laſt, but ſcattered irregularly over the branches, each proceeding from a ſcaly bud, ſimple, five or ſix inches long, one-third of an inch wide, rigid, ſtriated, tapering at each end; entire towards the baſe; alternately toothed in the upper part, the teeth an inch or more aſunder. *Flowers* crimſon, on ſhort ſtalks, ſome male and ſome female in each tuft; the latter feweſt.

5. X. *anguſtifolia* Narrow-leaved Sea-ſide Laurel. Swartz Prodr. 28. Willd. n. 5. Ait. n. 3. (X. elongata; Jacq. Hort. Schœnbr. v. 3. 53. t. 348. Poiret n. 7. Phyllanthus n. 2; Browne Jam. 188. Ph. americana, anguſtiori et longiori folio, ramoſa, cauleſcens; Pluk. Phyt. t. 247. f. 4. Ph. anguſtifolia; Swartz Ind. Occ. 1111.)—Leaves pinnate, linear-lanceolate, rather diſtantly toothed, ſcarcely curved. Flowers on ſhort ſtalks, polygamous, one or more from each tooth.—Native of ſtony rocky ſituations, in the weſtern part of Jamaica. *Swartz.* Cultivated in the Engliſh ſtoves before 1789, flowering in July and Auguſt. *Aiton.* This agrees with our ſecond and third ſpecies, in having ſeveral alternate *leaflets,* on a flat or channelled, bordered *common ſtalk;* but ſcarcely half ſo many on each ſtalk as in thoſe; and of a longer narrower form, not copiouſly crenate, but ſparingly and rather diſtantly toothed, more in the manner of *X. falcata.* The *ſtem* is only two feet high. The *flowers* are leſs copious than in the laſt-mentioned ſpecies, and, according to Dr. Swartz, there are ſome perfect, intermixed with the male and female ones. Their colour is red; the male ones paleſt. (Jacquin's figure expreſſes the contrary.) Plukenet's engraving, ſuch as it is, manifeſtly agrees with this ſpecies, and with no other. Linnæus, no doubt, confounded this, and, at one time, the *latifolia* alſo, with the *falcata.* Browne's ſynonyms are ſettled by his own ſpecies, though unmarked.

6. X. *linearis.* Linear Sea-ſide Laurel. (X. anguſtifolia β; Swartz Prodr. 28. Willd. n. 5. Phyllanthus linearis; Swartz Ind. Occ. 1113.)—"Leaves pinnate, linear, tapering, pliant, crenate; their common ſtalk bordered. Flowers ſeveral from each notch."—Native of ſhady ſtony banks of rivers, in the weſtern part of Jamaica. *Swartz.* The ſtem is ſcarcely a foot high, erect, with round branches. Common *footſtalks* four or five inches long, ſcattered, compreſſed, (rather depreſſed,) bordered. *Leaves* linear, rather broadeſt in the middle; tapering at the baſe; ending in a very long acute point, ſtriated, paler beneath, two inches long, of a thinner ſubſtance than the foregoing ſpecies, which circumſtance, added to its humbler ſtature, and different colour, has induced Dr. Swartz to conſider it as diſtinct. The *flowers* are white, monoecious, from three to ſix at each notch of the leaves, on capillary ſtalks, four lines in length.

7. X. *montana.* Mountain Sea-ſide Laurel. Swartz Prodr. 28. Willd. n. 6. (Phyllanthus montana; Swartz Ind. Occ. 1117.)—Leaves ſomewhat two-ranked, elliptic-lanceolate, coriaceous, deeply crenate. Flowers nearly ſeſſile, many from each notch. Branches round; two-edged at the extremity.—Found on lime-ſtone rocks, in the weſtern part of Jamaica. A *ſhrub,* ſix feet high, much and irregularly branched; the *branches* often forked, round, nearly erect, with annular ſcars; ultimate ones permanent, glaucous-aſhcoloured, compreſſed and two-edged at the ſummit. *Leaves* alternate, imperfectly two-ranked, nearly ſeſſile, either blunt or acute, obliquely ſtriated, rigid, browniſh-green, ſmooth, with deep many-flowered notches. *Flowers* monoecious; the males eight or ten, pale red; females ſolitary among the males, deep purple. Clearly diſtinguiſhable from all the ſpecies which it otherwiſe reſembles, by the permanency, and woody texture, of the ultimate branches. *Swartz.*

8. X. *ramiflora.* Siberian Sea-ſide Laurel. Ait. Hort. Kew. ed. 1. v. 1. 376. ed. 2. n. 4. Willd. n. 7. (Pharnaceum? ſuffruticoſum; Pallas It. v. 3. 716. t. E. f. 2.)—Leaves elliptical, ſtalked. Flowers axillary.—Native of the deſarts of Siberia, from whence it was procured for the Engliſh gardens, in 1783, by the late Mr. Bell. It is a hardy ſhrub, flowering in July and Auguſt. Pallas, who never ſaw the plant alive, merely gueſſed at its genus. By his figure, its habit is altogether that of a *Phyllanthus.* The *ſtem* is buſhy, with many ſtraight, wand-like, leafy branches, each a ſpan long. *Leaves* ſcattered, thin, hardly an inch in length, blunt, crenate, or ſomewhat wavy. *Flowers* ſix or eight together, making a little axillary tuft, accompanied by minute red *ſtipulas,* or *bracteas.* Segments of the *calyx* five, concave, white, with a coloured margin. *Anthers* five, thick, obtuſe, furrowed at the outſide. *Germen* in the ſame flower, as we preſume from Pallas's deſcription, very ſmall. *Styles* three, thread-ſhaped, ſimple, the length of the *ſtamens.* The genus of this ſpecies is, at beſt, very doubtful, as Willdenow has already remarked.

Phyllanthus and *Xylophylla* are ſo totally different in habit, and the latter is, in this reſpect, ſo very peculiar, that a clear character between them is much to be deſired. The true *Xylophyllæ* are all of Weſt Indian origin. The tropical *Phyllanthi* are natives of the Eaſt Indies; a few hardy ſpecies grow in North America.

Xylophylla, in *Gardening,* contains plants of the tender exotic kind for the ſtove, in which the ſpecies cultivated are, the long-leaved love flower (X. longifolia), the broad-leaved love flower (X. latifolia), and the falcated love flower (X. falcata).

The firſt is a branching angular plant, but the ſecond has round branches; and the laſt is woody in the ſtems and branches.

Method of Culture.—Theſe plants are increaſed by ſowing the ſeeds in pots in the early ſpring, and plunging them in a hot-bed: when the plants are come up two or three inches in growth, they ſhould be pricked out in ſeparate pots, replunging them in the bark-bed: they may afterwards be managed as other ſtove-plants of a ſimilar growth.

They are alſo, ſome of them, capable of being raiſed by off-ſets, ſlips, and cuttings, aſſiſted by a hot-bed in the ſame manner.

They require the conſtant protection of the ſtove in winter, but in the hot ſummer months may be ſet out in their pots in a ſheltered ſituation, being taken in on the approach of cold nights.

They afford variety, and are curious in ſtove collections among other plants of ſimilar growths.

XYLOPIA, in *Botany*, altered by Linnæus from *Xylopicrum* of Browne, a name which the latter took from Plukenet, whoſe *Xylopicron*, formed from ξυλον and πικρος, alludes to the bitterneſs of the wood. M. De Candolle, in following Linnæus, obſerves, that this abbreviation entirely deſtroys the ſenſe. It certainly does to thoſe who do not trace out the ſource of the word. If the original had been conſtructed in the moſt unexceptionable manner, we might have hazarded its reſtoration; but *Xylopia* is now too firmly eſtabliſhed to be lightly diſturbed, and in ſound nothing can be better.—Linn. Gen. 469. Schreb. 375. Willd. Sp. Pl. v. 2. 1270. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 3. 336. Juſſ. 284. De Cand. Syſt. v. 1. 499. Poiret in Lamarck Dict. v. 8. 810. Lamarck Illuſtr. t. 495. Gærtn. t. 69. (Xylopicron; Pluk. Almagr. 395. Xylopicrum; Browne Jam. 250.)—Claſs and order, *Polyandria Polygynia*. (Gynandria Polyandria, *Linn.*) Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juſſ. *Anonaceæ*, De Candolle.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in from three to five deep, broad, ovate, coriaceous, rather acute, permanent ſegments. *Cor.* Petals ſix, ſeſſile, linear-lanceolate, coriaceous, much longer than the calyx; the three outermoſt largeſt. *Stam.* Filaments none; anthers numerous, oblong, quadrangular, abrupt, parallel, crowded, ſeated on the tumid, nearly globoſe, receptacle, in ſeveral rows. *Piſt.* Germens ſeveral, on ſhort ſtalks, compreſſed; ſtyles tapering, crowded together; ſtigmas ſimple. *Peric.* Capſules ſeveral, ſtalked, coriaceous, compreſſed, bluntly angular, of one cell and two valves, burſting at the top. *Seeds* one or two, obovate, poliſhed, tunicated at the baſe.

Eſſ. Ch. Calyx lobed, coriaceous. Petals ſix; the three outermoſt largeſt. Capſules ſtalked, angular, compreſſed, of two valves. Seeds one or two, tunicated.

The plants compoſing this genus are trees or ſhrubs, with oblong or lanceolate (entire) *leaves*, and axillary, bracteated, ſimple or divided *flower-ſtalks*. The *wood* is bitter; *bark* and *fruit* aromatic. *De Candolle*, who deſcribes eight ſpecies, of which the firſt is ſtill the leaſt underſtood.

Linnæus, by a miſapprehenſion of the true character of his own claſs of Gynandria, (ſee that article,) has placed this genus far aſunder from *Anona*, *Uvaria*, &c., to which it is cloſely allied, both in natural and artificial diſtinctions. Few genera have hitherto been leſs underſtood.

1. X. *muricata*. Rough-fruited Bitter-wood. Linn. Sp. Pl. 1367. Willd. n. 1. De Cand. n. 1. Ait. n. 1. (X. fruteſcens; Gærtn. v. 1. 339. t. 69, excluding the ſynonym of Aublet. Xylopicrum n. 1; Browne Jam. 250. t. 5. f. 2.)—Leaves ovato-lanceolate, pointed; clothed with cloſe-preſſed hairs beneath. Branches zigzag, nearly ſmooth. Stalks with ſeveral flowers. Fruit muricated.—Found by Dr. Patrick Browne, at the foot of the mountains, in Sixteen-mile walk, Jamaica. His ſpecimen, drawn in the plate above-cited, is in our hands, but ſtripped of the leaves. This deficiency is ſupplied by another very large and perfect one, gathered in Jamaica, by Mr. Maſſon. The latter M. De Candolle unfortunately did not ſee, when the writer of this was favoured with too ſhort a viſit from this learned and amiable man. It is become neceſſary to correct ſome errors in the deſcription, whoſe ſource is unknown to us. The leaves are certainly not "bearded at the point," nor do we perceive in what ſenſe they are termed "ſtrigoſe beneath." Theſe are Willdenow's expreſſions, adopted by De Candolle. Sir Joſeph Banks ſent a living plant of this ſpecies to Kew garden, in 1793; but if it ſurvives, it has not yet flowered. This is a ſmall *tree*, fifteen or twenty feet high, with alternate, round *branches*, zigzag when young, quite ſmooth, except towards the very extremity, which is ſlightly ſilky. *Leaves* alternate, on ſhort thick ſtalks, ſpreading, rather ovate than lanceolate, with a blunt or emarginate, ſmooth point; their length two inches, or a little more; their margin entire, ſlightly revolute; their upper ſurface ſmooth and ſhining, reticulated with veins; under paler, more opaque, clothed with fine, ſcattered, cloſe, ſilky hairs, after a while deciduous: mid-rib ſtout, rough with minute tubercles at the back. *Flower-ſtalks* copious, axillary, ſolitary, ſhort, knotty, bearing from two to five *flowers*. *Calyx* three-lobed, ſcarcely downy. *Petals* half an inch long, denſely ſilky on both ſides; the three innermoſt very narrow, triangular-awlſhaped. *Capſules*, by Gærtner's account, which in the main agrees with that of Linnæus, nearly ovate, but angular and compreſſed, ſometimes as many as fifteen, coriaceous, covered with little points, of one cell and two valves, containing one or two oval *ſeeds*, each with a cup-like tunic at the bottom. Browne made no remarks on the bark or wood of this tree. We perceive little bitterneſs in either, though ſome aromatic flavour in the bark. This ſpecies being the type of its genus, we have thought a full deſcription requiſite.

2. X. *fruteſcens*. Shrubby Silky Bitter-wood. Aubl. Guian. 602. t. 242, excluding the ſynonyms of Linnæus and Browne. Willd. n. 2. De Cand. n. 2. "Dunal Monogr. 120." Lamarck t. 495, copied from Aublet, excluding the fruit, which is Gærtner's figure of the foregoing. Poiret n. 2. (X. ſetoſa; Poiret n. 4, according to De Candolle. Embira ſeu Pindaiba; Piſ. Braſ. 71. Ibira; Marcgr. Braſ. 99.)—Leaves lanceolate, pointed; glaucous and ſilky beneath. Branches ſilky. Stalks with few flowers. Capſules ſmooth.—Found by Marcgraf in Braſil, flowering in February; by Aublet in Cayenne and Guiana, bearing flowers and fruit in Auguſt. M. De Candolle has examined a ſpecimen, and we, having ſeen none, are obliged to rely on him and the other authors here cited for the ſpecific diſtinctions between this and the firſt ſpecies. The ſmoothneſs of the *fruit*, the ſilkineſs of the *branches*, and narrowneſs of the *leaves*, appear ſufficient to aſcertain the preſent plant. Marcgraf ſays the bark affords a tough kind of cordage. The *fruit*, equal in ſize to hazel-nuts, is aromatic and acrid, ſerving, when powdered, inſtead of pepper.

3. X. *ſalicifolia*. Willow-leaved Bitter-wood. "Humb. and Bonpl. unpubliſhed. Dunal Monogr. 121. t. 17." De Cand. n. 3.—"Leaves oblong, with a bluntiſh point; ſilky beneath. Stalks ſhort, ſingle-flowered? with ſmall bracteas."—Found by the celebrated travellers baron Humboldt and M. Bonpland, near Eſpinal, in South America. A *tree* with blackiſh *branches*, marked with white dots. *Leaves* narrow, an inch and a half or two inches long, three or four lines broad, on ſhort ſtalks, ſingle-ribbed, without veins; ſmooth and green above; villous beneath, with cloſe-preſſed, ſilky hairs, of a rufous grey. *Capſules* from five to ſeven, gibbous, ſlightly pointed, not burſting. *Seeds* one or two. *De Cand.*

4. X. *liguſtrifolia*. Privet-leaved Bitter-wood. "Dunal Monogr. 121. t. 18." De Cand. n. 4.—"Leaves oblong, rather acute, ſmooth on both ſides. Stalks ſhort, with few flowers, and ſmall bracteas."—Gathered by Humboldt and Bonpland, at Buga, in South America. The *branches* are round, blackiſh, rugged, rough with whitiſh points. *Leaves* an inch and a half long, four lines broad, on very ſhort ſtalks, ſingle-ribbed, veinleſs; ſomewhat ſhining above; paler beneath; the young ones ſilky at the under ſide. *Stalks* axillary, with three or four flowers, and roundiſh con-

cave *bracteas*. *Calyx* ſmall, three-cleft. Three outer *petals* longeſt, ſpreading at the points. *Capſules* corrugated, not burſting. *Seeds* one or two. *Dunal. De Cand.*

5. X. *glabra*. Smooth Bitter-wood. Linn. Sp. Pl. 1367. Willd. n. 3. De Cand. n. 4. "Dunal Monogr. 121. t. 19." Lunan Hort. Jam. 97. (Xylopicrum n. 2; Browne Jam. 251. Xylopicron arbor, barbadenſibus *Bitter-wood;* Pluk. Phyt. t. 238. f. 4.)—Leaves ovate-oblong, pointed, quite ſmooth on both ſides. Stalks ſingle-flowered, ſolitary or in pairs. Fruit ſmooth.—Brought from Barbadoes by Mr. James Reede, who was ſent to the Weſt Indies by the earl of Portland, to procure plants for the royal garden at Hampton-Court. *Plukenet*. This ſpecies, therefore, may have been alive in England. Dr. Patrick Browne met with it in the mountains, at the back of Bull-bay, in Jamaica, where it grew to a conſiderable ſize, being fifty or ſixty feet high. He never ſaw the flowers in perfection. "The wood, bark, and berries," ſays this author, "have an agreeable bitter taſte, not unlike that of the orange-ſeed; and would probably prove excellent medicines. Wild pigeons feed much upon the berries, and owe their delicate bitteriſh flavour to this food. I have eaten many of the berries juſt off the tree, and found them agreeable to the palate, and grateful to the ſtomach. The bark and wood are agreeably bitter while freſh, but that delicacy diminiſhes greatly after they are dried. The wood is eaſily wrought, and good timber, but muſt not be expoſed to the weather." *Browne*. Mr. Lunan, in his *Hortus Jamaicenſis*, adds nothing to this account, but carefully diſtinguiſhes this Bitter-wood from Quassia, (ſee that article,) with which ſome perſons have confounded it. M. De Candolle obſerves, that the *branches* of *X. glabra* are round, ſmooth, ſcarcely dotted; and that even the young *leaves* are ſmooth on both ſides: the full-grown ones are two inches long, and one broad, obtuſe with a point. *Calyx* ſmooth, with three very obtuſe lobes. Unexpanded *petals* oblong, clothed externally with cloſe-preſſed pubeſcence, their length four lines. Plukenet repreſents the *flower-ſtalks* ſolitary, oppoſite to each leaf.

6. X. *nitida*. Shining-leaved Bitter-wood. "Dunal Monogr. 122. t. 20." De Cand. n. 6.—"Leaves oblong-lanceolate, ſmooth; poliſhed on the upper ſide. Stalks branched, many-flowered. Calyx nearly entire."—Found by Joſeph Martin, on the Oyac mountains of Cayenne, ſloping down to the ſea. A *tree* of a middling ſize, with ſtraight, round, rugged, not hairy or downy, *branches*. *Leaves* ſomewhat elliptical, two or three inches long, and nine or ten lines broad; green, ſmooth, and very ſhining above; veiny, pale, and rather ſilky, with minute cloſe hairs beneath; the margin a little revolute. *Cluſters* ſmall, corymboſe, of four or five *flowers*, whoſe ſtalks are embraced by little roundiſh *bracteas*. *Calyx* coriaceous, brown, pitcher-ſhaped, ſcarcely divided. Bud of the *petals* oblong, triangular, acute. *Fruit* unknown. *De Cand.*

7. X. *acuminata*. Long-pointed Bitter-wood. "Dunal Monogr. 122. t. 16." De Cand. n. 7.—"Leaves oblong-elliptical, very long-pointed, perfectly ſmooth. Capſules on long ſtalks, ſingle-valved, with two ſeeds."—Native of Cayenne. *Branches* round, rugged, ſmooth. *Leaves* on very ſhort footſtalks, four to ſix inches long, two inches wide, remarkably pointed, revolute, rather coriaceous; a little ſhining above. *Flowers* unknown. *Capſules* ovate, nine or ten lines in length, pointed, each tapering down into a long ſtalk, imperfectly bivalve, ſmooth and even. *Seeds* obovate, black, fœtid, convex at the outſide, flat at the inner. *De Cand.*

8. X. *prinoides*. Winter-berry Bitter-wood. "Dunal Monogr. 122. t. 15." De Cand. n. 8.—"Leaves oblong-lanceolate, ſmooth, membranous, pointed; bluntiſh at the extremity. Flowers ſolitary. Capſules with two valves." —Native of Cayenne. *Branches* wand-like, ſlightly rugged. *Leaves* on ſhort ſtalks, ſmooth on both ſides, three or four inches, (the author, by miſtake as we preſume, ſays three or four lines,) in length, and from twelve to fifteen lines broad; ſhining above; rather glaucous beneath. *Stalks* ſingle-flowered, axillary, very ſhort, each bearing an extremely minute *bractea*. *Calyx* deeply three-cleft. *Petals* ovate, acute, ſcarcely two lines long, being the ſmalleſt of this genus, or perhaps natural order. *Capſules* ſtalked, imperfectly bivalve. *Seeds* two, flat at the inner ſide, convex at the outer. *De Candolle.*

XYLOPICRUM. See Xylopia *ſupra*.

XYLOPOLIS, in *Ancient Geography*, a town of Macedonia, in Mygdonia. Ptolemy.

XYLOSMA, in *Botany*, from ξυλον, *wood*, and οσμη, *a ſmell*, a name given by Dr. George Forſter to the *Myroxylon* of his father; the latter appellation having been appropriated by Linnæus to a different genus. (See Myroxylon.)—Forſt. Prodr. 72. Schreb. Gen. 703. Willd. Sp. Pl. v. 4. 834. Mart. Mill. Dict. v. 4. Poiret in Lamarck Dict. v. 8. 817. Lamarck Illuſtr. t. 827. (Myroxylon; Forſt. Gen. t. 63. Juſſ. 444. Lamarck Dict. v. 4. 192.)—Claſs and order, *Dioecia Polyandria*. Nat. Ord. *uncertain*. Juſſ.

Gen. Ch. Male, *Cal.* Perianth in four or five deep, roundiſh, minute, ſpreading ſegments. *Cor.* Petals none. Nectary minute, annular, finely crenate, ſurrounding the ſtamens. *Stam.* Filaments numerous (20—50), capillary, twice the length of the calyx; anthers roundiſh, ſmall.

Female, on a diſtinct tree, *Cal.* as in the male. *Cor.* Petals none. Nectary as in the male, ſurrounding the germen. *Piſt.* Germen ſuperior, roundiſh-ovate; ſtyle very ſhort, cylindrical; ſtigma obtuſe, flat, obſcurely three-cleft. *Peric.* Berry? dry, oblong, imperfectly divided into two cells by a partition from the bottom. *Seeds* two in each, triangular, convex at the back, flat at the ſides.

Eſſ. Ch. Male, Calyx in four or five deep ſegments. Petals none. Nectary annular, crenate. Stamens from twenty to fifty.

Female, Calyx and Nectary as in the male. Style very ſhort. Stigma ſlightly three-cleft. Berry dry, of two incomplete cells. Seeds two to each cell.

1. X. *ſuaveolens*. Serrated Sweet-wood. Forſt. Prodr. n. 380. Willd. n. 1. (Myroxylon ſuaveolens; Forſt. Gen. 63. n. 1.)—Leaves ovate, ſerrated.—Native of the Society iſlands of the South ſeas. The inhabitants employ this wood, to give a fragrant ſcent to cocoa-nut oil, for anointing their hair. We know not whether this be the precious Red Sanders Wood of the South ſea iſlands, for a ſpecimen of which we are indebted to ſir Joſeph Banks, whoſe ſcent reſembles that of the Eaſt Indian wood of the ſame name. The tree which produced it was, as long as poſſible, kept from the knowledge of our European voyagers.

2. X. *orbiculatum*. Entire-leaved Sweet-wood. Forſt. Prodr. n. 381. Willd. n. 2. (Myroxylon orbiculatum; Forſt. Gen. 63. n. 2.)—Leaves roundiſh, entire.—Native of Savage iſland. We have never ſeen a ſpecimen of either ſpecies.

XYLOSTEON, a name by which ſome authors have called the ſmall red-berried double-fruited *chameceraſus*.

XYLOSTEUM, Dod. Pempt. 411. Tourn. 609. t. 379. Juſſ. 212. Purſh 161. (Chamæceraſus; Tourn. ibid.), a word formed of ξυλον, *wood*, and οςεον, *bone*, being ſynonymous with a Swiſs name for the ſame ſhrubs, which alludes to the hardneſs of their wood, and perhaps to its tubular form, filled with pith, as a bone is with marrow. The authors who retain this genus ſplit the LONICERA of Linnæus, (ſee that article,) into ſeveral, without neceſſity or utility, offering, in our opinion at leaſt, great violence to nature.

XYLOSTROMA, ſo called from ξυλον, *wood*, and ϛρωμα, *a ſtratum*, or *layer*, becauſe this fungus forms indeterminate expanſions, like cloth or leather, in the inſide of the trunks or branches of trces.—Tode Fung. Mecklenb. v. 1. 36.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi angiocarpi?*

Eſſ. Ch. Expanded, coriaceous, two-ſided, ſhapeleſs, concealed; ſurface ſmooth and even. Seminal globules very minute, attached to internal fibres.

1. X. *giganteum.* Oak Leather. Tode as above, t. 6. f. 51. Sowerb. Fung. t. 358. (Racodium Xyloſtroma; Perſ. Syn. Fung. 702. Fungus coriaceus quercinus hæmatodes; Raii Syn. 25. "F. ampliſſimus; Scop. Pl. Subterr. 116. t. 44." Byſſus candida β; Lightf. Scot. 1004.)—This ſingular production is found in the centre of the trunks of growing oaks, ſpreading in the form of a piece of cloth or leather, with numerous ramifications, through ſome of the largeſt trees. But whether it is, like the *Boletus lachrymans*, or Dry Rot, in wrought timber, the cauſe of their decay, or its conſequence, we have not ſufficient information to decide. Tode's obſervations countenance the former opinion. He ſays the wood of the trees, occupied by this fungus, becomes rotten and perfectly dry. Its ſmooth ſurfaces are owing to the ſmoothneſs of the fiſſures, through which it ſpreads in a tender ſtate, and its branching indeterminate figure ariſes from the irregularity and ſubdiviſion of thoſe fiſſures. The inſide is ſpongy, or partly hollow, occupied with branching fibres, bearing numerous little ovate *capſules*, or *receptacles*, whoſe apex appeared to Mr. Sowerby to have an opaque lid. The whole fungus is very durable, remaining unchanged for many years. Its hue is generally an uniform buff or pale tan colour; but Perſoon notices a whitiſh variety, more compact than the uſual kind; and a ſaffron-coloured one, found by Schrader. We cannot well reduce the *Xyloſtroma* to any other genus of this natural order. The *Racodium*, Perſ. Syn. 701, defined as "expanded and ſoft, reſembling cloth in its denſely interwoven fibres," ſeems to us but a vague aſſemblage; the firſt ſpecies being *Byſſus nigra*, which ſome make a *Lichen*, others a *Conferva;* the ſecond a *Mucor.*

XYLOSTROTON, formed of ξυλον, *wood*, and ϛρωτος, *laid*, among the *Ancients*, an appellation given to Moſaic or chequered work.

XYLUS, in *Ancient Geography*, a town of Aſia Minor, in Caria. Steph. Byz.

XYMETHUS, a town of Africa, in the interior of Cyrenaica. Ptol.

XYMPATHESIS, a word uſed by ſome of the old medical writers for ſympathy.

XYNERESIS, formed of ξυν, or συν, *together*, and αιρεω, *I ſeize*, a word uſed by Hippocrates, and others of the ancients, to expreſs a firm coheſion or connection of any two things. Some uſe it to expreſs that firm ſhutting together, or clenching of the teeth, which happens in convulſions.

XYNIA, in *Ancient Geography*, a borough of Theſſaly, on the confines of Perrhœbia, near a lake of the ſame name. Livy.

XYNOECIA, formed of ξυν, or συν, *with*, and οικεω, *I inhabit*, a feaſt among the ancient Athenians, inſtituted on occaſion of Theſeus's uniting all the petty communities of Attica into one commonwealth; the aſſemblies of which were to be held at Athens, in the Prytaneum.

XYPHOID, in *Anatomy*, a name given to the cartilage, which forms the inferior extremity of the ſternum. See the deſcription of the *ſternum*, in the article LUNGS.

XYRIS, in *Botany*, an ancient name, of unknown derivation, ξυρις, or rather ξειρις of the Greeks, ſuppoſed to belong to our *Iris fœditiſſima*, transferred by Gronovius to the preſent genus, as one of nearly ſimilar habit and characters. They are not, however, of the ſame natural order.—Linn. Gen. 29. Schreb. 39. Willd. Sp. Pl. v. 1. 254. Vahl Enum. v. 2. 204. Mart. Mill. Dict. v. 4. Brown Prodr. Nov. Holl. v. 1. 255. Purſh 33. Juſſ. 44. Kunth Nov. Gen. et Sp. v. 1. 255. Poiret in Lamarck Dict. v. 8. 818. Lamarck Illuſtr. t. 36. Gærtn. t. 15.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Enſatæ*, Linn. (rather *Tripetaloideæ.*) *Junci*, Juſſ. *Reſtiaceæ*, Brown, Kunth.

Gen. Ch. (corrected from Brown and Gærtner), *Cal.* Perianth inferior, of three concave chaffy leaves; the outermoſt hooded, deciduous; the two lateral ones keeled, compreſſed, curved, acute, converging, permanent. *Cor.* Petals three, large, ſpreading, flat, crenate; with narrow claws, as long as the calyx. Nectaries three, feathery, alternate with the petals; ſuſpected by Brown and Kunth to be barren ſtamens. *Stam.* Filaments three, inſerted into the claws of the petals, much ſhorter than the limb, thread-ſhaped, erect; anthers oblong, incumbent. *Piſt.* Germen ſuperior, obovate, three-lobed; ſtyle one, thread-ſhaped, rather longer than the claws of the petals, three-cleft at the ſummit; ſtigmas obtuſe, entire, or jagged. *Peric.* Capſule roundiſh, of one cell and three valves, with three more or leſs prominent receptacles, running down the middle of each valve. *Seeds* numerous, minute, roundiſh or elliptical, acute.

Eſſ. Ch. Calyx of three unequal leaves; the two lateral ones permanent. Petals three, equal. Nectaries three, feathery. Capſule ſuperior, of three valves, with central receptacles. Seeds numerous.

A genus of perennial herbs, with fibrous *roots*. *Leaves* radical, numerous, ſword-ſhaped, or thread-ſhaped; dilated, equitant, and membranous at the baſe. *Flower-ſtalk* perfectly ſimple, wrapped in a ſheath at the bottom. *Head* terminal, ſolitary, its ſcales membranous, ſingle-flowered, cloſely imbricated; the outer ones ſometimes empty, and unlike the reſt. *Anthers* poſterior. *Brown. Flowers* almoſt invariably yellow.

Linnæus was acquainted with but one ſpecies, *X. indica.* Several others have been determined by various authors, inſomuch that Willdenow defines four, and Vahl ten in all. Mr. Brown has fifteen from New Holland alone, and there is a new one from South America. The author juſt mentioned divides this genus into two ſections. Thoſe ſpecies which belong to the firſt ſection have a capſule of one cell, whoſe receptacles are ſeparate at the baſe; of theſe there are thirteen found in New Holland. The ſecond ſection is characterized by a capſule incompletely divided into three cells, the receptacles being combined in their lower part. Of this there are two New Holland ſpecies. It is utterly impoſſible for us to follow this arrangement, few people having ſeen half the ſpecies in any ſtate, much leſs their ripe capſules. We are poſſeſſed of ten, which appear to be diſtinct, and which can be referred, with tolerable certainty in general, to as many deſcribed ſpecies. For the remainder we ſhall cite our authorities.

1. X. *indica.* Eaſt Indian Xyris. Linn. Sp. Pl. 62, excluding the ſynonyms of Gronovius, Moriſon, and Piſo.

Linn. Zeyl. 14. Willd. n. 1. Vahl n. 1. (Gladiolus indicus, flore tripetalo; Rudb. Elyſ. v. 2. 17. f. 8. Gladiolo lacuſtri accedens malabarica, e capitulo botryoide florifera; Pluk. Almag. 170. t. 416. f. 4. Kotsjiletti-pullu; Rheede Hort. Malab. v. 9. t. 71. Ranmotha; Herm. Zeyl. 41.)—Stalk furrowed, with many angles. Head ovate.—Native of the Eaſt Indies, and perhaps of Sierra Leone. The *leaves* are deſcribed by Vahl as ſometimes a foot long, equalling the flower-ſtalks, lax, acute, almoſt the breadth of the nail; but he never ſaw any ſo broad as in Rheede's figure. The *flower-ſtalks* are ſeveral, rather more ſlender than a pigeon's quill, furniſhed with ſix or eight furrows, and twiſted in the lower part. *Head* rather ſmaller than a Hazel-nut, with roundiſh ſcales. Our ſpecimens, gathered by the late Mr. Smeathman at Sierra Leone, have no *leaves*, but the *ſtalk* and *head* anſwer exactly to the above deſcription. The *ſcales* are from twenty-five to thirty in each head, rounded, or nearly orbicular, convex, cloſely imbricated, obtuſe, brown, but little poliſhed, divided lengthwiſe into three nearly equal ſpaces, or regions, (as is the caſe in moſt of the ſpecies that we have ſeen); the middle region here is ſlightly hoary or downy, the ſide-ones ſmooth. The *flowers* are paſt. The *head* in theſe ſpecimens is nearly globoſe; not oblong, as in Gærtner's figure, marked *X. indica.* A few of the loweſt ſcales are flatter and rather ſmaller than the reſt, apparently always barren, or unaccompanied by flowers. Whatever Mr. Purſh's *X. indica* may be, it cannot belong to this ſpecies. He deſcribes the *leaves* very long and graſſy, twiſted as well as the *ſtalks*.

2. X. *pubeſcens*. Downy-ſheathed Xyris. Poiret n. 2.—"Stalk ſtriated, almoſt cylindrical, enveloped in a downy ſheath. Leaves greatly elongated."—Received by profeſſor Desfontaines, from the Weſt Indies. Nearly related to *X. indica*, but differing in ſeveral characters peculiar to itſelf. The *roots* are long, as thick as the finger, with ſoft, rather fleſhy, nearly ſimple, fibres, as thick as a raven's quill; and producing from the crown a great number of ſoft, flaccid, alternate, ſomewhat imbricated, very ſmooth *leaves*, a foot or foot and a half long, half an inch wide, entire, pointed; dilated at the baſe. *Stalks* ſtraight, rather ſlender, twiſted at the lower part, where they are each embraced by a cylindrical, ſtriated, downy *ſheath*, three or four inches long, terminating in a little ſhort acute leaf. *Head* of *flowers* oval, obtuſe, the ſize of a large pea, formed of numerous, imbricated, very cloſe, unequal, whitiſh ſcales; the outer ones a little dilated, oval, nearly flat, ſcarcely pointed; the inner narrower, obtuſe, rather concave. *Poiret.* See our *X. anceps*, which has alſo a very long leafy-pointed *ſheath*, but it is quite ſmooth.

3. X. *macrocephala*. Great-headed Xyris. Vahl n. 2.—"Stalk with one acute angle. Head and ſcales ovate; the latter grey at the back."—Native of Cayenne. Deſcribed from the herbarium of profeſſor Desfontaines. The *leaves* are eighteen inches long; as broad as the nail, or broader. *Stalks* taller than the foliage; round in the lower part; ſomewhat two-edged further up, with one convex and one acute ſide. *Head* when in fruit twice as big as a Hazel-nut, ovate, with obtuſe *ſcales*. This differs from the reſt in the breadth of its *leaves*, and the ſize of the *head*. *Vahl.*

4. X. *platycaulis*. Broad-ſtalked Xyris. Poiret n. 4.—Stalk compreſſed, dilated, ſtriated, ſmooth; twiſted below; with a lax, cloven, abrupt ſheath at the baſe. Heads globoſe, abrupt at the ſummit.—Gathered by Commerſon in Madagaſcar. *Leaves* wanting in the ſpecimens. *Stalks* a foot high; two or three lines broad. *Sheath* at leaſt three inches long, ſmooth, ſtriated, rather lax, cloven lengthwiſe, obliquely truncated at the ſummit. *Head* hardly ſo big as a pea, flattiſh at the top, with broad, obtuſe, concave, ſhining, cheſnut-coloured ſcales, the outer ones keeled towards their point. *Poiret.* We have enlarged the author's ſpecific character from his own deſcription, in order the better to contraſt this ſpecies with the two following, with which it appears to agree in the flatneſs of the *ſtalk*.

5. X. *anceps*. Small-headed Two-edged Xyris. Lamarck Illuſtr. v. 1. 132. Vahl n. 3.—"Stalk two-edged, ſmooth. Head nearly globoſe."—Native of Madagaſcar, and Malabar; perhaps alſo of Guiana. *Leaves* rather rigid, narrow, but one-third or one-fourth the height of the *ſtalks*, which are ſeveral, a foot or more in height, twiſted, ſmooth, by no means ſtriated. *Head* ſcarcely ſo large as a pea, with roundiſh, convex, hardly emarginate, ſcales. *Petals* yellow, finely toothed. *Vahl.* A Guiana ſpecimen, communicated by Mr. Rudge, remarkable for the ſmallneſs of its *head* in proportion to the herbage, anſwers preciſely in every point to Vahl's deſcription. Aquatic, or marſh-plants, ſuch as the ſpecies of this genus, are known to grow, more than any others, in widely diſtant and diſſimilar parts of the world. We have ſuſpected this Guiana ſpecimen might be Poiret's *X. pubeſcens* n. 2; but the ſheath at the baſe of the ſtalk is not pubeſcent.

6. X. *complanata*. Flat-ſtalked Xyris. Brown n. 1.—"Stalk compreſſed flat, dilated, nearly ſtraight; cartilaginous and rough at the edges, four times as long as the ſword-ſhaped, ſtraight, bordered, roughiſh leaves. Spike oblong or cylindrical. Scales orbicular, tumid."—Gathered by Mr. Brown, in the tropical part of New Holland. The *ſtalk* is a line and a half broad. We have ſeen no ſpecimen.

7. X. *ſcabra*. Rough Xyris. Br. n. 2.—"Stalk two-edged, twiſted, with rather acute and rough angles. Leaves linear, roughiſh. Head ovate or oblong."—From the ſame country. The *ſtalk* is hardly a line in breadth. *Brown.*

8. X. *lævis*. Smooth Xyris. Br. n. 3.—"Stalk two-edged, ſmooth, as well as the narrow linear leaves. Head nearly ovate. Scales imbricated every way. Keels of the calyx-leaves fringed."—Gathered by Mr. Brown near Port Jackſon, as well as in the tropical part of New Holland. The *ſtalks* are from fifteen to eighteen inches high.

9. X. *americana*. Blue American Xyris. Aubl. Guian. 40. t. 14, very bad. Vahl n. 4. Symb. v. 3. 8. Willd. n. 3. Poiret n. 6. (Jupicai; Piſ. Braſ. 238.)—Stalk two-edged in the upper part. Head ovate-oblong. Scales poliſhed, emarginate, with a ſmall callous intermediate point.—Native of moiſt paſtures in Braſil, flowering in the rainy ſeaſon, according to Piſo, whoſe ſynonym was verified by Vahl, from an inſpection of Marcgraav's herbarium. Aublet found the ſame in wet meadows near the river Macouria, in Guiana, flowering in December; but his figure is made up, as Vahl obſerves, with the leaves of an *Eriocaulon;* the ſcales of the *head*, and the *flowers*, being moreover very ill drawn. We have never met with a ſpecimen anſwering to this ſpecies. Vahl ſays the *leaves* are graſſy, narrow, and acute, half the length of the *ſtalk*, which is a foot or more in height; round in the lower part, with two prominent lines running down it; compreſſed in the upper part, and a little dilated under the *head*. The latter is obtuſe, rather bigger than a pea. *Scales* oblong, concave, cloven at the point, with a browniſh, rather callous point in the notch. *Vahl.* The *corolla* is ſaid to be blue, of which we know no other inſtance in this genus.

10. X. *caroliniana*. Carolina Xyris. Walt. Carol. 69. Vahl n. 5. Poiret n. 7. Purſh n. 2. (X. Jupicai; Michaux Boreal.-Amer. v. 1. 23, according to Vahl.)——"Stalk two-edged. Head ovate, acute."—Native of

Carolina. *Vahl.* Found in low graſſy fields, on a ſandy ſoil, from New Jerſey to Florida. Perennial, flowering from June to Auguſt. *Heads* ſmall. *Flowers* yellow. It is extremely variable. *Purſh.* Vahl thought this ſpecies diſtinct from the laſt, in having more rigid *leaves*, and larger *heads*, which are acute, inſtead of being remarkably obtuſe. The *flowers* moreover are yellow, not blue. The *leaves* vary in length. The heads in Lamarck's ſpecimens are longer than thoſe of Richard's. *Vahl.* We have not ſeen this ſpecies, but it ſeems that more than one may poſſibly here be confounded.

11. X. *torta.* Twiſted-leaved Xyris. (X. indica; Purſh n. 1, excluding the ſynonyms.)—Leaves linear, ſpirally twiſted, as well as the ſtalk, which is two-edged below, quadrangular at the upper part. Head globoſe. Scales poliſhed, rounded, ſomewhat emarginate, pointleſs, with a ſmall ſilky diſk.—Gathered in North America by Kalm. Linnæus confounded his ſpecimens with *X. indica*, which he knew but imperfectly. They appear, however, to anſwer exactly to the *indica* of Purſh, who very properly gives an original ſpecific character, inſtead of copying what did not agree with the plant before him. He found it in overflowed meadows, and ſmall ponds, from Pennſylvania to Virginia; perennial, bearing yellow *flowers* in June and July. He calls the *leaves* "*longiſſime graminea.*" In our ſpecimens they are from one to ten inches long, a line broad, acute, many-ribbed, roughiſh at the edges, perfectly graſſy; the outermoſt degenerating into broad, ſhort, cheſnut-coloured, pointed, imbricated ſcales. *Stalks* ſolitary, about two feet high; nearly round, though two-edged and ſtriated, at the bottom, as well as very much twiſted, even more than the leaves; the upper part is leſs ſo, more evidently two-edged; and towards the top there are four, not always equal, angles. *Head* the ſize of a large white currant, obtuſe, of a ſhining cheſnut-colour. *Scales* almoſt orbicular, convex; dilated and thin at the edges; marked at the back, juſt below the notch, with a pale, greeniſh, ſilky ſpot. Two or three of the lowermoſt of all are ſmaller, flatter, a little keeled.

12. X. *puſilla.* Dwarf Broad-leaved Xyris. Brown n. 4.—Stalk two-edged, ſmooth, like the ſhort, ſword-ſhaped, two-ranked, equitant leaves. Head orbicular, compreſſed, of a few ſhining, ſomewhat keeled and pointed, ſcales.—Gathered by Mr. Brown, in the tropical part of New Holland. Our ſpecimens, in the herbarium of the younger Linnæus, were probably given to him when in England, by ſir Joſeph Banks and Dr. Solander. The *ſtalks* are from two to ſix inches high, pale green, a little zigzag and twiſted, ſomewhat quadrangular; ſheathed at the baſe with one or two *leaves*, which, like thoſe that grow from the root, are about an inch long, and two or three lines broad, ſlightly incurved at the point, of a pale rather ſhining green, with ſeveral ribs, and a finely dotted, or reticulated, ſurface in the dry ſtate. *Head* the ſize of a pea. *Scales* orbicular, convex, of a ſhining cheſnut-brown, pale at the edges: the two lowermoſt equal, without *flowers*, in an early ſtate covering the whole head, and furniſhed with a ſtrong, green, pointed keel.

13. X. *denticulata.* Tooth-leaved Xyris. Br. n. 5.—Stalk roundiſh, ſmooth. Leaves ſhort, linear-awlſhaped; rough with minute marginal teeth. Head globoſe. Scales orbicular, ſhining, keeled at the ſummit.—Gathered in the tropical part of New Holland, by ſir Joſeph Banks and Dr. Solander, who gave ſpecimens to the younger Linnæus. This is about the ſize of the laſt, or rather taller. The *root* conſiſts of very ſmall fibres. *Leaves* from one to two inches long, not a line broad, their fine reticulations ſeeming to form the little teeth, at the margin and keel. *Stalk* ſlender, ſtriated or angular towards the top. *Head* twice the ſize of the laſt, of more numerous, bright-cheſnut *ſcales*, with thin, pale, often jagged margins, and a little green ſhort keel, or point, not extending beyond the ſcale. The two lowermoſt *ſcales* are barren, as in the preceding, and in a young ſtate encloſe the whole head.

14. X. *paludoſa.* Bog Xyris. Brown n. 6.—"Stalk roundiſh, ſmooth; angular at the top. Leaves ſomewhat tubular; that of the ſtalk longer than the ſheath. Head nearly globular. Scales orbicular, ſhining, imbricated every way."—Found in the tropical part of New Holland, by ſir Joſeph Banks and Dr. Solander. We have ſeen no ſpecimen, nor did Mr. Brown himſelf meet with this or the laſt ſpecies, any more than with the *pauciflora* hereafter deſcribed.

15. X. *capenſis.* Cape Xyris. Thunb. Prodr. 12. Fl. Cap. v. 1. 310. Willd. n. 4. Vahl n. 6.—Stalk ſolitary, thread-ſhaped, ſtriated. Leaves linear, very ſhort. Head ovate, acute. Scales ovate, obtuſe, ſmooth.—Native of hills near Verkeerde valley, at the Cape of Good Hope, flowering in December. *Stalk* a foot high, or more, ſlender, ſmooth, very finely ſtriated. *Leaves* few, radical, ſmooth, many times ſhorter than the ſtalk. *Flowers* yellow. *Stigmas* three, tumid, revolute, whitiſh. *Thunberg.*

16. X. *brevifolia.* Short-leaved American Xyris. Michaux Boreal.-Amer. v. 1. 23. Vahl n. 7. Purſh n. 3.—"Stalk thread-ſhaped. Leaves awl-ſhaped, compreſſed. Head globoſe. Scales oblong; the outermoſt narroweſt, keeled."—Native of low boggy meadows, in Lower Carolina and Georgia; perennial, flowering in July. The ſmalleſt American ſpecies. *Flowers* yellow. *Purſh.* *Leaves* narrow, an inch and a half long. *Stalk* a ſpan high, round and ſlender. *Head* the ſize of a black pepper-corn. *Scales* broadiſh-oblong. *Vahl.*

17. X. *pauciflora.* Few-flowered Xyris. Willd. n. 2. Phytogr. 2. t. 1. f. 1. Vahl n. 8. Br. n. 7.—Stalk quadrangular. Leaves linear; rough with minute marginal teeth. Head nearly globular. Scales ſhining, orbicular; ſpreading at the point, with a ſhort triangular keel.—Gathered by Koenig and Rottler in the Eaſt Indies; and by ſir Joſeph Banks, in the tropical part of New Holland. The *root* is a ſmall denſe tuft of pale fibres. *Stalk* from one to ſix or eight inches high, erect, ſtraight, ſlender, ſtriated, roughiſh. *Leaves* ſeveral, erect, ſometimes nearly as tall as the ſtalk, graſſy, very narrow, taper-pointed, ſtriated, roughiſh, eſpecially at the edges, where they are minutely toothed, or crenate, as in *X. denticulata*, n. 13. *Head* the ſize of a large pea. *Scales* cheſnut-coloured, with a membranous, dilated, ſhining margin of a golden yellow, and each tipped with a green, triangular, projecting keel, or point, originating from the brown diſk, but not extending beyond the membranous margin, with which it is incorporated. The prominence of this point, giving the head a ſquarroſe aſpect, is well expreſſed in Willdenow's, otherwiſe miſerable, figure. The two lowermoſt *ſcales* are barren, and cloſely preſſed to the next. *Corolla* yellow.

18. X. *bracteata.* Bracteated Xyris. Br. n. 8.—Stalk triangular. Leaves linear; their margins, and baſe of the keel, rough. Head roundiſh. Scales with a hoary diſk, and brown membranous margin; the lower ones oblong, empty, with a linear diſk.—Sent from Port Jackſon, New South Wales, by Dr. White, in 1792. Mr. Brown found it in the ſame country, and we borrow from him the above characters of the *leaves*, wanting in our ſpecimens. The *ſtalk* is a foot and a half high, ſlender and ruſhy, bluntly triangular, even, ſmooth to the touch, though Mr. Brown remarks that its moſt acute angle is roughiſh. *Head* rather

ovate than perfectly globoſe, one-third of an inch in length. *Scales* elliptical, abrupt, or partly emarginate; their diſk elliptic-oblong, convex, not keeled, of a hoary or glaucous hue, finely dotted, not downy; their margin, at each ſide, about half as broad, membranous, of a ſhining brown, paler outwards. Three, four, or more, *ſcales*, at the bottom of each head, are deſtitute of flowers, ſhorter, much narrower, abrupt, oblong, not elliptical, with a peculiarly narrow diſk, and have the appearance of *bracteas*. *Corolla* rather large, yellow, turning white in decay.

19. X. *juncea*. Ruſhy Xyris. Brown n. 9.—"Stalk roundiſh, ſlightly compreſſed, rather zigzag, ſmooth as well as the awl-ſhaped leaves. Head globoſe. Scales ovate, undivided, imbricated every way; their diſk of the ſame colour as the margin. Stigmas many-cleft."—Gathered by Mr. Brown, in the neighbourhood of Port Jackſon, New South Wales. The *ſtalk* is only eight or ten inches high. We have no ſpecimens anſwering to the above characters.

20. X. *gracilis*. Slender Xyris. Brown n. 10?—Stalk thread-ſhaped, ſmooth, ſcarcely twiſted. Leaves linear, ſtraight, rough-edged. Head oval, of few flowers. Scales imbricated every way; their diſk hoary; margin blackiſh. Stigmas undivided.—Sent from Port Jackſon, in 1792, by Dr. White. Mr. Brown mentions only the ſouth part of New Holland, and Van Diemen's iſland, as the native country of this ſpecies, and yet we cannot refer our ſpecimens to any other mentioned by him. Our plant is about half the ſize of *X. bracteata*, with fewer and paler *flowers*. *Head* ſmall, elliptical, or obovate. *Scales* with a broad, hoary, or glaucous, diſk, like that of the *bracteata;* but their membranous margin is of a darker brown, and, at the upper part of each ſcale, quite black, as if burnt. Several of the lowermoſt ſcales are ſmaller, linear-oblong, and of a more uniform brown. The *ſtigmas* are long, and undivided. *Stalk* ſomewhat compreſſed, ſeldom above a foot high; Mr. Brown ſays a foot and half.

21. X. *filiformis*. Thread-ſhaped Xyris. Lamarck Illuſtr. 132. Vahl n. 9. Poiret n. 9.—Stalk thread-ſhaped, compreſſed. Leaves linear-awlſhaped, compreſſed, two-ranked. Head and ſcales elliptical; diſk and margin uniform, with ſlight traces of a keel.—Gathered by the late Mr. Smeathman, as well as by Dr. Adam Afzelius, in marſhy ſandy ground at Sierra Leone. The *root* is ſmall and fibrous. *Leaves* four or five, ſeldom more, equitant, erect, linear-ſwordſhaped, compreſſed, very narrow, tapering, but rather obtuſe at the point; their ſurface minutely ſpeckled, and more or leſs evidently reticulated, or dotted; their length, in our ſpecimens, from one to two inches; Vahl ſays ſcarcely half an inch. *Stalk* ſolitary, ſix or eight inches high, very ſlender. *Head* the ſize of hemp-ſeed, but more oblong, acute at each end, of a copper-brown, not very ſhining; the two loweſt ſcales empty, rather paleſt, moſt oblong, and ſtrongly keeled; the reſt elliptical, bluntly pointed, very ſmooth and even, without any limited diſk, but ſometimes marked with beautiful concentric veins; their keel ſcarcely diſcernible, except in the form of a ſhort pale elevation, near the apex, but not projecting into a point. *Corolla* yellow, ſmall.

22. X. *flexifolia*. Wavy-leaved Xyris. Br. n. 11.—"Stalk thread-ſhaped, twiſted, ſmooth, as well as the zigzag, ſlender, ſlightly compreſſed, leaves. Head oval, with few flowers. Stigmas undivided."—Found by Mr. Brown, on the ſouthern coaſt of New Holland. *Stalk* from ſix to twelve inches high.

23. X. *teretifolia*. Cylindrical-leaved Xyris. Br. n. 12. —"Stalk, as well as the leaves, round, ſtraight, and roughiſh. Head ovate, many-flowered. Scales imbricated every way, torn into many ſegments."—From the ſame country. *Stalk* eighteen inches high. *Brown*.

24. X. *lacera*. Jagged-headed Xyris. Br. n. 13.—"Stalk round, ſmooth. Head nearly globular, many-flowered. Scales imbricated every way, torn into many ſegments."—Diſcovered by Mr. Brown, on the ſouth coaſt of New Holland. We have ſeen no ſpecimens of this, or the two ſpecies immediately preceding.

25. X. *ſubulata*. Awl-leaved Peruvian Xyris. "Fl. Peruv. v. 1. 46. t. 71. f. *b*." Vahl n. 10. Kunth n. 1.—"Stalk thread-ſhaped; roughiſh at the top. Leaves linear-awlſhaped; their ſheaths woolly at the margin. Head oblong, about three-flowered."—Native of marſhy, cool, highly elevated, mountainous ſituations, in Peru, flowering in September. *Root* perennial. *Plants* growing together in patches. *Leaves* about an inch long; villous at the baſe. *Stalk* ſlender, about eight inches high. *Flowers* yellow, two or three only in each head. *Vahl*.

26. X. *vivipara*. Viviparous Xyris. Kunth n. 2.—"Stalk ſomewhat compreſſed; roughiſh at the top. Leaves linear-ſwordſhaped; their ſheaths fringed. Head globular; at length leafy and viviparous."—Gathered by Humboldt and Bonpland on the banks of the river Oroonoko, between the mouths of Ventuario and Guaviares, flowering in May. *Root* fibrous, perennial. *Leaves* all radical, two-ranked, from two to four inches long, erect, bluntiſh, ſheathing, ſmooth, except a little roughneſs at the back; their *ſheaths* keeled, ſtriated, fringed, roughiſh alſo at the back. *Stalks* about a foot high, ſmooth, except ſome roughiſh points towards the ſummit; enveloped at the baſe with a ſtriated, keeled, bluntiſh, ſmooth, rough-backed *ſheath*, an inch and a half long. *Head* globoſe, rather abrupt, the ſize of a pepper-corn. *Scales* roundiſh-ovate, bluntiſh, browniſh, coriaceous, ſmooth, rather tranſparent at the margin. After flowering, the head throws out from its centre a leafy crown, which becomes a young plant. *Kunth*.

We are not told whether this leafy tuft originates in the vegetation of one or two of the ſeeds; or in the *germen* being ſupplanted in the flower by a bud; or, which is the leaſt likely, in a proliferous elongation of the *ſtalk*, independent of the parts of fructification altogether.

27. X. *operculata*. Imbricated Xyris. Labill. Nov. Holl. v. 1. 14. t. 10. Brown n. 14. Poiret n. 13. Curt. Mag. t. 1158.—Capſule partly three-celled. Stalk round. Leaves thread-ſhaped. Head obovate. Scales beardleſs, imbricated in five rows, with numerous empty ones, gradually ſmaller, at the baſe.—Sent from Port Jackſon, New South Wales, by Dr. White, in 1792. Mr. Brown alſo obſerved it there; and Labillardiere in Van Diemen's iſland. Neither the figure of the laſt-mentioned author, nor that in the Botanical Magazine, by any means repreſents the remarkable character of the five-ranked ſcales of the *head*, and the numerous, gradually diminiſhing ones, deſtitute of flowers, at its baſe; ſo that, but for Mr. Brown's authority, we ſhould have ſuppoſed our Port Jackſon plant to be eſſentially and widely different. Dr. White's ſpecimens are without *leaves*. The *ſtalk* is about eighteen inches high, round, or ſlightly angular, quite ſmooth. *Head* obovate, full half an inch long, with five rows of very numerous obovate *ſcales*, whoſe broad convex diſk is of a bronze-like hue; the margin brown and narrow, more or leſs jagged, with a deciduous tooth-like fringe. *Flowers* large, bright yellow. *Stigmas* obtuſe.

28. X. *lanata*. Woolly Xyris. Br. n. 15.—"Stalk round, ſmooth. Leaves linear, narrow. Head nearly globoſe. Scales woolly at the extremity, imbricated in five rows, with ſeveral empty ones, gradually ſmaller at the baſe."—Gathered by Mr. Brown, on the ſouthern coaſt of New Holland.

The above great acceſſion of new ſpecies throws much
light

light on this hitherto little-known, and ill-deſcribed, genus of plants. Could they all be compared together, even in a dried ſtate, we have no doubt that their ſpecific characters, and the principles on which they are founded, would derive conſiderable improvement; and that *Xyris*, whoſe generic marks are ſo well eſtabliſhed, would afford a beautiful diſplay of clear and preciſe ſpecific diſcrimination. Whether the *leaves* of any of the ſpecies be really toothed, in a living ſtate, we have conſiderable doubt. Their *foliage* partakes greatly of the cellular texture, ſo remarkable in the neighbouring genus *Eriocaulon;* with which alſo they cloſely accord in *infloreſcence*, and general habit. Mr. Brown, in his *Prodromus*, has elucidated both theſe genera, as far as concerns their numerous New Holland ſpecies, with infinitely more ſucceſs than any other botaniſt; the one genus having previouſly been ſcarcely better underſtood than the other.

XYSMALOBIUM, from ξυσμα, *a ſtrip*, or *narrow ſhred*, and λοβος, *a pod*, alluding to the ſhreddy coat of the ſeed-veſſel, which is very peculiar.—Brown Tranſ. of the Wernerian Soc. v. 1. 38. Aſclep. 27. Ait. Hort. Kew. v. 2. 79.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, lanceolate, acute, permanent ſegments. *Cor.* of one petal, in five deep, ovate, ſpreading, rather oblique ſegments. Crown of the ſtamens in a ſingle row of ten deep ſegments; five of them fleſhy, roundiſh, oppoſite to the anthers, ſimple at the inner ſide; five intermediate ones ſmaller. *Stam.* Filaments ſcarcely any; anthers five, each tipped with an ovate bluntiſh membrane; maſſes of pollen ten, compreſſed, ſmooth, pendulous, with rather broad connecting proceſſes. *Piſt.* Germens two, ovate, pointed; ſtyles very ſhort; common ſtigma pointleſs. *Peric.* Follicles two, inflated, clothed all over with numerous, long, ſlender, tapering, hairy, filamentous proceſſes. *Seeds* numerous, imbricated, crowned with ſilky down.

Eſſ. Ch. Maſſes of pollen ten, ſmooth, pendulous. Crown ſimple, in ten deep ſegments, the intermediate ones minute. Corolla ſpreading. Follicles ſhaggy.

A genus of upright ſhrubs, with oppoſite, ſometimes alternate, *leaves*. *Umbels* lateral, either axillary, or between the *footſtalks*. *Flowers* rather large; the limb of the *corolla* ſometimes bearded. Only two ſpecies are at preſent known, both natives of ſouthern Africa.

1. X. *undulatum*. Waved-leaved Xyſmalobium. Dryand. in Ait. n. 1. (Aſclepias undulata; Linn. Sp. Pl. 312. Willd. Sp. Pl. v. 1. 1262. See ASCLEPIAS, n. 1. Apocynum africanum, lapathi folio; Comm. Rar. 16. t. 16.)—Leaves undulated, naked. Corolla bearded.—Native of the Cape of Good Hope. Sent to Kew garden, in 1783, by Mr. John Græfer. This is a green-houſe plant, flowering in July. Mr. Aiton marks it as a *ſhrub;* but Commelin ſays the thick, white, perennial *root* ſends up every year, in the early ſpring, two or three thick, round, green, leafy *ſtems*. All authors ſpeak of the *leaves* as oppoſite; but in our Linnæan ſpecimen, gathered at the Cape by Thunberg, they are alternate, ſeſſile, three or four inches long, ovato-lanceolate, gradually tapering to a bluntiſh point, with a thick mid-rib, and numerous interbranching veins; nearly ſmooth on both ſides; undulated and roughiſh at the margin. *Umbels* axillary, ſtalked, much ſhorter than the leaves, with hairy ſtalks, and linear hairy *bracteas*. *Flowers* green, their ſegments denſely bearded at the extremity, with white ſhaggy hairs. *Follicles* covered with ſpreading hairy filaments, an inch long. Every part of the plant, when wounded, diſcharges a copious milky fluid.

2. X. *grandiflorum*. Large-flowered Xyſmalobium. (Aſclepias grandiflora; Linn. Suppl. 170. Thunb. Prodr. 47. Willd. Sp. Pl. v. 1. 1264. See ASCLEPIAS, n. 26.)—Leaves ſtalked, hairy. Corolla ſmooth.—Gathered by Thunberg, at the Cape of Good Hope, but as yet a ſtranger to our gardens, nor does the Linnæan collection contain a ſpecimen. The *ſtem* is ſaid to be ſimple, erect, and hairy. *Flowers* large, axillary, ſtalked; but, as far as we can gather, the umbel is not elevated on a common ſtalk, as in the foregoing. *Corolla* ſpeckled like *Fritillaria Meleagris*, and of a ſimilar colour.

XYSTARCHA, in *Antiquity*, the maſter or director of the xyſtus.

In the Greek gymnaſium, the xyſtarcha was the ſecond officer: the firſt was the gymnaſiarch. The xyſtarcha was his lieutenant, and preſided over the two xyſti, and all exerciſes of the athletæ therein.

XYSTICI, among the *Ancients*, a deſignation given to the athletæ, becauſe they performed their exerciſes in the xyſtus.

XYSTIS, in *Ancient Geography*, a town of Aſia Minor, in Caria. Steph. Byz.

XYSTRIS, in *Botany*, Schreb. Gen. 138. Poiret in Lamarck Dict. v. 8. 822, is one of thoſe genera of profeſſor Schreber's, to which we have adverted under WHELERA, (ſee that article,) as being unintelligible to all but thoſe who may have acceſs to the learned author's herbarium, or to ſome record in his manuſcripts. The name is Greek, ξυϛρις, *a curry-comb*, or *ſcraper*.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ* of Brown?

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, lanceolate, acute, ſpreading, hiſpid, permanent ſegments, each contracted at the baſe. *Cor.* of one petal: tube very ſhort; limb in five deep, ovate, obtuſe, veiny, ſpreading ſegments. *Stam.* Filaments five, briſtle-ſhaped, erect, ſpreading at the ſummit, ſhorter than the corolla, inſerted into the middle of its tube; anthers oblong, erect. *Piſt.* Germen ſuperior, globoſe, pointed; ſtyles two, capillary, erect, combined in the lower part; ſtigmas obtuſe. *Peric.* Drupa globoſe, ſurrounded at the baſe by ſhort, proſtrate hairs, inſerted into the middle of the calyx. *Seed.* Nut globoſe, furrowed, of ten cells; kernels oblong.

Whether this genus be founded on ſome New Holland ſpecimen of the natural order of *Epacrideæ*, and whether the rigid or prickly habit of the plant ſuggeſted the name, can only be matter of vague conjecture. We acknowledge that the diviſion of the *ſtyle*, and the hiſpid ſegments of the *calyx*, militate greatly againſt our ideas of the ſuppoſed natural order. In total darkneſs, however, any glimmering of light is welcome, and we will therefore hazard another conjecture, not altogether inconſiſtent with the former. As Schreber places *Xyſtris* immediately after the *Jacquinia* of Linnæus, can it poſſibly have been founded on *Jacquinia ruſcifolia*, of whoſe fructification no botaniſt, as yet, has given any ſufficient account? There ſeems an aſſociation of ideas between the habit of *Ruſcus*, and the name of *Xyſtris;* and the globoſe pointed figure of the *fruit*, as copied from Plumier in *Dill. Hort. Elth.* t. 123, anſwers to part of the above deſcription, though the permanent *calyx* is drawn obtuſe, and not apparently hiſpid.

XYSTUS, Ξυϛὸς, formed of ξυειν, *to poliſh*, or *rub*, in the *Ancient Architecture*, among the Greeks, was a long ſpacious portico, either open, or covered over; in which the athletæ, and others, practiſed wreſtling and running.

The xyſtus made a neceſſary part of a gymnaſium. The athletæ, who practiſed in it, were thence called *xyſtici*.

XYSTUS, among the Romans, was an alley, or double row of trees, meeting arbor-wiſe at top, and forming a ſhade to walk under.

Y.

Y, The twenty-third letter in the Engliſh alphabet, borrowed, originally, from the Greek *υ*.

It is occaſionally both vowel and conſonant. As a vowel ſome authors have judged it unneceſſary in our language, becauſe its ſound is preciſely the ſame with that of the *i*. Accordingly, it is but little uſed, except in words borrowed from the Greek, to denote their origin, by repreſenting the Greek *υψιλον*.

The vowel *y*, however, has a place even in ſome words purely Engliſh; and that both in the middle of them, as in *dying*, *frying*, &c. and at the end, as in *lay*, &c.

Some aſcribe the uſe of the *y*, in pure Engliſh and French words, and thoſe that have no *y* in Latin or Greek, to this; that anciently each of thoſe words was written with a double *ii*; which having ſomething aukward in it, the *y* was ſubſtituted in their place.

Others ſay, that thoſe words being anciently written, as well as pronounced, with a double *ii*, as they ſtill are in the Walloon, as *paiing*, *paiiſan*, &c. to avoid their being miſtaken for an *u* with two dots over it, they made the ſecond *i* longer than the firſt, and ſo formed the *y* without deſigning it. Some give a particular reaſon why words ending in *i* came to be written with *y*; *viz.* that the copyiſts found the tail of the *y* very commodious, in adorning the margins and bottoms of pages.

Y was much uſed by the Saxons; whence it is found for *i* in the old Engliſh writers.

When the *y* follows a conſonant, and at the end of words, it is a vowel, and has the ſound of *i*; and when it precedes a vowel, or diphthong, and at the beginning of words, it is a conſonant.

Some have thought that *y* is in all caſes a vowel; but Dr. Johnſon obſerves of *y*, as of *w*, that it follows a vowel without any hiatus, as *roſy youth*.

The Romans uſed the *y* for the vowel *u*, which they had no character for, diſtinct from the *v* conſonant; their way being to pronounce the common *u*, as we do the diphthong *ou*; and the Greek *υψιλον*, as the Engliſh and French *u*.

Peter Diaconus obſerves, that Auguſtus firſt took the letters *y* and *z* from the Greeks, which were not uſed by the Romans before his time; *s s* being written for *z*, and *i* for *y*. But Mr. Jackſon ſhews, that the *y* was uſed before the time of Auguſtus, though probably (ſays Aſtle, Orig. and Progr. of Writing, p. 78.) it was not much older.

In our own and ſome other modern tongues, authors begin to diſpenſe more and more with the preciſe orthography, which requires all words that have an upſilon, in the Greek, to be written with a *y*. And with reaſon; ſince our Greek *y* has loſt the ſound it had, in the language from which we borrow it. But it is certainly ridiculous to uſe it, as many do, in words which indeed have a Greek origin, but have no *u* in the Greek, as in *eclipſe*: yet ſome affect to do this.

Y is alſo a numeral letter, ſignifying 150, or, according to Baronius, 159; as in the verſe,—

> "Y dat centenos et quinquaginta novenos."

When a daſh was added at top, $\overline{\text{Y}}$, it ſignified 150 thouſand.

Pythagoras uſed the Y as a ſymbol of human life; the foot repreſenting infancy, and the forked top the two paths of vice and virtue, one or the other of which people are to enter upon, after attaining to the age of diſcretion.

Y, on the French coins, denotes thoſe ſtruck at Bourges.

Y, in *Geography*, a city of China, of the ſecond rank, in Chan-tong; 317 miles S.S.E. of Peking. N. lat. 35° 10′. E. long. 118° 19′.

Y, a city of China, of the ſecond rank, in Pe-tche-li; 55 miles S.W. of Peking. N. lat. 39° 25′. E. long. 115° 14′.

Y, or Ey, a river, or broad piece of water, which paſſes by Amſterdam, exhibiting the appearance of a creek of the ſea rather than of a river.

YA, a city of China, of the ſecond rank, in Se-tchuen, on the borders of Thibet; 840 miles S.W. of Peking. N. lat. 30° 9′. E. long. 102° 39′.

YABAQUE, one of the Bahama iſlands, ſituated in N. lat. 23° 30′.

YABARGULSKAIA, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 120 miles E. of Tobolſk.

YABAY, a town of Burmah; 50 miles S.W. of Ava.

YABTONOI, a ridge of the Altaian chain in Aſiatic Ruſſia, bending in a northerly direction to the vicinity of Ochotſk. The name denotes the mountains of Apples.

YACHT. See Ship, and *Plate* XIII. *Ship-Building*.

YACHTA, in *Geography*, a fort of Ruſſia, in the government of Irkutſk, on the borders of China; 48 miles S.S.W. of Selenginſk.

YACINTE, St. See St. *Yacinte*.

YACONG Tala, a number of ſmall lakes in Thibet, ſituated near each other. N. lat. 30° 50′. E. long. 78° 39′.

YADAVA, in *Hindoo Mythology*, a name of the Hindoo Kriſhna. It is ſaid to indicate his being of the family or tribe of Yadu.

YADI, in *Geography*, a river of Ruſſia, which runs into the Obſkaia gulf, N. lat. 68° 25′. E. long. 72° 38′.—Alſo, a river of Ruſſia, which runs into the Obſkaia gulf, N. lat. 67° 25′. E. long. 72° 18′.

YADKIN, a river of North Carolina, which riſes in the

Allegany mountains, and after a courſe of about 100 miles, changes its name to Pedee, in North Carolina; 9 miles S.W. of Salem.

YADRIN, a town of Ruſſia, in the government of Kazan; 122 miles W. of Kazan. N. lat. 55° 34′. E. long. 45° 44′.

YAEGONMEW, a town of Pegu; 58 miles S. of Prone.

YAFA. See JAFFA.

YAGARCHOCA, a lake of South America, in the juriſdiction of St. Miguel de Ibarra. It is famous for having been the ſepulchre of the inhabitants of Otabalo: upon this place being taken by Huana Capac, the 12th ynca, he, inſtead of ſhewing any clemency to them on account of their magnanimity, being exaſperated at the noble reſiſtance which they made againſt his army, ordered them all to be beheaded, both thoſe who had quietly ſurrendered, as well as thoſe taken in arms, and their bodies to be thrown into the lake: ſo that from the waters of the lake being tinged of a bloody colour, it acquired its preſent name, which ſignifies "a lake of blood."

YAGATH, in *Mythology*, a deity adored by the ancient Arabian idolaters, under the figure of a lion.

YAGO, ST. in *Geography*. See ST. *Yago*.

YAGUACHE, or ST. JACINTO DE YAGUACHE, a town of Peru, and principal place of a lieutenancy, in the province of Guayaquil; 25 miles N.E. of Guayaquil.

YAGUAHS, a town of the iſland of Cuba; 22 miles S. of Bayamo.

YAGUARIPE, a river of Braſil, which runs into the Atlantic, S. lat. 13° 12′.

YAGUARON, a town of South America, in the province of Paraguay; 10 miles S.E. of Aſſumption.

YAGUEPIRI, a river of Braſil, which runs into the Negro, 50 miles above Fort Rio Negro.

YAH, in *Hindoo Mythology*, a name of Pavana, the Hindoo god or regent of the wind; another of whoſe names is Vayu. See PAVANA and VAYU.

YAHANGA, in *Geography*, a ſmall iſland in the ſea of Japan. N. lat. 43° 8′. E. long. 131° 45′.

YAHEBIRI, a river of South America, which runs into the Parana, S. lat. 24° 20′.

YAIK, a conſiderable ſtream of Aſiatic Ruſſia, which flows into the Caſpian. The name has been recently changed for that of Ural, on account of a daring inſurrection of the tribes bordering on the Yaik.

YAITCHNEI, a ſmall iſland of Ruſſia, in the Penzinſkoi ſea. N. lat. 60° 30′. E. long. 160° 50′.

YAIVA, a river of Ruſſia, which runs into the Kama, 16 miles S. of Solikamſk, in the government of Perm.

YAK, in *Zoology*, the *bos grunniens* of the Linnæan ſyſtem, or ox with cylindric horns curving outwards, very long pendant hair, and extremely villous horſe-like tail, the grunting ox of Pennant, and yak of Tartary, has been lately particularly deſcribed by Turner, in his "Embaſſy to Tibet." He calls it the buſhy-tailed bull of Tibet; and in Hindooſtan it is denominated ſoora goy. It is about the height of an Engliſh bull, which it reſembles in the general figure of the body, head, and legs. He could diſcover no difference between them, except that the yak is wholly covered with a thick coat of long hair. The head is rather ſhort; the horns tapering from the root upwards, and terminating in ſharp points; arched inwards, and bending towards each other, but a little turned backwards near the extremities; the ears ſmall; the forehead prominent; the eyes full and large; the noſe ſmall and convex; the noſtrils ſmall; the neck ſhort and curved; the withers are high and arched; the rump low; over the ſhoulders riſes a thick muſcle, like the protuberance peculiar to the cattle of Hindooſtan, covered with a profuſion of ſoft hair; the tail compoſed of a prodigious quantity of long, flowing, gloſſy hair; the ſhoulders, rump, and upper part of the body, clothed with a ſort of thick ſoft wool, the inferior parts having ſtraight pendant hair that deſcends below the knee, and ſometimes trailing on the ground; from the cheſt, between the legs, iſſues a large pointed tuft of ſtraight hair, ſomewhat longer than the reſt; the legs very ſhort. In all other reſpects, this animal reſembles the ordinary bull. Theſe cattle appear of a large bulk; they have a downcaſt heavy look, and are, as they appear to be, ſullen and ſuſpicious, and very impatient at the near approach of ſtrangers. Their lowing is not loud, but a kind of ſcarcely audible grunting noiſe. They are paſtured in the coldeſt parts of Tibet, on the ſhort herbage peculiar to the tops of mountains and bleak plains. Their favourite haunt is the chain of mountains that is ſituated between the latitudes 27° and 28°, which divides Tibet from Bootan, and whoſe ſummits are commonly covered with ſnow. They are a valuable property to the tribes of itinerant Tartars, called Duckba, who live in tents, and tend them from place to place; they at the ſame time afford their herdſmen an eaſy mode of conveyance, a good covering, and wholeſome ſubſiſtence. They are never employed in agriculture, but are very uſeful as beaſts of burthen; for they are ſtrong, ſure-footed, and carry a great weight. Tents and ropes are manufactured of their hair, and caps and jackets are made of their ſkins. Their tails are much eſteemed; and under the denomination of *chowries*, they are univerſally uſed for driving away winged inſects, flies, and muſquitoes, and are employed as ornamental furniture upon horſes and elephants They ſupply an abundant quantity of rich milk and excellent butter, which may be kept in ſkins or bladders through the year, and to the utmoſt verge of Tartary furniſhes a very material article of commercial produce. The orientals highly value a large kind of bezoar that is ſometimes found in this animal's ſtomach. The yak is ſaid to vary in colour, as well as in the length and form of the horns. Thoſe with white tails are moſt eſteemed; and ſometimes their horns are as white as ivory.

In India no man of faſhion ever goes out or ſits in form at home without two "chowrabadars," or bruſhers, attending him, each furniſhed with one of theſe tails, mounted on ſilver or ivory handles, to bruſh away the flies. The Chineſe dye them of a beautiful red, and wear them as tufts to their ſummer bonnets.

Elian, according to Pennant, is the only ancient writer who takes notice of this ſingular ſpecies.

YAK, in *Geography*, a name given by the Oſtiaks to the *Oby*; which ſee.

YAKE DSAKE, a lake of Thibet, about 12 leagues in circumference. N. lat. 34° 40′. E. long. 90° 24′.

YAKSAI. See AKSHAI.

YAKSHA, in *Hindoo Mythology*, a race of malignant beings of hideous form, into whom the ſouls of bad men are ſaid to migrate; particularly the ſouls of ſuch as in this life are addicted to ſordid and baſe paſſions, or abſorbed too much in worldly proſperity. In the plural, they are termed Yakſhaſa; and are aſſigned as ſlaves or ſervants to Kuvera, the Plutus of the Hindoo Pantheon. Another race of beings, of a like deſcription, is called *Rakſha*. (See that article.) Rakſhni and Yakſhni are the feminines of theſe races of demons. Theſe names, and ſome note of their characters and attributes, occur in the articles KUVERA, RAVENA, and SITANTA.

YAKSHNI-DEVI, a name and an inferior manifeſtation of the Hindoo goddeſs Parvati. It means goddeſs of malignant beings; one race of whom are in the maſculine termed *Yakſha*, which article, and others thence referred to, the reader deſirous of information concerning them may conſult.

YAKSIMVAR, in *Geography*, a town of Ruſſia, in the government of Viborg, on the north-weſt coaſt of lake Ladoga; 8 miles S. of Serdopol.

YAKUTSK, a town of Ruſſia, in the government of Irkutſk, on the Lena, which is here about two leagues in width; but it is greatly impeded with ice, and navigable only by a few ſmall boats, chiefly employed in ſupplying the town with proviſions. This town is the capital of a province, to which it gives name: it contains between 500 and 600 houſes, moſtly of wood, with ſome ſtone churches, and is defended by a wooden fort. The beſt ſables are found near this town and Nerſhinſk; 960 miles N.E. of Irkutſk. N. lat. 62° 5′. E. long. 129° 14′.

YAKUTSK, *the Province*. The Yakutes, or, as they denominate themſelves, *Socho*, or natives of this province, are robuſt, and in general large; they reſemble the Tartars in the caſt of their features, and there is ſaid alſo to be a great ſimilarity in the idioms of theſe two people. Their ancient homeſtead extended from the Sayane mountains as far as the Angara and the Lena. Perſecuted by the Buræts and Mongoles, they removed down the Lena to their preſent rude and inclement diſtricts, where they are found in the government of Irkutſk on both ſides of that river quite to the Frozen ocean. In the year 1620 they ſubmitted to the Ruſſian conquerors, and at the middle of the laſt century they numbered upwards of 40,000 bows; but ſince that time they are conſiderably increaſed. Their dreſs is ſimple, and nearly the ſame all the year round; the only difference is, that in winter it is made of ſkins; over their chemiſe they commonly wear a large ſtriped waiſtcoat with ſleeves; their breeches do not extend below the middle of the thigh, but their long boots, called *ſarri*, reach above the knee. In hot weather they wear nothing but the breeches. Polygamy forms a part of the political code of this people; obliged to make frequent journies, a Yakute has a wife in every place where he ſtops, but he never aſſembles them together. Notwithſtanding this licence, they are jealous to exceſs, and the ſworn enemies of any one who ſhall dare to violate the rights of hoſpitality. When ſummer commences, they leave their winter habitations, and with their families and a ſmall number of horſes, make their harveſts of fodder for conſumption during the froſt ſeaſon. They repair to a conſiderable diſtance from their yourt, and to the moſt fertile cantons. In their abſence, the horſes are left to the care of the ſervants, and the neighbouring paſtures ſerve for the maintenance of all their herds. Chamans, or ſorcerers, are regarded as interpreters of the gods; they grant their mediation to the ſtupid Yakute, who implores it with trembling, but always pays for it. In the idolatry of the Yakutes, we find all the abſurdities and ſuperſtitious practices of the ancient Kamtſchadales, Koriaks, Tchutchis, and other inhabitants of theſe countries. The funerals are attended with a kind of pomp more or leſs magnificent, in proportion to the rank and wealth of the defunct. If a prince, he is arrayed in his fineſt habits, and moſt ſplendid arms. The body, placed in a coffin, is carried by the family to the tomb; deep groans announce the ſolemn proceſſion; his favourite horſe, and another the beſt in his ſtud, both richly capariſoned, and led by a valet, or near relation, walk by the ſide of the corpſe. When arrived at the burying-place, they are tied to two ſtakes, fixed near the grave, and while the maſter is interred, their throats are cut over the corpſe. This bloody libation is the homage paid to his attachment to theſe animals, who are ſuppoſed to follow him into the other world, where it is imagined that he will again be able to enjoy them. They are then flayed; the head and hide, in one entire piece, are fixed horizontally upon the branches of trees at a ſmall diſtance from the grave; and ſuch is the memorial that is erected. A fire is then kindled, and the laſt proof of friendſhip for the deceaſed conſiſts in roaſting and eating upon the ſpot theſe favoured animals: the feaſt being concluded the company diſperſes. The ſame ceremonial is obſerved for a woman, except that inſtead of a horſe, they ſacrifice her favourite cow. Their houſes, like the yourts of the wandering Koriaks, are circular, ſpacious, and conſtructed with poles, fewer in number, but ranged in the ſame manner, and kept aſunder by a ſort of hoops at the top, the whole covered with the bark of the birch-tree, formed into pieces eighteen inches wide, placed in a downward direction. Theſe pieces are edged with a kind of ribband, made of bark, and ſhaped into feſtoons, and the inſide of the yourt is ornamented in the ſame manner. The taſte of the ornaments is governed by the caprice of the proprietor, and there is in them a ſort of wildneſs that is ſufficiently amuſing. The ſame decoration is annexed to the chairs and beds of the heads of families. The domeſtics lie upon the ground on mats or ſkins, and the fire is lighted in the middle of the houſe. See YUHAGHIRS.

YALE, a town of the iſland of Ceylon; 56 miles S.S.E. of Candi. N. lat. 6° 52′. E. long. 81° 20′.—Alſo, a river of Ceylon, which runs into the ſea, on the S.E. ſide of the iſland, N. lat. 6° 23′. E. long. 81° 41′.

YALE *College*. See COLLEGE.

YALEPUL, in *Geography*, a town of Ceylon, at the mouth of the Yale; 30 miles S. of Yale.—Alſo, a town of the iſland of Ceylon, near the E. coaſt; 96 miles S.E. of Candi.

YALLAH's BAY, a bay of the iſland of Jamaica, on the S. coaſt, ſituated to the E. of Yallah's Point.

YALLAH's *Point*, a cape on the S. coaſt of Jamaica; 12 miles S.E. of Kingſton. N. lat. 17° 53′. W. long. 76° 21′.

YALLAH's *River*, a river of Jamaica, which runs into the ſea, a little to the eaſt of Yallah's Point.

YALMAL, a cape on the E. coaſt of Ruſſia, in the Karſkoe ſea. N. lat. 72°. E. long. 68° 24′.

YALME, a river of Devonſhire, which runs into the Engliſh Channel, 7 miles S.E. of Plymouth.

YALOFFS, YALLOFFS, *Jalofs*, or *Jalloffs*, an active, powerful, and warlike race of negroes, and eſteemed the moſt handſome of thoſe people, who inhabit a great part of that tract of Africa which lies between the Mandingo ſtates, on the river Gambia to the S., and the Senegal to the N. and E. See JALLOFFS.

The Yaloffs differ from the Mandingoes, (ſee MANDING,) not only in language, but likewiſe in complexion and features. Their noſes are not ſo much depreſſed, nor the lips ſo protuberant, as among the generality of Africans; and although their ſkin is of the deepeſt black, they are conſidered by the white traders as the moſt ſightly negroes in this part of the continent. They are divided into ſeveral independent ſtates or kingdoms; which are frequently at war either with their neighbours, or with one another. In their manners, ſuperſtitions, and government, however, they have a greater reſemblance to the Mandingoes than to any other nation; but excel them in the manufacture of cotton cloth, ſpinning the wool to a finer thread, weaving it in a broader loom, and dyeing it of a better colour. Their language is ſaid to be copious and ſignificant, and is often learnt by Europeans trading to Senegal. Their numerals are as follow:

One - - -	Ween
Two - - -	Yar
Three - - -	Yat
Four - - -	Yanet
Five - - -	Judom
Six - - -	Judom Ween
Seven - - -	Judom Yar
Eight - - -	Judom Yat
Nine - - -	Judom Yanet
Ten - - -	Fook
Eleven - - -	Fookang Ween, &c.

Park's Travels, vol. i.

In connection with this brief account of the Yaloffs, we cannot forbear mentioning an anecdote that redounds very much to the honour of Damel, their king. On occaſion of a war between Damel and Abdulkader, king of Foota Torra, a country to the W. of Bondon, the latter inflamed with zeal for propagating his religion, ſent an ambaſſador to Damel, accompanied by two of the principal Baſhreens, who carried each a knife, fixed on the top of a long pole. When they obtained admiſſion into the preſence of Damel, they announced the object of their embaſſy in the following ſingular manner:—"With this knife," ſaid the ambaſſador, "Abdulkader will condeſcend to ſhave the head of Damel, if Damel will embrace the Mahometan faith; and with this other knife, Abdulkader will cut the throat of Damel, if Damel refuſes to embrace it—take your choice." Damel coolly replied, that he had no choice to make; he neither choſe to have his head ſhaved, nor his throat cut: and with this anſwer the ambaſſador was civilly diſmiſſed.

Abdulkader with a powerful army invaded Damel's country. The inhabitants of the towns and villages filled up their wells, deſtroyed their proviſions, carried off their effects, and abandoned their dwellings as he approached. Thus he was led on from place to place, until he had advanced three days' journey into the country of the Yaloffs. Several of his men had died with fatigue and hunger by the way. This led him to direct his march to a watering-place in the woods, where his men, having allayed their thirſt, lay down, overcome with fatigue, to ſleep among the buſhes. In this ſituation, they were attacked by Damel before day-break, and completely routed. Many were killed, and a greater number taken priſoners. Among the latter was Abdulkader himſelf, who was led, as a miſerable captive, into the preſence of Damel. The behaviour of Damel on this occaſion is celebrated, in terms and ſounds of the higheſt approbation, by the ſinging men. When his royal priſoner was brought before him in irons, and thrown upon the ground, the magnanimous Damel, inſtead of ſetting his foot upon his neck, and ſtabbing him with his ſpear, according to the cuſtom in ſuch caſes, addreſſed him in the following manner:—"Abdulkader, anſwer me this queſtion. If the chance of war had placed me in your ſituation, and you in mine, how would you have treated me?" "I would have thruſt my ſpear into your heart," returned Abdulkader with great firmneſs; "and I know that a ſimilar fate awaits me." "Not ſo," ſaid Damel; "my ſpear is indeed red with the blood of your ſubjects killed in battle, and I could now give it a deeper ſtain by dipping it in your own; but this would not build up my towns, nor bring to life the thouſands who fell in the woods. I will not therefore kill you in cold blood; but I will retain you as my ſlave, until I perceive that your preſence in your own kingdom will be no longer dangerous to your neighbours; and then I will conſider of the proper way of diſpoſing of you." Abdulkader was accordingly retained, and worked as a ſlave for three months; at the end of which period, Damel liſtened to the ſolicitations of the inhabitants of Foota Torra, and reſtored to them their king.

YALOVA, a town of Natolia, on the ſea of Marmora, once the reſidence of Diocleſian; 30 miles N. of Bruſa.

YALUTOROVSK, a town of Ruſſia, in the government of Tobolſk, on the river Tobol; 108 miles S.W. of Tobolſk. N. lat. 56° 8′. E. long. 66° 32′.

YAM, in *Botany*, a large fleſhy root, eatable when boiled or roaſted, of which there are ſeveral ſpecies, all natives of tropical climates, and highly uſeful to voyagers, as they will, like potatoes, keep for a conſiderable time without ſpoiling. See DIOSCOREA.

YAM, in *Geography*. See JAMEZ.

YAMA, in *Hindoo Mythology*, is the god of the infernal regions, correſponding with the Pluto of weſtern heathens. Yama is a very important deity: his name is of perpetual recurrence in the ſacrificial ceremonies of the Hindoos; oblations and invocations to him forming a portion of many of thoſe ceremonies. The Hindoos, as is explained under our article MARUT, have aſſigned regents or guardian deities to each of the cardinal and intermediate points of the world. Yama is regent of the ſouth, or lower world, in which the Hindoos place the infernal regions; this correſponding with the Grecian Pluto or Minos. Under our article MENU, the great law-giver of that name is ſuppoſed to have been the ſame perſon as the Minos of antiquity. Yama has many names; and in his character and functions is found related to many important perſonages of ſacred and profane hiſtory. Among his names are, *Dherma-raja*, or king of juſtice; *Pitripeti*, lord of the Pitris, or patriarchs (ſee PITRIS); and *Mritu*, meaning death; a name alſo of *Kala*, or *Siva*. (See thoſe articles.) *Suſan-yama*, and *Vaivaſwata-yama*, are others of his names, derived, it is ſaid, the firſt from a term denoting comelineſs or beauty, the other from his ſolar origin; Yama being of the race of the ſun, of which ſome explanation will be found under our article SURYAVANSA. He is alſo named *Sradha-deva*, or lord of the obſequies, in honour of deceaſed anceſtors, of which a copious account is given under SRADHA. As well as the Seventh Menu, Yama bears likewiſe the name of *Satyavrata*. He is alſo named *Adhumbara;* this name is ſaid to be derived from a ſpecies of wood, by the attrition of which fire is produced, wherewith to light the pile on which funeral obſequies are performed to Yama. Every thing connected with the important element of fire is peculiarly myſtical with the Hindoos. Touching the ſacrificial and other fires, the reader will find many particulars under our articles PAVAKA, SAGNIKA, SAMI, and others thence referred to. *Anheka* is another name of Yama; it means *death*, or the *deſtroyer:* thus the compound *Kal-anheka-yama* is Yama, the deſtroyer of Kal or Time, a perſonification of great boldneſs and extent. *Kal* is alſo a name of Yama. (See KAL.) Yama has other compound names, meaning the ſlayer of all beings, king of deities, reducer of all things to aſhes, the dark-blue deity, of wolf-like belly, the variegated being, the wonderful *inflictor* of pains, &c.

His abode is in the infernal city of Yamapur, whither the Hindoos believe that a departed ſoul immediately repairs; and receiving a juſt ſentence, aſcends to Swerga, the firſt heaven, or deſcends to Nareka, the ſnaky hell; or is returned to earth, according to its merits or demerits, where it aſſumes the form of ſome animal, unleſs its offences had been ſuch as deſerved condemnation to a vegetable or even to a mineral priſon. This extenſive theory of tranſmigration is of a very poetical tendency, affording great ſcope for the imagination, which the myſtical and enthuſiaſtic turn of Hindoo metaphyſicians or theologians has amply indulged in.

Mr. Wilford believes Yama to be the ſame with Serapis; deriving the latter from a Sanſkrit term, implying thirſt of blood. In the Puranas, Yama is deſcribed as attended by two dogs, named Serbura and Syama; the firſt name ſignifies *varied*, and it has other appellations meaning *ſtained* or *ſpotted*. When we add that it was alſo called *Tri-ſiras*, or the three-headed, little doubt can be entertained of its being the ſame with the Cerberus of the Greeks. *Syama* means *black*. See SERBURA, SYAMA, and TRI-SIRAS.

As Dherma Raja, or the king of juſtice, Yama is deſcribed in the Puranas as having two countenances. "One, called his divine countenance, is mild and benevolent; and thoſe only ſee it who abound in virtue. In this form, he is called an emanation of Viſhnu. He is attended by a ſervant named Karmala, who conducts the righteous on ſelf-moving cars into the preſence of their judge. His other countenance or form is more eſpecially named Yama. He is then depicted with large teeth and a monſtrous body, and is thus ſeen only by the wicked. His attendant is named Kaſhmala, who drags the wicked with ropes round their necks over rugged paths; and at the command of Yama ſome are beaten, ſome cut to pieces, ſome devoured by monſters, and thrown headlong into hell. He is unmerciful, hard is his heart, and every one trembles at his ſight."

Yama is the name of a celebrated legiſlator, whoſe enactments are ſtill venerated by the Hindoos. For his profound knowledge and juſtice, he is ſaid to have been made the judge of departed ſpirits.

In the ſeeming contradictions of mythologiſts, Yama is found to be identified, or nearly ſo, with both *Siva* and *Viſhnu*, (ſee thoſe articles,) as well as with Menu, Kala, and others. This may be reconciled, as in the mythology of Greece, by recollecting that almoſt all the deities melt into one. Proſerpine or Hecate is given to Pluto as a help-mate, being but another form of Diana. Thus Yama has a form of Parvati aſſigned him, under the name and character of Pataladevi, or goddeſs of the infernal regions. (See PATALADEVI.) In heaven Diana is Luna, and Parvati is Swardevi, or queen of heaven. On earth they are diſtinguiſhed by the names of Diana and Bhudevi, the latter meaning goddeſs of the earth. Theſe ſimilarities or coincidences could be carried to a great extent.

Some of the ceremonies ſtill in uſe as propitiating Yama, or his conſort *Sakti*, (which ſee,) have been found by ſir W. Jones and others, as ſtrikingly reſembling thoſe of the Eleuſinean goddeſs; and there can be no doubt but the inveſtigation of the mythological fables of the Hindoos has thrown great light, and may throw ſtill greater, on many obſcure and unintelligible paſſages of our ancient poets of Europe.

We do not find any direct repreſentation of Yama, or any minute deſcription of his perſon and attributes, in the mythological works before the public; nor many particulars of his family. We have already noticed him as the offſpring of the ſun; this he ſhares in common with ſeveral other of the heroic perſonages of the Hindoos. Yama is indeed one of the many names of Surya, or the ſun. The river Yamuna, or Jumna, or rather perhaps the damſel who was poetically metamorphoſed into that intereſting ſtream, is fabled as the twin ſiſter of Yama. She is poetically called the "blue daughter of the ſun." Days are eſpecially ſet apart for certain ceremonies to their honour. On one, Yamuna is ſaid to have entertained her brother; and the remembrance of it is preſerved in an exiſting uſage of Hindoo young ladies feaſting and making their brothers preſents on its anniverſary. In the Rig-veda (ſee VEDA), a dialogue is given, in which Yama endeavours to ſeduce his beauteous ſiſter; but his baſe offers are rejected by her with virtuous expoſtulation. In ſome accounts, a divinity named Swadha is deſcribed as the goddeſs of funeral obſequies; and as ſuch we ſhould expect to find her cloſely allied to Yama, but know little of the relationſhip. We have noticed her under the article SWADHA. Several other of our articles contain ſome particulars of Yama. See KASYA, KRITANTA, SRADHADEVA, TAPAS, and VAIVASWAT.

YAMAMAK, in *Geography*. See JAMAMA.

YAMANCHALINSKOI, a town of Ruſſia, in the government of Caucaſus, on the Ural; 20 miles N. of Guriev.

YAMASCA, a river of Canada, which runs into the St. Laurence, N. lat. 46°. W. long. 72° 45′.

YAMASCO, a town of Canada, at the conflux of the Yamaſca with the St. Laurence.

YAMBLAK, one of the *Aleutian iſlands*; which ſee.

YAMBO. See JAMBO.

YAMBURG, a town of Ruſſia, in the government of Peterſburg, on the Luga. The cloth manufactory at this place was inſtituted by Catharine II., preſently after her acceſſion to the throne: it contains 36 looms, and employs 600 perſons. The cloths are ſold at St. Peterſburg at a low price; 20 miles E. of Narva. N. lat. 59° 15′. E. long. 28° 40′.

YAMEOS, a town of South America, in the audience of Quito, on the river Amazons; 36 miles W.S.W. of St. Joachim de Omaguai.

YAMIMKA, a river of Ruſſia, which riſes in the government of Tobolſk, and runs into the Irtiſch, 14 miles S.S.W. of Kozlovo.

YAMINA, a town of Africa, in the kingdom of Bambarra, near the Niger. This town, according to Mr. Park, was large, covering the ſame extent of ground as Sanſanding; but having been invaded and plundered a few years ſince by the king of Kaarta, it was, when he was there, half in ruins. N. lat. 13° 46′. W. long. 3° 50′.

YAMON BAY, a bay on the north coaſt of the iſland of Luçon. N. lat. 14° 21′. E. long. 122° 37′.

YAMSCHEVSKAIA, a fort of Ruſſia, in the government of Kolivan, on the Irtiſch. N. lat. 51° 55′. E. long. 77° 50′.

YAMSKAIA, a gulf of Ruſſia, in the Penzinſkoi ſea, between Cape Piliatchin and the continent. N. lat. 60° 20′. E. long. 154° 14′.

YAMSKOI, a town of Ruſſia, near the gulf of Yamſkaia; 2500 miles E. of Tobolſk. N. lat. 60° 12′. E. long. 153° 34′.

YAMUMINTI, in *Hindoo Mythology*, the name of one of the wives of the amorous Hindoo deity Kriſhna. Her name ſeldom occurs.

YAMUNA, in *Geography*, a river of India, which takes its riſe, as is ſuppoſed, in the great range of mountains called Himalaya. Its ſource has not been accurately explored, but it probably is not more remote than that of the Ganges, which riſes in the ſouthern part of that range. The Yamuna flows through the province of Srinagara, or Serinagur, in a ſoutherly courſe, nearly parallel with the Ganges, approaching its ſiſter ſtream to within forty miles, at the village of Garudavara (Gurudwar), in N. lat. 30° 22′; it is then of nearly equal width. The Yamuna enters Hindooſtan Proper, in the province of Delhi, varying its diſtance from eighty to fifty miles from the Ganges. The country between them is called Dooab, a word meaning two waters, or watered by two rivers. It is a very fertile diſtrict. The rivers approximate and join at Allahabad, an important fortreſs and military ſtation under the Bengal government, when the Yamuna, little inferior in magnitude, has its name and waters abſorbed in the more celebrated ſtream. Its length, of courſe under its own name, is eſtimated at about nine hundred miles.

For many miles of its courſe, the Yamuna, or Jumna, as it is more properly called, was conſidered a boundary to the Britiſh territories, dividing them from the poſſeſſions of the Mahrattas. But from its ſhallowneſs, being fordable in many places in the dry ſeaſon, it was not an important military barrier; and for the ſame reaſon is of leſs conſequence for the operations of commerce.

The confluence of any two rivers is viewed with holy reſpect by Hindoos,—of theſe two grand ſtreams more particularly. To heighten the myſticiſm, (any *ternary* connection being ſtill more deeply venerated,) it is feigned that a third river, the Saraſwaty, joins the other two by a ſubterranean communication at Allahabad. Frequent alluſion is made to this occult union by mythological poets, who teach that theſe three rivers are terrene manifeſtations of the three great goddeſſes, Parvati, Lakſhmi, and Saraſwati; the Sakti, as they are called, or active energies of their reſpective lords, Siva, Viſhnu, and Brahma, who compoſe the Hindoo triad of divinity. Of theſe perſonages ſufficient will be found in the articles given under their ſeveral names in this work. The fable of the "three plaited locks," as this ſuppoſed union of theſe rivers is poetically called, often occurs in the writings of the Hindoos: it is noticed in our articles JUNCTIONS, TRIVENI, and ZENNAR. Under SUICIDE, an account is given of the ſuppoſed proneneſs of the Hindoos to this crime. At the confluence now under our notice, it not only loſes its ſin, but aſſumes a meritorious form. Of this, ſee more under SUTTEE.

The river goddeſs Yamuna is made by mythologiſts to be the ſame with Lakſhmi, conſort of Viſhnu, and twin ſiſter of Yama, the judge of departed ſpirits, and ruler of the infernal regions. Of theſe perſonages ſufficient occurs under their reſpective names.

YAMUTHA, one of the Aleutian iſlands. N. lat. 53° 40′. E. long. 180° 29′.

YAMYA KONDA, a town of Africa, in the kingdom of Yani.

YAMYAMA KUNDA, a town of Africa, in the kingdom of Tomani.

YANA, a river of Ruſſia, which riſes in a lake, ſituated in lat. 63° 40′, long. 131° 14′, and running due north, being ſupplied by many ſmall ſtreams, empties itſelf in the Frozen ſea, N. lat. 71° 25′. E. long. 131° 16′. At its diſcharge it forms five conſiderable rivers, which iſſue in a capacious bay.

YANAM, a town of Hindooſtan, in the circar of Rajamundry; 28 miles S.E. of Rajamundry.

YANATONG, a town of Burmah; 40 miles S. of Mellone.

YANAUCA, a ſmall iſland at the mouth of the river of the Amazons; 10 miles N. of Caviana.

YANDABOO, a town of Birmah, on the Irawaddy, remarkable for its manufacture of earthenware; 70 miles W.S.W. of Ava.

YANDINSKOI, a town of Ruſſia, in the government of Irkutſk, on the Angara; 160 miles N.N.W. of Irkutſk. N. lat. 54° 30′. E. long. 103° 20′.

YANFONG, a town of Corea; 40 miles E.S.E. of Ou-tchuen.

YANG, a town of Corea; 13 miles E. of King-ki-tao.

YANGBONRAW, a town of Pegu; 60 miles S. of Lundſey.

YANG-CONG, a river of China, which runs into the Kincha river, near Lo-choui-tong.

YANG-HO, a river of China, which joins the San-camho, N. lat. 40° 23′. E. long. 112° 49′.

YANG-KIN, a town of the kingdom of Corea; 15 miles S.E. of King-ki-tao.

YANG-LI, a city of China, of the ſecond rank; 1157 miles S.S.W. of Peking. N. lat. 22° 54′. E. long. 106° 35′.

YANG-TCHEN, a town of Corea, in Tchuſin; 150 miles S.S.W. of King-ki-tao. N. lat. 35° 19′. E. long. 125° 14′.

YANG-TCHEOU, a city of China, of the firſt rank, in Kiang-nan, ſituated on the bank of the royal canal, which extends from the Ta-kiang northwards to the river Hoang-ho, or the Yellow river: it carries on a great trade in all manner of Chineſe works, and is rendered extremely populous, chiefly by the ſale and diſtribution of the ſalt that is made on the ſea-coaſts of this juriſdiction and parts adjoining, and which is afterwards carried along ſmall canals made for this purpoſe, which end in communication with the great canal; 485 miles S.S.E. of Peking. N. lat. 32° 26′. E. long. 118° 54′.

YANG-TCHUEN, a town of Corea; 35 miles W.S.W. of King-ki-tao.

YANG-TE′, a town of Corea; 84 miles E. of Hantcheou.

YANG-TSE-KIANG, a river of Aſia, which riſes in the mountains of Thibet, and after croſſing the empire of China, from eaſt to weſt, empties itſelf into the ſea, 120 miles E. from Nan-king. This river changes its name almoſt in every province through which it paſſes. See KINCHA.

The Yang-tſe-kiang may be conſidered as equalling, if not exceeding in ſize, the YELLOW *River* (which ſee). The ſources of both theſe rivers are in the ſame range of mountains, and they approach one another in one part within a few miles. The Yang-tſe-kiang, according to Mr. Barrow's ſtatement, conſiſts of two diſtinct branches, which ſeparating from each other about eighty miles, flow in a parallel direction to the ſouthward for the ſpace of 70 miles, and then unite between the 26th and 27th degrees of N. latitude, juſt at the boundaries of the two provinces of Yunnan and Se-chuen. Then ſtriking off to the N.E. directly through the latter of theſe provinces, collecting the waters of the numerous rivers that deſcend towards it from that and another province called Quee-choo, it continues in this direction about 600 miles, and then enters the province of Hoo-quang, in the

31ſt degree of N. latitude. Through this province it takes a ſerpentine courſe, and receives the waters of ſeveral lakes, with which this part of the country abounds. Leaving Hoo-quang, it paſſes between the province of Ho-nan and Kiang-ſee, and with a little inclination from the E. towards the N., its copious ſtream glides ſmoothly through the province of Kiang-nan, and is diſembogued into the ſea, which bounds China to the E. in the 32d degree of N. latitude. The diſtance from thence to Hoo-quang is about 800 miles, which makes the whole length of the river about 2200 miles. The current, where the yachts of lord Macartney's embaſſy paſſed it, did not exceed in the ſtrongeſt part two miles; but it was much deeper than the Yellow river. There theſe two great Chineſe rivers, taking their ſources in the ſame mountains, paſſing almoſt cloſe to each other in a particular ſpot, ſeparating afterwards from each other to the diſtance of 15 degrees of latitude, finally diſcharge themſelves into the ſame ſea, within two degrees of each other; comprehending within their graſp a tract of land of above 1000 miles in length, which they contribute greatly to fertilize and enrich, though by extraordinary accidents occaſioning unuſual torrents, they may do injury in particular inſtances. This tract includes the principal portion of the Chineſe empire in ancient times; and lies in that part of the temperate zone, which in Europe, as well as in Aſia, has been the ſcene where the moſt celebrated characters have exiſted, and the moſt brilliant actions been performed, which hiſtory has tranſmitted to poſterity. When the gentlemen of the embaſſy had croſſed the Yang-tſe-kiang, they found that, inſtead of a flat country, lakes, and ſwamps, the ground roſe gradually from the margin of the river, enriched with various kinds and tints of culture, interſperſed with trees, temples, and pagodas. In the river were iſlands ſkirted with ſhrubbery, and rocks riſing abruptly from the ſurface of the water. The waves rolled like thoſe at ſea, and porpoiſes are ſaid to be ſometimes ſeen leaping amongſt them: ſeveral junks were lying at anchor. In the middle of the river is the iſland called "Chin-ſhan," (which ſee.) The ground to the ſouthward of the river gradually roſe to ſuch a height, that it was found neceſſary to cut down the earth in ſome parts to the depth of near 80 feet, in order to find a level for the paſſage of the canal. The land in this neighbourhood is chiefly cultivated with that particular ſpecies or variety of the cotton-ſhrub that produces the cloth uſually called Nankeens in Europe. The down enveloping the ſeed, or cotton-wool, is whole in the common plant; but in that growing in the province of Kiang-nan, of which the city of Nan-kin is the capital, the down is of the ſame yellow tinge which it preſerves when ſpun and woven into cloth. The colour, as well as the ſuperior quality of this ſubſtance in Kiang-nan, was ſuppoſed to be owing to the particular nature of the ſoil; and it is aſſerted, that the ſeeds of the Nankeen cotton degenerate in both particulars when tranſplanted to another province, however little different in its climate. Lord Macartney's Embaſſy, vol. ii.

YANG-TSI, a town of Corea; 30 miles S. of King-ki-tao.

YANI, a kingdom of Africa, ſituated to the eaſt of Burſali, and divided into Upper and Lower, on the north ſide of the river Gambia. See Pisania.

YANIMAREW, a town of Africa, in the Lower Yani.

YANIMAZCU, a town of Africa, in the kingdom of Yani. N. lat. 13° 40′. W. long. 14° 1′.

YANKEON, a mountain of Thibet; 30 miles N. of Zuenga.

YANKJA, a town of Aſſyria, near the Tigris, and not far from Bagdad. This place and alſo Doueſſla are ſmall ſtraggling towns, every houſe being ſurrounded by a ſeparate mud-wall.

YANTAC, a town of Thibet; 28 miles S.W. of Harachar.

YAN-TCHIN, or Van-tchin, a city of China, of the ſecond rank, in Quang-ſi; 1177 miles S.S.W. of Peking. N. lat. 23° 1′. E. long. 106° 51′.

YAN-TINCOU, a town of Thibet; 75 miles E.N.E. of Pa.

YANTRA, a word denoting a myſtical figure among the Hindoos; alſo a mathematical inſtrument uſed in any ſcience or art of an occult nature. An inſtrument uſed in aſtronomical obſervations, called Golayantra, or the ſpheric yantra, is deſcribed in the ninth volume of the Aſiatic Reſearches, art. 6, as ſimilar to our armillary ſphere. The article now referred to by Mr. Colebrooke, preſident of the Aſiatic Society of Calcutta, is very curious and important. The Hindoos, being ſo prone to myſticiſm, can fancy various wiſhes in occult figures and practices. Figures ſimilar to the magic ſquares, abracadabra, &c. of weſtern wizards, are ſtill uſed and venerated by the knaves and fools of Aſia; theſe are generally called yantra: as are peculiar figures or hieroglyphics, appropriated to certain Hindoo deities, whoſe followers or ſectaries mark their foreheads therewith, and deem them of a ſanctifying tendency. The nature of theſe various yantras, with ſuitable inſtructions and warnings as to their formation, uſes, and purpoſes, are taught in a Sanſkrit book, entitled "Agamaſaſtra, or Occult Science." It may be noticed in paſſing, that the word Agama, meaning in the Sanſkrit tongue hidden, myſterious, ſecret, &c. ſeems to have had in various languages and regions a ſimilar meaning, as to which it may ſuffice to refer to our articles Ogham, O'm, and Shastah.

Combined with and related to the yantra, are certain imprecations, incantations, charms, philtres, &c. called Mantra and Tantra, which occur frequently in Hindoo writings, and of which ſome notice is taken in this work under thoſe words.

YAO, in *Geography*, a city of China, of the ſecond rank, in Chen-ſi; 485 miles S.W. of Peking. N. lat. 35° 54′. E. long. 108° 31′.

YAO-NGAN, or Yao-gan, a city of China, of the firſt rank, in Yun-nan. The territory of this city is conſiderable, although it contains but two cities, one of the ſecond order, and the other of the third. It is intermixed with mountains, which are covered with fine foreſts and fruitful valleys, and produces abundance of muſk: near the city there is a well of ſalt water, from which they make very white ſalt; 1175 miles S.W. of Peking. N. lat. 25° 33′. E. long. 101°.

YAO-TCHEOU, a town of Chineſe Tartary; 380 miles E.N.E. of Peking. N. lat. 40° 43′. E. long. 122° 14′.

Yao-tcheou, or Yao-choo-foo, a city of China, of the firſt rank, in Kiang-ſi, ſituated on the S.E. bank of the lake Po-yang. It has ſeven towns of the third rank in its juriſdiction. In this town is a large manufacture of porcelain, from whence, as well as from King-te-ching, it is ſent to Nem-chang-foo; 670 miles S. of Peking. N. lat. 29°. E. long. 116° 14′.

YAP, among the *Hindoos*, is a ſilent meditation on the names, attributes, and powers of the Deity. Great merit is aſcribed to this ſpecies of devotion, which is otherwiſe, though we apprehend leſs correctly, ſpelled *jap;* under which article we find we have ſufficiently deſcribed it, although reference has occaſionally been made to this article;

ticle; which is therefore thus given, chiefly to point to the more lengthened deſcription.

Yap *Iſland*, in *Geography*, one of the group called *Carolines*; which ſee. In this iſland, a kind of crocodile is the object of their worſhip. Here are alſo a number of magicians, who impoſe upon the credulity of the inhabitants, by leading them to believe, that they have communication with the evil ſpirit; and by this impoſition, they commit with impunity all ſorts of crimes. They procure maladies and even death to thoſe whom it is their intereſt to deſtroy.

YAPANDAIN, a town of the empire of Birmah, on the Irawaddy; 40 miles W. of Ava.

YAPIZLAGA, or Llanos de Manso, a province of South America, in the vice-royalty of Buenos Ayres, of great extent, ſituated to the ſouth of the Vermejo river. This country was formerly called Llanos de Manſo, or the Plains of Manſo, from a captain of that name, who in 1556 undertook to build a town: but when he thought himſelf in perfect ſecurity, he, with all his attendants, was murdered by the Indians; of whom there are ſeveral nations. The country is but little known.

YAPOC, a river of Surinam, which runs into the Atlantic, near Cape Orange.

YAPON, in *Botany*, a ſpecies of *ilex*. See Holly.

YARACUI, in *Geography*, a river of Venezuela, which runs into the Spaniſh Maine, N. lat. 10° 28′. W. long. 68° 40′.

YARANSK, a town of Ruſſia, in the government of Viatka; 72 miles S.W. of Viatka. N. lat. 55° 36′. E. long. 48° 34′.

YARAY, a town of Africa, in the kingdom of Kayor; 80 miles S.E. of Amboul.

YARBA, a town of Africa, and capital of a country, called Yarra; 430 miles S.W. of Tombuctoo.

YARD, *Virga*, a long meaſure, uſed in England and Spain; chiefly to meaſure cloth, ſtuffs, &c.

The Engliſh yard contains three feet. It was firſt ſettled by Henry I. from the length of his own arm. See Measure.

The Engliſh yard is juſt ſeven-ninths of the Paris ell; ſo that nine yards make ſeven ells. To reduce ells, therefore, into yards, ſay, If ſeven ells give nine yards, how many yards will the given number of ells give?

Yards are converted into ells Flemiſh, by adding a third part; into ells Engliſh, by ſubtracting a fifth part; or multiplying by 8, and caſting off the right-hand figure. Ells Engliſh are converted into yards, by adding a fourth. To turn ells Flemiſh into yards, ſubtract one quarter.

The Spaniſh vara, or yard, chiefly uſed at Seville, is, in ſome places, called *barra*. It contains ſeven twenty-fourths of the Paris ell; ſo that ſeventeen ells make twenty-four Spaniſh yards.

Yard, in *Anatomy*, the penis, or virile member; ſerving for the evacuating of the urine and ſeed.

It is alſo the common name for the penis in moſt animals.

Yard *of Land*, *Virgata Terræ*, or *Virga Terræ*, is a certain quantity of land, but that various, according to the place. At Wimbledon, in Surrey, it is only 15 acres; but in moſt other counties it contains 20, in ſome 24, in ſome 30, and in others 40 or 45 acres.

"Virgata terræ continet 24 acras; et 4 virgatæ conſtituunt unam hidam, et quinque hidæ conſtituunt feodum militare." MS. Abbat. Malmeſ. See Carrucate, Hide, and Knight's *Fee*.

Yard, in *Agriculture*. See Farm-*Yard*.

Yard-*Manure*. See Farm-*Yard*, Compost, Dung, Manure, and Manuring.

In order to prevent the vegetation of weeds in this manure, the manure is turned up in the yard in rows when it is about two feet in depth, leaving proper room between each row to put the freſh dung from the ſtables, cow-houſes, and hog-ſties. After the manure thus thrown up has got a fair heat, it is again turned over, which moſtly deſtroys or prevents the weeds from growing, when the manure is ready for being taken out upon the land.

The uſes and powers of the long and ſhort yard dungy manure are very different in different ſtates of it.

The opinions and practice of the farmers in the county of Norfolk, in regard to the uſe of long or ſhort dung or yard manure, are much divided. Comparative trials are wanting to fully aſcertain this important point.

It is, however, a prevailing idea in the above county, that long dung is beſt for ſtrong land, and ſhort for light ſoils; but that the general practice is that of ſpreading ſhort in all caſes.

In Eſſex, too, it is now the practice of many enlightened farmers to make uſe of long dung or yard manure with great advantage; though what may be ſaid to be the general cuſtom of the diſtrict is to clamp and employ that which is in the ſhort ſtate. Some farmers there, however, do not like to ſee their yard-manure too long in the heaps, as there is loſs in turning it. In the practice of dunging for wheat, it was there obſerved, on long and extenſive experience, that it ſhould be *long freſh* dung, as the ſuperiority of ſuch dung to that which the farmers ſo generally prefer, ſuch as has been moved and turned over until quite rotten, was, one load of it, worth ſix of that of a year old and rotten, as with ſuch dung a crop of wheat is always certain.

In Oxfordſhire, and many other counties, the ſame is the caſe with many farmers, though the common practice is to mine and turn yard-manure until it is reduced into the ſhort ſtate, and then to apply it to the land.

On this very intereſting point of management, the writer of a late work on Agricultural Chemiſtry has ſuggeſted, that a ſlight incipient fermentation is undoubtedly of uſe in the heaps of this ſort of manure, as by means of it a diſpoſition is brought on in the woody fibre to decay and diſſolve, when it is carried to the land, or ploughed into the ſoil; and that this ſort of fibre is always in great exceſs in the refuſe of the farm, eſpecially that of the yards: but that too great a degree of fermentation is very prejudicial to ſuch mixed yard-manure, when in the heaps; and that it is better that there ſhould be no fermentation at all before the manure is uſed, than that it ſhould be carried too far, the exceſs of fermentation tending to deſtroy and diſſipate the moſt uſeful part of the manure.

During the violent fermentation which is neceſſary for reducing farm-yard manure to the ſtate in which it is termed *ſhort muck* or *dung*, not only a large quantity of fluid, but likewiſe of gaſeous material is loſt; inſomuch that the dung or manure is reduced one-half, two-thirds, or more of its weight; and that the principal elaſtic matter diſengaged is carbonic acid with ſome ammonia; both of which, if retained by the moiſture in the ſoil, would be capable of becoming an uſeful food or nouriſhment of plants.

Beſides the diſſipation of gaſeous matter when fermentation is puſhed to the extreme, as in the caſe of ſhort dung, there is another diſadvantage attending it in the loſs of *heat*, which, if excited in the ſoil, is uſeful in promoting the germination of the ſeed, and in aſſiſting the plant in the firſt ſtage of its growth, when it is moſt feeble and moſt liable to diſeaſe; and the fermentation of the manure in the ſoil muſt be particularly favourable to the wheat-crop, in preſerving a genial temperature beneath the ſurface late in the autumn and during winter. Moreover, it is a general principle in chemiſtry, that in all caſes of decompoſition, ſubſtances combine much more readily at the moment or time of their diſengagement, than after they have been perfectly formed: and in fermentation beneath the ſoil the fluid matter produced is applied inſtantly, even while it is warm, to the organs of the plant, and conſequently is more likely to be efficient, than in ſhort dung or manure that has gone through the proceſs; and of which all the principles have entered into new combinations.

The writings of ſcientific cultivators allege many arguments and facts which favour the application of yard-dung in a freſh or long ſtate; and it is ſuppoſed, that perhaps there is no ſubject of inveſtigation in which there is ſuch an union of theoretical and practical evidence and proof.

The main objection againſt the uſe of ſlightly fermented or long yard-dung or manure is, that weeds riſe more luxuriantly and in greater numbers where it is had recourſe to: but though ſeeds thus carried out will certainly ſprout, it is but ſeldom that this can be the caſe to any extent; and if the land be not clean of weeds, any kind of manure, long or ſhort, fermented or unfermented, will cauſe their rapid growth.

The application of yard-dung, or manure in the long ſtate, is highly advantageous with regard to the quantity or extent of the improvement which may be produced, as nearly four loads of it are moſtly required to form one of the ſhort kind.

There is another queſtion connected with this ſubject, which is not of leſs intereſt or importance to the farmer to have decided, which is that of the ſuperior advantage of conſuming the ſtraw of the farm by animals, or of having it littered and trodden into dung or manure in the yards. Many of the moſt enlightened farmers in the firſt of the above counties, the writer of the account of the agriculture of it ſays, are againſt the former of theſe practices, though a large part of them is in the cuſtom of it: and they have frequently, too, recourſe to the method of buying oil-cake, even often at a loſs, in order that their ſtraw may be trodden into dung or manure by fattening beaſts, which is an excellent management of the yard kind.

YARD-*Fallen*, a term uſed among our farriers to expreſs a malady to which horſes are ſometimes ſubject, which is the hanging down of the penis from its ſheath between the legs, the creature not being able to draw it up again. This is cauſed by weakneſs of the peculiar muſcles which ſhould act in the drawing up; and proceeds ſometimes from a violent ſlip or ſtrain, ſometimes from a blow on the back, and ſometimes from extreme wearineſs in long journeys.

The method of curing this is, firſt to waſh it with oil of roſes, after this with warm white wine, and finally, to anoint it with a mixture of oil of roſes and honey; it is then to be returned into its place, and kept from falling down again by a little canvas bolſter. It is to be thus dreſſed once in twenty-four hours, till the cure is perfected.

There are ſome other diſtemperatures to which this part is ſubject in a horſe, as the being foul at the end, ſo that the creature voids his urine in the ſheath; in this caſe, the method of cure is to draw out the penis, and cleanſe the end of it from any foulneſs that may be found there; then it is to be waſhed with butter and white wine vinegar melted together: ſometimes there is a diſcharge of yellow ſtinking matter from the penis; this is peculiar to ſtone-horſes, and principally affects them after the time of their covering of mares.

This running is attended with a ſwelling of the penis, and with a pain in voiding the urine; the creature alſo finds a difficulty in drawing up the penis into the ſheath.

The method of cure is, to diſſolve in a pint of white wine an ounce of roach-alum by boiling; and four or five times a day this is to be uſed, injecting it up into the yard with a ſyringe, blood-warm. This will prove a certain cure.

YARD-*Foul*, the filthy, furred ſtate of the yard and ſheath in animals of the horſe kind, which ſometimes produces diſeaſe.

It is removed by well waſhing and cleaning the parts, by the free uſe of ſoft-ſoap and water.

YARD, *Mattering of*, a diſeaſe in the yards of horſes, produced by different cauſes, in which matter is formed. It is removed by the uſe of cooling waſhes, and keeping the parts clean and perfectly free from dirt and naſtineſs.

YARD, *Sheep*. See SHEEP-*Yard* and STANDING *Fold*.

YARD, *Stable*. See STABLE.

YARD, *Stack*. See FARM-*Yard*, STACK, and STACK-*Yard*.

YARD, *Straw*. See STRAW-*Yard*.

YARDS, in a *Ship*, are long cylindrical pieces of fir-timber, ſuſpended to the maſts of ſhips, &c. to extend the ſails to the wind.

All yards are either ſquare or latteen; the former are ſuſpended athwart the maſts by the ſlings, at right angles, and the latter at one-third their length, obliquely.

The proportional lengths of yards are as follow, particularly in the royal navy:—Main-yard, eight-ninths the length of the main-maſt; fore-yard, ſeven-eighths of the main-yard; mizen-yard, ſix-ſevenths of the main-yard; main-topſail-yard, five-ſevenths of the main-yard; fore-topſail-yard, ſeven-eighths of the main-topſail-yard; mizen-topſail-yard, two-thirds of the main-topſail-yard; topgallant-yards to 74-gun ſhips, two-thirds all under three-fifths of their topſail-yards; royal-yards, half of the topſail-yards; croſs-jack-yard and ſpritſail-yard, the ſame as the fore-topſail-yard; ſpritſail-topſail-yard and driver-yard, the ſame as the fore-topgallant-yard; and the ſtudding-ſail-yards, four-ſevenths of their booms.

Proportion of diameters of main and fore yards at the ſlings is one-quarter of an inch to every foot in their length; mizen-yard, two-thirds the diameter of the main-yard; topſail-yards, five-eighths of an inch to every yard in the length; topgallant-yards, three-fifths of an inch to every yard in the length; royal-yards, half the diameter of the topſail-yards; ſpritſail-yard and croſs-jack-yard, the ſame diameter as the fore-topſail-yard; ſpritſail-topſail-yard and driver-yard, the ſame diameter as the fore-topgallant-yard; and the ſtudding-ſail-yards, one inch diameter to every five feet in the length.

The ſquare yards are of a cylindrical ſurface the greater part of their length. They taper from the middle, which are called the *ſlings*, towards the extremities, which are termed the *yard-arms*; and the diſtance between the ſlings and the yard-arms on each ſide is divided into quarters, which are diſtinguiſhed into the firſt, ſecond, and third quarters, and yard-arms, which are regularly tapered by the following proportions. The firſt quarter, or that next the ſlings or middle, thirty thirty-ones of the given diameter; the ſecond quarter, ſeven-eighths; the third quarter, ſeven-tenths; and the arms or ends, three-ſevenths. From a middle line ſtruck on the tree or ſpar the yard is to be made from, half of the ſeveral dimenſions above is to be ſet off, and the yard then ſawn to its ſiding; it is then canted, and a middle line ſtruck on one of thoſe ſides, and the middle and the quarters ſquared up thereon from the middle line on the firſt ſide, and the ſame diameters ſet off as before, then lined and ſawn ſquare to the upper ſide; it is then ſawn eight-ſquare the whole length.

The main and fore yards (*fig.* 17. *Rigging*, *Plate* II.) are then trimmed ſixteen-ſquare, and rounded from one quarter on each ſide the ſlings to the outer ends, except on the aft-ſide, which muſt remain eight-ſquare two-quarters on each ſide the middle. The whole is then planed fair and ſmooth.

In merchant ſhips they have a ſheave-hole in their arms for the topſail-ſheets, and are left ſquare the length of the ſheave-hole; but this method weakens the lower yards.

Topſail-yards (*fig.* 18. *Rigging*, *Plate* II.) being trimmed ſixteen-ſquare, are rounded and planed from the firſt quarter on each ſide the middle to their outer ends, and a ſheave-hole cut from their upper ſide, its length within each outer end for the reef-tackles. In ſome merchant ſhips a hole is cut within the cleats for the top-gallant-ſheets, but is better avoided, as it weakens the yard-arms.

Topgallant-yards (*fig.* 19. *Rigging*, *Plate* II.), royal-yards, croſs-jack-yards, mizen-yards, ſprit and ſprit-topſail-yards, ſtudding-ſail and driver yards, are trimmed eight-ſquare, ſixteen-ſquare, and then rounded and planed fair and ſmooth from end to end throughout the length.

Battening of Yards.—Main and fore yards, main, fore, and mizen topſail-yards, have oak battens nailed on their ſquares nearly the ſame length and breadth, one inch to three-quarters of an inch thick; their ends rounded and ſnaped, and the edges chamfered. The fore-ſide has no battens.

Cleating of Yards.—The ſling-cleats, *a a*, (*fig.* 17. *Rigging*, *Plate* II.) nailed on the fore-ſide of the main and fore yards, are once and a quarter the given diameter of the yard in length, with a ſhoulder one-third its length; the breadth one-fourth the length; the thickneſs two-thirds the breadth, made of elm, and nailed once the given diameter on each ſide the ſlings.

Stop-cleats, *b*, (*fig.* 17. *Rigging*, *Plate* II.) are made of oak, and nailed within the arms, on the fore-ſide and aft-ſide of the lower yards, one inch and a half to every yard in their length. Their length half the given diameter of the yard; the breadth one-fourth its length; and its thickneſs two-thirds its breadth. Yards for merchant ſhips have their cleats ſometimes raiſed from the ſolid.

Topſail-yards have ſtop-cleats, nailed on the fore-ſide of the yard, once the given diameter on each ſide of the ſlings. Thoſe within the arms, on the fore and after ſides of the main and fore topſail-yards, three inches to every yard in the length; and mizen topſail-yards, two inches and a quarter.

Topgallant-yards the ſame as topſail-yards.

Royal-yard-cleats are once the diameter on each ſide the middle aſunder, and twice their length within at the arms.

Croſs-jack-yards have ſtop-cleats, nailed on the fore-ſide of the yard, half the diameter on each ſide of the ſlings; thoſe at the arms, one inch and a half within their outer ends to every yard in length, and nailed on the fore and after ſides.

Mizen-yards have ſtop-cleats nailed once the diameter aſunder on the ſtarboard-ſide, and once and a half the given diameter below the middle of the yard: thoſe at the peek or outer end, once the diameter within.

Sprit and ſprit-topſail-yards have ſtop-cleats nailed on their under ſides; the ſpritſail-yard once the diameter on each ſide the ſlings; the ſprit-topſail-yard half the diameter one each ſide: thoſe at the arms one inch and a half within their outer ends to every yard in the length; and they nail on the fore and after ſides contrary to thoſe at the ſlings.

Studding-ſail and driver yards have ſtop-cleats, nailed once the given diameter aſunder, at one-third the length of the yard from the inner end; thoſe at the arms twice their length within.

Boat-yard-cleats are once the given diameter aſunder at the ſlings; ſome in the middle, others one-third from the end, ſuch as lugs, latteen, and ſettees, and the length of the cleat within at the arms.

Yards are fitted at their outer ends for rigging out ſtudding-ſails. Main and fore yards have four boom-irons; one on each of their outer ends, *c*, (*fig.* 17. *Rigging*, *Plate* II.) the others at one-third the length of the boom within, *d*. The outer boom-iron is compoſed of a ring, a neck, and ſtraps.

The ring, through which the boom ſlides, is of the ſame diameter in the clear as its topmaſt-ſtudding-ſail boom; breadth three-eighths the diameter, and from five-eighths to three-quarters of an inch thick. In one ſide a lignum vitæ roller is fitted, one-third in length the diameter of the boom-ring. The neck is ſquare, and connects the ring to the ſtraps; each neck one inch longer than the diameter of the ring, and one-fourth its length in ſize.

The ſtraps are made one inch and a quarter in length to every three feet of the yard; their breadth once and a half the breadth of the ring; thickneſs at the inner part, three-eighths of an inch: they increaſe in ſubſtance towards the neck, and are made to the ſhape of and let in their thickneſs into the yard-arm. They are bolted, and have two hoops made to the ſize of the yard-arm, one cloſe to the end, and the other near the neck.

Inner boom-irons are made after the ſame proportion as the outer ones, but differ in ſhape. The ſtraps are made to compaſs the yard at one-third the length of the topmaſt-ſtudding-ſail boom within the end, and the ring is ſeparated from the ſtrap by a collar; the upper part of the ring opens with a hinge on one ſide, and the heel of the boom is claſped therein.

Boom-irons fix on the yards thus: the rings are parallel with the axis of the yard, in a ſtraight direction, with a line ſtruck upon the yard, in the middle of the ſquare, between the upper and fore ſide.

Boom-irons, on the yard-arms of ſhips in the merchant ſervice, differ much in ſhape. The ring the boom ſlides through is connected by a collar to a ſquare hoop, that lets on and nails to the yard-arms, they being left ſquare; and ſometimes a round hoop to the ſize of the yard-arms. Others have a ſtraight neck, projecting from ſtraps, with a ſhoulder in the middle of the neck, and the part without left ſquare. The boom-ring has a ſhank on the under part, with a mortiſe that fits the neck, and there faſtened by a ſcrew-nut, or a ſpring-forelock, that goes on the neck next the ring.

Topſail-yards, main and fore, commonly have boom-irons at their outer ends, like the lower yards in merchant ſhips. In the navy they are moſtly fitted with a boom-ring, and a ſprig-eye-bolt driven in the middle of their ends, parallel to its axis; and an iron hoop let in its thickneſs and breadth, and nailed, to prevent ſplitting the yard-arm. Yards that have no inner boom-irons have ſaddles for the heel of the boom.

Topgallant-yards, main and fore, mizen-yards, ſprit and ſprit-topſail-yards, have their arms fitted with a ferrule-hoop and ſprig-eye-bolts, as the topſail-yards.

Mizen-topſail and topgallant yards have hoops like the former let on their outer ends, but no eye-bolts.

Driver-yards have a ſheave-hole cut through their outer end, and a hoop and eye-bolt.

The main and fore yards of large ſhips are ſometimes made of two trees; they have each tree lined, long enough to ſcarf four feet beyond the firſt quarter, next the middle, or ſlings, which is in all five-eighths the length of the yard, adding four feet. The ſcarfs line ſtraight, from each quarter next the middle to one-fourth the ſubſtance at the quarter next the butt, and three-fourths at the quarter next the middle, and haunches to about three inches at the butt. Each tree is then ſawn as before directed, and completed thus: the ſcarf and haunches are trimmed ſtraight, and out of winding on the inſide, and a line ſtruck along the middle, and a chain-coak ſet off, each about two feet four inches long, and one-third the diameter broad; and the butts ſquared acroſs and down the ſides. The coaks are raiſed one inch and a quarter at the butt, and ſunk to the ſame on the other ſide of the middle, towards the arm; the other half is then canted thereon, ſet ſtraight and out of winding, and fayed as the *maſts*, (which ſee, and the *Plate* of *Maſts*,) and bolted together fore and aft through the middle, in the butt of every coak; the heads are to be driven from the thinneſt part of the ſcarf, and clenched on a ring, and the haunches nailed.

The yard is then completed as before directed, and the ſcarfs caulked their length and hooped; one hoop over the butt of each ſcarf, one in the middle of each haunch, and one over every bolt: then a fiſh of fir, two inches thick, and the ſame length and breadth as the ſquare on the aft-ſide, is fayed and nailed cloſe over all the hoops.

Another method of ſcarfing yards together made of two trees, which is the ſtrongeſt, and takes leſs trees than the former, is by providing two trees that will hold the diameter beyond the fiſhes, and ſcarf together ſimilar to the former. Then the deficiency of the diameter towards the middle is made good by long fiſhes of fir, from four to ſix inches thick, as the ſize of the yard may require, extending two feet in length at each end beyond the long ſquare on the aft-ſide, and each of ſufficient breadth to form the eight-ſquare on the outſide. The inner ſurfaces of the fiſhes are coaked and fayed cloſe upon the yard, the coak extending near the whole length. The yard is then finiſhed as before directed, and hooped and bolted, as in the *Plate* of *Maſt-making*.

YARD-*Arm* is that half of the yard which is on either ſide the maſt, when it lies athwart the ſhip. See the preceding article.

YARDS alſo denote places belonging to the navy, where the ſhips of war, &c. are laid up in harbour. See DOCK-*Yards*.

YARDLEY, in *Geography*, a village of Worceſterſhire, which, according to the population return of the year 1811, contained 1918 inhabitants, including 121 families employed in manufactures, and 453 houſes; 7 miles S.E. of Birmingham.

YARE, a river of England, in the county of Norfolk, which riſes about five miles N. from New Buckenham, paſſes by the city of Norwich, and runs into the German ocean near Yarmouth.

YARE. See SEGOVIA *Nueva*.

YARE, among *Sailors*, implies as much as, nimble, ready, quick, expeditious. Hence, *to be yare at the helm*, as ſome ſay, ſignifies to ſet a freſh man at the helm.

YARECA, in *Geography*. See JARECA.

YAREE, a town of Burmah; 40 miles S.W. of Ava.

YARENSK, a town of Ruſſia, in the province of Uſtiug, on the Vitchegda; 92 miles N.E. of Uſtiug. N. lat. 62°. E. long. 47° 50′.

YARI, a town of Braſil, in the government of Para; 60 miles N.E. of Paru.

YARIN, a word uſed by ſome of the chemical writers to expreſs the flos æris.

YARKAN, YARKAND, *Irken*, or *Yarkien*, in *Geography*, a town of Caſhgar, or Little Bucharia, where the grand khan of the Eluth Tartars chiefly reſides. The town is large, and well built of bricks dried in the ſun. The environs are fertile, and the palace of the khan large, but not handſome. In 1400 this town was taken and plundered by Timur Bec; 90 miles S.E. of Caſhgar. N. lat. 38° 13′. E. long. 78° 49′.

YARKAN, or *Yarkand*, ſuggeſted to be the Oechardes of Ptolemy, a river of Aſia, which paſſes by the town of Yarkan, and after a conſiderable courſe runs into lake Lop; 100 miles S. of Tourfan.

YARM, or YARUM, a market-town in the W. diviſion of the liberty of Langbaurgh, in the North Riding of the county of York, England, is ſituated on the banks of the river Tees, 4 miles S. by W. from Stockton, 44 N.N.W. from York, and 237 in the ſame direction from London. In 1811 the houſes in the town and pariſh were 361, and the inhabitants 1431. Here is a neat modern church. A market is held on Thurſday, and fairs on Thurſday before the 5th of April, Holy Thurſday, 2d of Auguſt, and 20th of October. At Yarm was an hoſpital, founded before 1185; alſo a houſe of Black friars, founded about 1271, by the family of Brus or Bruce, both of which were ſuppreſſed by Henry VIII. Over the river Tees at this place is a handſome ſtone bridge, communicating with the county of Durham. The town, formerly more conſiderable than at preſent, ſtill carries on a good trade by water, particularly in corn and lead for the London market. In 1761 the town ſuffered ſeverely by an inundation of the river Tees.—Beauties of England and Wales, Yorkſhire, by J. Bigland, 8vo. Lond. 1812.

YARMOUTH, GREAT, an important ſea-port, borough, and market-town, in the hundred of Eaſt Flegg, and county of Norfolk, England, is ſituated on the E. coaſt of England, near the mouth of the river Yare, whence it has its name, 22 miles E. from Norwich, and 124 N.E. from London. The number of houſes in the pariſh, according to the returns of 1811, was 3594, and the inhabitants were 17,977. A market is held here on Saturday, and a fair in Eaſter week. The town, which ſends two members to parliament, was incorporated by James I. It is governed by a mayor, recorder, 7 aldermen, 36 common-council-men, a town-clerk, and other inferior officers. In former times, Yarmouth was a member of the Cinque Ports, and by ancient cuſtom appointed bailiffs, who, in conjunction with the magiſtrates of the town, hold a court there during the herring-fair. The corporation poſſeſs alſo the privileges of courts of admiralty and of record. Yarmouth is ſingularly ſituated on a long, narrow, ſandy peninſula, having on the E. the German ocean, and on the W. the river Yare, which, after pointing N.E. towards the ſea, ſuddenly bends round to the S. parallel to the ſhore, and opens into the ſea, two miles below the town. The coaſt near Yarmouth and ſouthward to Loweſtoft is the moſt eaſterly part of Great Britain, Yarmouth church lying in E. long. 1° 45′ from Greenwich.

The firſt mention of this town is in Domeſday-book, which renders it probable, that it had its beginning in the early part of the Anglo-Saxon dynaſty. When the ſand-bank, on which it ſtands, and which, thrown up by the ſea, impeded, or at leaſt diverted, the courſe of the Yare, was ſufficiently conſolidated, habitations were formed on it by the fiſhermen who reſorted to the coaſt. By the influx of foreigners for the purchaſe and ſale of fiſh the town increaſed, ſo as to become the moſt conſiderable port on the eaſt coaſt of England. To provide for its ſecurity, Henry III. granted to the inhabitants permiſſion to incloſe the town with a moat and walls; works which, however, do not appear to have been commenced until 1285, the thirteenth year of his ſucceſſor, Edward I. But when war with France broke out in 1545, an additional rampart was thrown up towards the ſea, and further extended in 1587. In the following year, to guard againſt the Spaniſh invaſion, outworks were conſtructed, the ſouth mount was raiſed and planted with cannon, and a boom was laid acroſs the entrance of the harbour. Coeval with the firſt fortification of Yarmouth was probably the caſtle, in the centre of the town. It ſerved for ſome years as a priſon; but in 1621 the whole was demoliſhed. In 1642 the inhabitants of Yarmouth declared for the parliament; but it was only after the independents had gained an aſcendancy in the ſtate that a garriſon was admitted here. During the American war, forts and batteries were conſtructed, and barracks for a conſiderable body of troops were erected for the defence of the place. Indebted for its original exiſtence, and ſubſequent increaſe to the fiſhery, Yarmouth very early poſſeſſed a very numerous ſhipping. In the ſummer of 1310, when Edward II. ordered the ſeveral ports of England to ſend ſhips to Dublin, to convey troops over to Scotland, Yarmouth furniſhed ſix, while even Briſtol and Glouceſter, although ſo conveniently ſituated for that object, furniſhed only two between them. To form a fleet to be employed in the ſiege of Calais, in 1346, under Edward III., Yarmouth ſent out forty-three veſſels, carrying 1095 mariners; a number of men far exceeding thoſe furniſhed by any other port in the kingdom; for London itſelf was called on for only twenty-five veſſels, containing 662 mariners.

In 1797, when men for the navy were required in proportion to the tonnage of each port, Yarmouth was the ninth in order; but according to the Cuſtom-houſe books of 1800 it had advanced to be the eighth, the ſhips of the port being 375, the tonnage 32,957, navigated by 2442 men, while Briſtol poſſeſſed 186 ſhips, carrying 26,193 tons and 1674 men. Yarmouth was early diſtinguiſhed, and ſtill remains unrivalled, for the herring-fiſhery. About 1220 the abbot of St. Alban's purchaſed a large houſe in Yarmouth, "in order to lay up fiſh, eſpecially herrings, which were bought in by his agents at the proper ſeaſon, for the uſe of his abbey." Prior to 1238, the people of the oppoſite coaſt of Europe were in the habit of reſorting to Yarmouth for a ſupply of herrings. Theſe and other recorded facts ſhew that the method of preſerving that fiſh, probably by ſalt, muſt have been known in England more than 200 years before the pretended invention of Beukels in Flanders, from whom *pickling* is ſaid to have had its name. (See Herring-*Fiſhery*.) The herrings uſually appear on the eaſt coaſt of England about September, when the grand fiſhing ſeaſon commences. The boats fitted out for the fiſhery are decked, and average from forty to fifty tons burthen, with a crew of eleven or twelve men to each. The veſſels, with ſome tons of ſalt on board, proceed from four to twelve leagues out to ſea. Each boat is provided with eighty or a hundred nets, twenty-one yards in length, and eight and a half in depth; all of which, faſtened to a long rope, are let down into the ſea at duſk, and drawn up at day-light. When ſalted, the fiſh are hung up in lofty buildings, and expoſed, with ſmall intermiſſions, for about a month, to the ſmoke of a wood fire, and thus become red-herrings. Two centuries ago the fiſhery was alſo carried on in ſummer; but in the preſent times no herrings are found on the coaſt in that ſeaſon. In the interval of the fiſhery, the boats are employed in catching mackarel and cod. Yarmouth trades very largely in the export of corn and malt, and in the woollen ſtuffs of Norwich. Timber, iron, and hemp, are imported from the Baltic, and ſhip-building is carried on at this place to a conſiderable extent.

The formation and the maintenance of the harbour of Yarmouth have required great exertion, ingenuity, and expence; for the preſent is the ſeventh recorded to have been made, and its yearly charge amounts to about 2000*l*., which ſum is defrayed by duties exacted from goods brought in. The new works were executed by Joas Johnſon, a Dutchman, who had been invited from Holland for the purpoſe. The principal or north pier is in length 265 yards, and the ſouth pier, which is better conſtructed, 340 yards: the extent of the harbour between theſe piers is 1111 yards; and the depth of water, in all ſtates of the tide, being now about twenty-four feet, inſtead of three feet, as was the caſe before the erection of the piers, veſſels can always lie afloat at their moorings. The well-known Yarmouth roads are formed by ranges of ſand-banks, lying out parallel to and at no great diſtance from the ſhore. The channels between the banks, ſome of which are dry at low water, and between them and the ſhore, are in general narrow, but deep enough for ſhips of any ſize. The roads conſequently afford moſt deſirable ſhelter in ſtormy weather, on a tract of coaſt projecting a great way into the German ocean, and peculiarly deſtitute of acceſſible harbours. But the concourſe of ſhipping in this ſtation has, on various occaſions, produced dreadful diſaſters, the veſſels being frequently driven from their anchors, and wrecked on the banks or on the ſhore.

The town of Yarmouth is in form an oblong quadrangle, conſiſting of four principal ſtreets, croſſed at right angles by 156 lanes, called rows, ſo confined in breadth, that for the conveyance of goods through them, the inhabitants have adopted narrow carts, mounted upon low wheels, and drawn by one horſe, the driver ſtanding in the front of the cart. The town is incloſed by a wall on the north, eaſt, and ſouth ſides, in length 2240 yards, which, with the weſt ſide along the river, 2030 yards, make the circuit two miles and 750 yards. Although ſo populous a town, Yarmouth forms but one pariſh, and, until a century ago, had but one church, that of St. Nicholas, which was erected by Herbert Loſinga, biſhop of Norwich, in 1123; but it was greatly enlarged in 1250. It conſiſts of a nave, two aiſles, and a tranſept, and had lately a ſpire 136 feet high, a diſtinguiſhed ſea-mark in the midſt of a long tract of low and dangerous coaſt; but in 1803 it was taken down. The other public buildings of Yarmouth are, the town-hall, a handſome building, with a Tuſcan portico, ſituated near the centre of the quay; the council-room, which alſo ſerves for aſſemblies; the fiſherman's hoſpital, a quadrangle, containing twenty rooms on a floor, each intended for an old fiſherman and his wife; the hoſpital-ſchool for maintaining and clothing thirty boys and twenty girls, at the expence of the corporation; and the charity-ſchool for ſeventy boys and thirty girls, who are clothed and educated. The quay of Yarmouth is juſtly the boaſt of the town, and is one of the fineſt and the moſt extenſive in Europe. Its length from the ſouth gate to the bridge is 1014 yards, beyond which it reaches 1016 yards farther, making its whole extent a mile and 270 yards. In many places the breadth is 150 yards, and the ſouthern part is decorated with a range of handſome buildings. By means of a bridge acroſs the Yare a communication is maintained with the county of Suffolk, which ſtretches up the weſt bank of the river. As a faſhionable watering-place, Yarmouth is well provided with every accommodation, and conſequently much frequented. On the beach a bathing-houſe was erected in 1759, commanding a fine view of the roads and ſhipping; and in 1778 a neat theatre was opened. Oppoſite to Yarmouth, and for about two miles north and ſouth of the town, the coaſt is nearly a level common, elevated only from two to three yards above high-water mark. From the edge of the common down to the water is a gentle ſlope of fine ſand, intermixed with looſe pebbles called ſhingles; and as the tides riſe but about ſix feet, the ſpace brought under water is only a few yards. From high-water mark to the turf of the common the ſands abound with marine plants, ſome of them rare and curious, of which an account is given by Mr. Dawſon Turner in the Hiſtorical Guide to Great Yarmouth, 12mo. 1806.—Beauties of England and Wales, Norfolk, by J. Britton, F.S.A. 8vo. Lond. 1809.

Yarmouth, *South*, a ſea-port, borough, and market-town, in the S.W. half hundred of Weſt Medina liberty, in the Iſle of Wight, and county of Southampton, or Hampſhire, England, is ſituated at the entrance of the little river Yare, on the N.W. coaſt of the iſland, 10 miles W. from Newport, and 97 S.W. from London. The town, which is governed by a mayor, twelve burgeſſes, a ſteward, a town-clerk, &c. was incorporated by James I., and ſends two members to parliament. In 1811 the houſes in the borough and pariſh were 88, and the inhabitants 427. A market is held here on Saturday, and two fairs annually. Yarmouth is built on a bank ſloping to the ſea, and ſeems to have been formerly much larger than it is at preſent. The church is ſituated in the middle of the town. The market-houſe has over it the town-hall. Here was a caſtle, built by Henry VIII. on the ſcite of an ancient church, which had been deſtroyed by the French. This fortreſs is defended by ſome pieces of cannon, and a ſmall garriſon. Between Yarmouth and Lymington a packet ſails daily.—Beauties of England and Wales, Hampſhire, by J. Britton and E.W. Brayley, 8vo. Lond. 1808.

Yarmouth, a ſea-port town of Maſſachuſetts, in Barnſtaple bay; 50 miles S.E. of Boſton. N. lat. 41° 42′. W. long. 70° 10′.

Yarmouth, a town on the weſt coaſt of Nova Scotia; 35 miles W. of Shelburn.

Yarmouth, *North*, a town of America, in the diſtrict of Maine, and county of Cumberland, with 3295 inhabitants; 9 miles N.E. of Portland. N. lat. 43° 45′. W. long. 70° 8′.

YARMUC, or Yarun, a town of Paleſtine, in the diſtrict of Saphet, on a river of the ſame name, which runs into the lake of Tiberias, chiefly inhabited by Chriſtians; 24 miles S.E. of Saphet.

Yarmuc, a river of Syria, anciently called *Marſyas*, which runs into the Orontes, near Apamea. In 636 a battle was fought on the banks of the river, between the Chriſtians and the Saracens, in which the former were defeated.

YARN, denotes ſpun wool. See Wool, and Woollen *Manufacture*.

Yarn, *Marking*. See Marking.

Yarn, in *Rope-Making*, is ſpun from hemp, and is called twenty-five, twenty, and eighteen thread yarn, which differs only in the fineneſs; the twenty-five being finer than the twenty, &c. It is thus diſtinguiſhed, becauſe either twenty-five, twenty, or eighteen threads a hook, make a rope of three inches in circumference, and ſo in proportion.

Yarn, *Spun*, on board a *Ship*. See Spun.

YARNALLS, in *Geography*, a town of Pennſylvania; 20 miles E. of Sunbury.

YAROVOI, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 52 miles N. of Tobolſk.

YARRA. See Jarra.

YARRINGLES, or Yarringle-*Blades*, a kind of reel, or inſtrument, with which hanks of yarn are wound on to clues, or balls.

YARROW, in *Botany*. (See Achillea.) Perhaps this old Engliſh name originated in the Spaniſh *Yerba*, or *Yerva*, an herb; our Common *Achillea Millefolium* having been formerly called, in that language, *Milhoyas Yerva*, or Thouſand-leaved Herb, a tranſlation of its Latin appellation.

The leaves and flowers of the common yarrow, or *achillea millefolium* of Linnæus, which is in flower on our ditch-banks, and in dry paſtures, the greateſt part of the ſummer, are greatly recommended by ſome of the German phyſicians, as mild corroborants, vulneraries, and antiſpaſmodics, in diarrhœas, hemorrhages, hypochondriacal, and other diſorders. They promiſe, ſays Dr. Lewis, by their ſenſible qualities, to be of no inconſiderable activity. They have an agreeable, though weak, aromatic ſmell, and a bitteriſh, roughiſh, ſomewhat pungent taſte. The leaves, having the greateſt bitteriſhneſs and auſterity, are chiefly directed for medicinal uſe; the flowers have the ſtrongeſt and moſt ſubtile ſmell, are remarkably acrid, and promiſe to be of the greateſt efficacy, if the plant has any ſuch efficacy, as an anodyne or antiſpaſmodic. The virtue of both leaves and flowers is extracted by watery and ſpirituous menſtrua; the aſtringency moſt perfectly by the former; their aromatic warmth and pungency by the latter; and both of them equally by a mixture of the two. The flowers, diſtilled with water, yield a penetrating eſſential oil, poſſeſſing the flavour of the milfoil in perfection; in conſiſtence ſomewhat thick and tenacious; in colour very variable, from a greeniſh-yellow to a deep green and blueiſh-green, and fine blue, which differences depend in a great meaſure on the ſoil in which the plant is produced; the flowers gathered from moiſt freſh grounds yielding generally a blue oil, and thoſe collected from dry commons a green one, with a greater or leſs admixture of yellow. The extract obtained by inſpiſſating the yellowiſh tincture made in rectified ſpirit, is more agreeable in ſmell than the flowers, of a moderately warm penetrating taſte, ſomewhat like that of camphor, but much milder, accompanied with a ſlight bitteriſhneſs and ſubaſtringency. The *achillea ptarmica* of Linnæus, called *ſneezewort*, or *baſtard pellitory*, is perennial, grows wild on heaths, and in moiſt ſhady grounds, and is found in flower from June to the end of ſummer. The roots of this plant have a hot biting taſte, approaching to that of pellitory of Spain, with which they nearly agree in their pharmaceutic properties, and for which they have been ſometimes ſubſtituted in the ſhops. They are by ſome recommended internally as a warm ſtimulaut and attenuant; but their principal uſe is as a maſticatory and ſternutatory. Lewis.

Yarrow, in *Agriculture*, a plant of the herbage kind, which is common but uſeful in the paſture-field in many caſes. It has long ago been noticed, by the writer of the "Eſſays on Rural Affairs," as valuable for cultivation in graſs-lands in different ſorts of ſoil. It ſucceeds on moiſt loams, but is moſt proper for dry burning gravels, ſands, and chalks. It is ſaid to poſſeſs the ſingular quality or property of reſiſting drought on the moſt arid ſoils; ſo that if a green ſpot appears in a burnt-up cloſe-fed paſture ground, it may almoſt with certainty be concluded to be covered with this plant. In paſtures there is not any ſort of plant which is eaten down more cloſely than this, by every kind of browſing domeſtic animal. It has been remarked with ſurpriſe, that ſpots of rich dry land, which were almoſt wholly filled with theſe plants, were eaten down barer than even white clover. It is a ſtrong-rooted perennial plant, which has many fine leaves, of a highly aromatic ſmell, and which is conſidered as not only very acceptable, but uncommonly healthy, or even medicinal, both to ſheep and black cattle.

It is found in the beſt bullock paſtures and grounds, where it is ſaid to be highly grateful to every ſort of live-ſtock of the cattle kind, and particularly ſo to ſheep, which bite it as faſt as it grows or riſes: ſo that on tolerably well-ſtocked paſtures or grounds it is rarely ſuffered to come into flower. The ſeeds of it are, therefore, to be obtained from ſome rich dry ſpot which is well ſtored with the plant; and if the ſoil be well ſupplied with good mouldy compoſt, it has been found that the yarrow may be made into a rough hay, from which it is eaſy to obtain ſeeds, which are of a peculiar winged form and appearance. It flowers late in the ſummer, and the ſeeds may be gathered about the month of October.

It is a plant that has not been obſerved in abundance in boggy or wet lands; but which, for dry rich ſoils, deſerves the preference to moſt others for the purpoſe of being depaſtured. It is a plant that on the whole ſeems to merit the attention of the ſtock-farmer, at leaſt in a much greater degree than he has yet beſtowed upon it.

Yarrow, *Water*. See *Water* Violet.

Yarrow, in *Geography*, a river of Scotland, which riſes in a mountain called *Yarrow Cleugh*, in the county of Selkirk, forms two lochs, St. Mary's and Lows, in its courſe, and runs into the Tweed, about two miles below Selkirk.

YARUM. See Yarm.

YARUQUI, a plain twelve miles north-eaſt from the city of Quito. This ſpot was pitched upon as the baſe of the whole operations for meaſuring the length of an arc of the meridian, by Ulloa, &c. Near it is a village of the ſame name.

YARWHELP, or Yarwip, an Engliſh name uſed in ſome places for the *ægocephalus* of authors. See Godwit.

YASASCHNA, in *Geography*, a town of Ruſſia, in the government of Irkutſk, on the Kitoi; 68 miles N.W. of Irkutſk.

YASASCHNAIA, a river of Ruſſia, which runs into the Kolima, at Verchnei Kovimſkoi.

YASCHAMBOU, a town of Perſia, in the province of Adirbeitzan; 198 miles S.W. of Tauris.

YASSA, in *Modern Hiſtory*, the name given among the Tartars to a body of laws, aſcribed to the famous conqueror Gengis-Kan, which are ſtill obſerved among the Tartars of Crimea, and other parts of Aſia. M. de la Croix has given, in his life of Gengis-Kan, an extract of thoſe laws, compriſing twenty-one articles: the firſt of which inculcates the belief of one God, the Creator of heaven and earth, and to whom belong the abſolute diſpoſal and dominion of events.

YASUDA, in *Hindoo Mythology*, the name of the foſter-mother of the Hindoo Kriſhna: it is ſaid to mean the *giver of honour*.

YASUDERA, the name of the wife of Budha, or Boodh, or deity of the Hindoos, and of other people. See Boodh.

YATA, in *Geography*, a town on the ſouth coaſt of the iſland of Catanduanes. N. lat. 13° 52'. E. long. 124° 29'.

YATCHEVERAM, a town of Hindooſtan, in the Carnatic; 25 miles S.W. of Nellore.

YA-TCHI, a town of Corea; 25 miles S.W. of Ou-tcheou.

YA-TCHING, a town of China, in Fo-kien; 15 miles N.E. of Fou-nhing.

YATE's River, a river of Africa, which runs into the Atlantic, N. lat. 8° 8'. W. long. 12° 15'.

YATHKIED, a lake of North America. N. lat. 63° 10'. W. long. 98°.

YATI, the prieſthood of the extenſive ſect of Jaina, in India. (See Jaina.) A yati is ſometimes ſaid to be more properly an aſcetic, for it doth not appear that he performs any religious rite. It is his duty to read and expound to his diſciples the ſcriptures of the Jaina ſyſtem. See under Sects *of Hindoos* for a general notice of the Jainas.

The yatis are devoted to religion from their infancy; for with the Jainas the prieſthood is not hereditary, as with the orthodox Hindoos. A yati never marries, but ſometimes purchaſes a child, adopts it, and inſtructs it in religious duties. Parents ſometimes vow or promiſe their firſt-born to the deity, in the hope of obtaining the bleſſing of fecundity in their family. They ſerve their noviciate with their guru, or preceptor, and perform for him many domeſtic offices. After a proper period, when arrived at a ſufficient age and progreſs in their ſtudies, they are admitted as yatis. The ceremony on this occaſion is ſimple. The noviciate is carried out of the town with muſic and rejoicing in proceſſion, followed by a crowd of Sravakas, as the laity of the Jainas are called. (See Sravaka.) He is taken beneath a tree with milky juice. The pipala, or Indian fig, is uſually preferred. A circle is formed on the ground, within which none but yatis are admitted. The hair, or lock, of the noviciate is pulled out by the root at five pulls; and camphor, muſk, ſandal, ſaffron, and ſugar, are applied to the ſcalp: he is then ſtripped, and placed, with joined palms, the poſture of reſpect and ſupplication, before his guru, who pronounces a mantra (ſee Mantra) in his ear, and inveſts him with the dreſs of a yati, which conſiſts of a cloth of three cubits for his loins, another of five cubits for his head, a coarſe country blanket, called *kamly*, for his bed, a water-pot, a plate for his victuals, a cloth to tie them up in, a long ſtick to defend him, but not to injure others, and laſtly, a broom of cotton-threads to ſweep the ground where he ſits or lies, to avert the deſtruction of any inſect. The Jainas are the ſect that ſo eſpecially avoid ſhedding blood or deſtroying life; a tenet that leads them to ridiculous exceſſes, as will be ſeen under our article Jaina, in which ſeveral particulars of the yati are alſo given.

YATREB, in *Geography*, the real name of Medina, in Arabia. It is called *Medina*, or the city, by way of eminence.

YATTENDON, a village of England, in the county of Berks. Here Alfred overthrew the Danes in 876; 4 miles S.E. of Eaſt Ilſley.

YATTONG, a town of Burmah; 15 miles W.N.W. of Ava.

YATTONUR, a town of the iſland of Ceylon; 10 miles S.W. of Candy.

YAUACA, a town of Peru, in the dioceſe of Lima, on the coaſt; 20 miles S.S.E. of Naſca. S. lat. 15°.

YAUGAR, a town of Burmah, on the right bank of the Irawaddy, oppoſite to Raynangong.

YAUGOS, a town of Peru, in the dioceſe of Lima; 80 miles S.E. of Lima. S. lat. 12° 40′. W. long. 75° 46′.

YAVI, a town of Peru, in the dioceſe of La Plata; 85 miles E.S.E. of Lipes.

YAW, in *Sea Language*, denotes the movement by which a ſhip deviates from the line of her courſe towards the right or left in ſteering. See STEADY.

YAWL, a ſmall light ſhip's boat, rowed with four to ſix oars, uſed to convey the officers to and from the ſhip.

YAWNING, OSCITATIO, an involuntary opening of the mouth, generally indicating a troubleſome wearineſs, or an inclination to ſleep. See LUNGS.

YAWS, in *Medicine*, a ſevere cutaneous diſeaſe, which is indigenous in Africa, and has been thence conveyed to the Weſt Indies and America; ſo called from the reſemblance of its eruptions to a raſpberry, the word *yaw* in ſome African dialect being the name of that fruit. Noſologiſts have denominated it *Frambœſia*, from the French *Framboiſe*, which has the ſame ſignification.

The nature of this diſeaſe has been imperfectly inveſtigated by European practitioners; and as it is perhaps never ſeen in England, a brief account of it will be here ſufficient.

It is not eaſy to diſcover the preciſe character of this eruption, from the varying language of authors. An anonymous writer, who gave the firſt explicit account of the diſeaſe, (ſee Edinb. Med. Eſſays, vol. v. part 2. art. 76.) ſays, they are at firſt "level or ſmooth with the ſkin," but ſoon "become protuberant *like pimples*." Dr. Hillary, who has copied much from this writer, deſcribes them as "*pimples*," though ſmooth and level with the ſkin, but ſoon becoming "protuberant *puſtules*." (On the Diſ. of Barbadoes, p. 339.) And Dr. Winterbottom, who has given on the whole the moſt perſpicuous deſcription of the diſeaſe, calls them "*puſtules*," from their firſt appearance. Again, as to the contents of theſe eruptions, the anonymous author and Dr. Hillary ſay, that *no pus* nor any quantity of ichor is found in them, but ſpeak of a little *ichor* as drying upon the ſurface; while Dr. Winterbottom ſays, they are "filled with an opaque whitiſh fluid," and when they burſt, "a thick viſcid matter is diſcharged." There is alſo ſome difference of opinion among the writers on this diſeaſe reſpecting the precurſory ſymptoms, the earlier authors aſſerting, that the general health is not impaired during the firſt ſtages; but others, eſpecially Dr. Winterbottom and Dr. Dancer, affirm, that a *febricular* uſually precedes it. On the whole, however, the following appears to be the moſt correct account of the malady, which is to be collected from the various deſcriptions which have been publiſhed.

The eruption of the yaws ſometimes commences without any precurſory ſymptoms of ill health; but it is generally preceded by a ſlight febrile ſtate, with languor, debility, and pains of the joints, reſembling thoſe of rheumatiſm. After ſeveral days, minute protuberances appear on various parts of the ſkin, at firſt ſmaller than the head of a pin, but gradually enlarging, in ſome caſes to the diameter of a ſixpence, and in others even to a greater extent: they are moſt numerous, and of the largeſt ſize, in the face, groins, axilla, and about the anus and pudenda. But the crop is not completed at once; new eruptions appear in different places, while ſome of the earlier ones dry off. When the cuticle is broken, a foul cruſt is formed on the ſurface, from under which, on the larger protuberances, red fungous excreſcences often ſpring up, which attain different magnitudes, from that of a ſmall raſpberry to that of a large mulberry, which fruit they ſomewhat reſemble from their granulated ſurfaces. When the eruption is moſt copious, theſe tubercles are of the ſmalleſt ſize; and when fewer, they are largeſt. Their duration and progreſs are various in different conſtitutions, and at different periods of life. Children ſuffer leſs ſeverely than adults, and are more ſpeedily freed from the diſeaſe. In them, according to Dr. Winterbottom, the duration of the yaws is from ſix to nine months; while in adults it is ſeldom cured in leſs than a year, and ſometimes continues during two or three. The fungous tubercles attain their acme, according to the anonymous writer already quoted, more rapidly in the well-fed negroes than in thoſe who are ill-fed and thin; and they likewiſe acquire a larger ſize in the former than in the latter. They are not poſſeſſed of much ſenſibility, and are not the ſeat of any pain, except when they appear upon the ſoles of the feet, where they are confined and compreſſed by the hard and thickened cuticle: in that ſituation they render the act of walking extremely painful, or altogether impracticable. They never ſuppurate kindly Dr. Winterbottom ſays, but gradually diſcharge a ſordid glutinous fluid, which forms an ugly ſeat round the edges of the excreſcence, and covers the upper part of it, when much elevated, with white ſloughs. When they appear on any part of the body covered with hair, this gradually changes in its colour from black to white, independently of the white incruſtation from the diſcharge. They leave no depreſſion of the ſkin.

The period during which the eruption is in progreſs varies from a few weeks to ſeveral months. "When no more puſtules are thrown out," Dr. Winterbottom obſerves, "and when thoſe already upon the ſkin no longer increaſe in ſize, the diſeaſe is ſuppoſed to have reached its acme. About this time it happens, on ſome part of the body or other, that one of the puſtules becomes much larger than the reſt, equalling or ſurpaſſing the ſize of a half-crown piece: it aſſumes the appearance of an ulcer, and inſtead of being elevated above the ſkin like others, it is conſiderably depreſſed; the ſurface is foul and ſloughy, and pours out an ill-conditioned ichor, which ſpreads very much, by corroding the ſurrounding ſound ſkin: this is what is called the *maſter* or *mother yaw*." When arrived at its acme, however, the eruption continues a conſiderable time without undergoing much alteration, often without very materially injuring the functions, and it ſeldom proves dangerous, except from the miſchievous interference of ill-directed art.

The yaws is propagated ſolely by the contagion of the matter diſcharged from the eruption, when it is applied to the wounded or broken ſkin of another perſon, who has not previouſly undergone the diſeaſe. For, like the febrile eruptions, the yaws affects the ſame perſon only once during life; but, unlike them, it is not propagated by effluvia. The complaint is ſometimes inoculated by flies, in thoſe hot countries, when the ſkin both of the diſeaſed and the healthy remains uncovered. Hence, Dr. Bancroft ſays, "none ever receive it whoſe ſkins are whole; for which reaſon the whites are rarely infected; but the backs of the negroes being often raw by whipping, and ſuffered to remain naked, they ſcarce ever eſcape it." (Nat. Hiſt. of Guiana, p. 385. See alſo Winterbottom, p. 141—3.) In Africa it is uſually undergone during childhood. The period which elapſes between the reception of the contagion and the commencement of the diſeaſe is no where mentioned; but in the caſe of a Dane, whom Dr. Adams ſaw at Madeira, the patient had been abſent ten months from the Weſt Indies before he felt any indiſpoſition. See Memoirs of the Med. Soc. of London.

With reſpect to the treatment of yaws, nothing very ſatisfactory is to be collected from the writings of the practitioners to whom we are indebted for the hiſtory of the diſeaſe. "The native Africans," according to Dr. Winterbottom, "never attempt to cure it until it has nearly reached its height, when the fungi have acquired their full ſize, and no more puſtules appear." And the practitioners in the Weſt Indies ſoon learned by experience, that active evacuations retard the natural progreſs of the diſeaſe; and that mercurials, although they ſuſpended it, and cleared the ſkin of the eruption, yet left the patient ſtill ſuſceptible of, or rather ſtill impregnated with, the virus, which ſpeedily evinced its preſence by a re-appearance of the ſymptoms more ſevere and tedious than before. In truth, the diſeaſe, it would ſeem, like the puſtular and exanthematous fevers of our own climate, will only leave the conſtitution after it has completed the various ſtages of its courſe, and removed the ſuſceptibility of the individual to future infection; and no medicine yet diſcovered has had any influence in ſuperſeding this action, or in accelerating its progreſs. Unleſs, therefore, any urgent ſymptoms ſhould require alleviation, (which ſeldom, if ever, happens) it is adviſeable to diſpenſe with the adminiſtration of medicine, and to be content with reſtricting the patient to a moderate and temperate regimen, during the firſt ſtage of the malady. When the eruptions begin to dry, or as ſoon as they ceaſe to multiply and enlarge, the diſeaſe appears to require the ſame management as other ſlow and ſuperficial ulcerations, accompanied with a cachectic ſtate of the ſyſtem; *viz.* a light but nutritious diet, a dry and wholeſome air, warm clothing, moderate exerciſe, and a courſe of tonic medicine, eſpecially of ſarſaparilla, or cinchona, with the mineral acids, or with antimonials and ſmall doſes of mercury, according to the circumſtances of the individual habit. The effects of mercury, however, exhibited ſo as to excite ſalivation, as the early practitioners recommend, ſeem to be of a very queſtionable nature, eſpecially when it is unaccompanied by the vegetable decoctions; and it is certain that patients have, in ſome caſes, ſoon recovered under the uſe of the latter, when the mercurials were omitted. The mercurial treatment, indeed, is often followed by a train of haraſſing ſymptoms, called by the negroes the *bone-ache*. "The unhappy ſufferer is tormented with deep-ſeated pains in the bones, eſpecially round the joints, which are occaſionally aggravated to a violent degree: the perioſteum becomes thickened, inflamed, and painful, and nodes are formed on the bones. When theſe ſymptoms have continued for ſome time, the bones are affected with caries, and even become ſoft and loſe their form." The native Africans employ decoctions of the bark of two or three trees, which are generally purgative, as well as tonic, and likewiſe waſh the ſores with them, after carefully removing the cruſts.

The *maſter-yaw* ſometimes remains large and troubleſome after the reſt of the eruption has altogether diſappeared. It requires to be treated with gentle eſcharotics, and ſoon aſſumes a healing appearance under theſe applications. Stronger cauſtics are requiſite after the cure of the *crab-yaws*, or tedious excreſcences, which occur on the ſoles of the feet.

We may add, that the anonymous writer in the Edinb. Med. Eſſays, and after him Dr. Hillary and others, have deemed the yaws to be the Hebrew leproſy, deſcribed by Moſes. (Leviticus, chap. xiii.) In ſome reſpects, and eſpecially in the appearance of what is called "raw fleſh" in the leprous ſpots, together with *whiteneſs of the hair*, the deſcription of the leproſy of the Jews is applicable to the yaws. But the leproſy is deſcribed by the great legiſlator as beginning in ſeveral ways, or appearing under ſeveral varieties of form, in only one of which this riſing of "raw fleſh" is mentioned; and the two circumſtances, which all theſe varieties exhibited in common, were a depreſſion of the ſkin and whiteneſs of the hair. Now this change in the colour of the hair is common to the yaws and to the leuce; and it is conjoined in the latter with cutaneous depreſſion. It ſeems pretty obvious indeed, that the term leproſy was uſed in the Scriptures to denote ſeveral diſeaſes of the ſkin, againſt which the law of excluſion was enforced, and others to which it did not apply. An inſtance of the latter occurs in Gehazi, whom we find ſtill in the employment of Eliſha, and even converſing with the king, after the leproſy had been inflicted upon him, "and his ſeed for ever." (2 Kings, chap. v. vi. and viii. v. 4.) See Dr. Bateman's Practical Synopſis of Cutan. Diſeaſes; and the Works above quoted.

YAXARTES, or YAKSARTES, the *Syr-Daria*, in *Geography*, a river of Ruſſia, that falls into the Aral.

YAXLEY, a ſmall market-town in the hundred of Norman-Croſs, and county of Huntingdon, England, is ſituated 2 miles N.E. from Stilton, and 73 miles N. by W. from London. It has of late increaſed in importance from its contiguity to the barracks at Norman-Croſs. The market was for a long time diſcontinued, but has been recently revived, and is now held on Tueſdays. It was originally granted to the abbots of Thorney, one of whom, named De Yalkeſley, who died in 1294, was native of this town. Here is alſo an annual fair. The church is a handſome fabric, and particularly remarkable for its lofty and well-proportioned ſpire, which is ſeen at a conſiderable diſtance on all ſides. The population of the pariſh, in the enumeration of the year 1811, was returned at 1391, occupying 171 houſes.

YAYACATLAN, a town of Mexico, in the province of Tlaſcala; 10 miles E.S.E. of Puebla de los Angelos.

YAYAUHQUITOTOTL, in *Ornithology*, the name of an Indian bird deſcribed by Nieremberg, remarkable for having two feathers of its tail much longer than the reſt, and naked for a great way, but the end ornamented with black and blue hairs. The bird is of the ſize of the ſtarling, and is beautifully variegated with green, blue, yellow, and grey.

Mr. Ray is of opinion, that this is the bird deſcribed by Marcgrave under the name *guiaira-guainambi*.

YAYNANGHEOUM, or EARTH OIL CREEK, in *Geography*, a town of Burmah, on the Irawaddy, which receives its name from ſome wells of petroleum, in its neighbourhood. It is chiefly inhabited by potters; 15 miles S. of Pegongmew.

YAYYOS, or YANVOS, a town of Peru, and capital of a juriſdiction, in the archbiſhopric of Lima, which begins about 48 miles ſouth-eaſt from Lima, and extends about 75 miles in length along the Andes. It abounds in fruit, maize, wheat, barley, &c. and the paſtures feed a great number of cattle for the markets of Lima; 80 miles S.S.E. of Lima.

YAZAMATES, a people who inhabited Kuban, after the Sarmates were for the moſt part given to Europe, five years before Alexander.

YAZOO, a river of the ſtate of Georgia, which runs into the Miſſiſſippi, N. lat. 32° 38′. W. long. 91° 10′.

YAZOO, *Little*, a river of Weſt Florida, which runs into the Miſſiſſippi, N. lat. 32° 13′. W. long. 91° 10′.

YAZVA, a river of Ruſſia, which runs into the Viſchera, 8 miles E. of Gerdin, in the government of Perm.

YBAGUE, a town of South America, in the kingdom of New Grenada.

YBAICABAL. See Nervio.

YCA. See Ica.

YCAYALE. See Ucayale.

YCHAN, a town of Corea; 13 miles S. of Hetſin.

Y-CHI, a town of China, of the third rank, in Chan-ſi; 12 miles N.N.E. of Kiai.

YCONOMIUS. See Oeconomus.

YDALA, in *Geography*, a town of Sweden, in Blekingen; 10 miles S.S.E. of Kongſback.

YDRIA. See Hydria.

YDRINUS, or Hydrinus, a name given by ſome to the *ophites*, or ſerpent-ſtone.

YDRUS, in *Ancient Geography*, a mountain of Hiſpania. Jerome.

YE, or Wye, in *Geography*, a river of Holland, which paſſes by Amſterdam, and runs into the Zuyder See, about 6 miles below.

YEA Water, a river of Scotland, which runs into the Nith, 2 miles E. of Lochmaben.

YEADON, a townſhip of Yorkſhire, in the Weſt Riding, with 1695 inhabitants, including 476 employed in trade and manufactures; 3 miles S. of Ottley.

YEALME, a river of England, in the county of Devon, which runs into the Engliſh Channel, 1 mile N.N.W. of Stoke Point.

YEANGLAW, a town of Birmah; 7 miles S. of Pegongmew.

YEANING, among *Sheep-Farmers*, a term uſed to ſignify the act of bringing forth the young in animals of the ſheep kind. It is ſaid that in the polled breeds of ſheep the lambs are yeaned with the greateſt eaſe and facility, and in the large-horned breeds with the greateſt difficulty and inconvenience. See Sheep.

Yeaning-*Time*, the ſeaſon of yeaning in ſheep, which is different in different breeds of them, but probably the moſt early in the Dorſetſhire breed, as they may be managed ſo as to lamb at a very early period. In general, however, the management is ſuch, that the lambs are yeaned or brought forth from towards the latter end of February to the beginning of the following month, and later in ſome caſes and ſituations. When yeaned too early there is often great loſs, on account of the inclemency of the ſeaſon, unleſs the ewes have been kept very well for ſome time before it takes place. Conſequently, in all ſuch caſes, they ſhould, for ſome weeks at leaſt before the yeaning time, be plentifully ſupplied with proper food, ſo that the health and ſtrength of them and that of their young may be promoted and preſerved againſt this period. Proper ſheltered ſituations, yards, and ſpots of ground, ſhould alſo be provided for this purpoſe, by which the lives of numbers may be ſaved. See Sheep.

In all bad caſes of yeaning, the ewes ſhould be well ſupported by good oatmeal gruel and cordial drinks.

YEANLING, a term applied to the young of the ſheep kind when newly yeaned. See Lamb.

YEAR, Annus, in the full extent of the word, is a ſyſtem or cycle of ſeveral months; uſually twelve.

Others define year, in the general, a period, or ſpace of time, meaſured by the revolution of ſome celeſtial body in its orbit.

Thus, the time in which the fixed ſtars make a revolution is called the great year. And the times in which Jupiter, Saturn, the ſun, moon, &c. finiſh their revolutions, and return to the ſame point of the zodiac, are reſpectively called the years of Jupiter and Saturn; and the ſolar and the lunar years.

As there is no luminary whoſe changes and revolutions are ſo frequent and remarkable as thoſe of the moon, ſome have thought that all nations at firſt meaſured and divided time according to the various aſpects of this planet. Accordingly the Egyptian year originally conſiſted of a ſingle lunation; afterwards it included two or three months, and was defined by the ſtated returns of the ſeaſons. It has been alſo ſuppoſed, that ſeveral ages muſt have elapſed before the idea of adjuſting the length of the year to the courſe of the ſun became general, though repeated obſervations were made on his motion in the ecliptic. The Indians, the Chaldæans, and Egyptians, who in a very early period applied their attention to aſtronomy, at length found, by comparing the motions of the ſun and moon together, that one revolution of the former was equal to about 12 of the latter; and hence was formed a year of 12 lunations, in every one of which were reckoned 30 days: and hence alſo, it is ſaid, aroſe the diviſion of the ecliptic into 360 equal parts or degrees.

Year, properly, and by way of eminence ſo called, is the ſolar year; or the ſpace of time in which the ſun moves through the twelve ſigns of the ecliptic.

This, by the obſervations of Caſſini, Bianchini, and de la Hire, contains 365 days, 5 hours, and 49 minutes; which is the quantity of the year aſſumed by the authors of the Gregorian calendar.

But in the civil or popular account, this year only contains 365 days; except every fourth, which contains 366.

The viciſſitude of ſeaſons ſeem to have given occaſion to the firſt inſtitution of the year. Man, naturally curious to know the cauſe of that diverſity, ſoon found it was the proximity and diſtance of the ſun; and, upon this, gave the name year to the ſpace of time in which that luminary, performing his whole courſe, returned to the ſame point of his orbit.

And hence, as it was on account of the ſeaſons, in a great meaſure, that the year was inſtituted, their chief regard and attention were, that the ſame parts of the year ſhould always correſpond to the ſame ſeaſons; *i. e.* that the beginning of the year ſhould always be when the ſun was in the ſame point of his orbit; and that they ſhould keep pace, come round, and end together.

This, different nations aimed to attain by different ways; making the year to commence from different points of the zodiac, and even making the time of his progreſs different. So that ſome of their years were much more perfect than others, but none of them quite juſt; *i. e.* none of them whoſe parts did not ſhift, with regard to the parts of the ſun's courſe.

We may naturally ſuppoſe that the commencement of the year would be determined by the date of ſome conſiderable event, ſuch as the creation of the world, the univerſal deluge, a conjunction of planets, the incarnation of our Saviour, &c.; and of courſe it has been referred to different points in the ecliptic. The Chaldæan and Egyptian years were dated from the autumnal equinox. The eccleſiaſtical year of the Jews began in the ſpring; but in civil affairs they retained the epoch of the Egyptian year. The ancient Chineſe reckoned from the new moon, neareſt to the middle of Aquarius; but according to ſome recent accounts, the beginning of their year was transferred (B. C. 1740) to the new moon neareſt to the winter ſolſtice. This likewiſe is the date of the Japaneſe year. Diemſchid, or Gemſchid, king of Perſia, obſerved on the day of his public entry into Perſepolis, that the ſun entered into Aries; and in commemoration of this fortunate event and coincidence, he ordained the beginning of the year to be removed from the autumnal to the vernal equinox. This epoch was denominated Neuruz, *viz.* New-day, and is ſtill celebrated with great pomp and feſtivity.

The ancient Swediſh year commenced at the winter ſolſtice, or rather at the time of the ſun's appearance in the horizon, after an abſence of about 40 days. The feaſt of this epoch was ſolemnized on the 20th day after the ſolſtice. Some of the Grecian ſtates computed from the vernal, ſome from the autumnal equinox, and others from the ſummer tropic. The year of Romulus commenced in March, and that of Numa in January. The Turks and Arabs date the year from the 16th of July; and the American Indians reckon from the firſt appearance of the new moon of the vernal equinox. The church of Rome has fixed new-year's day on the Sunday that correſponds with the full moon of the ſame ſeaſon. The Venetians, Florentines, and Piſans in Italy, and the inhabitants of Treves in Germany, begin the year at the vernal equinox. The ancient clergy reckon from the 25th of March; and this method was obſerved in Britain until the introduction of the New Style, A.D. 1752, after which our year commenced on the firſt day of January. See EPOCHA and CHRONOLOGY.

They were the Egyptians, if we may credit Herodotus, that firſt formed the year, which was luni-ſolar, making it to contain 360 days, which they ſubdivided into 12 months.

This year was corrected by the Thebans, who added to it five intercalary days. The Medes and Perſians, who were anciently a part of the Aſſyrian empire, adopted the old Chaldæan year of 360 days, which they afterwards reformed.

Some miſſionaries report, that the luni-ſolar year was corrected in China; the year of the Indians contained 360 days, and was divided into 24 months. But beſides this form of the year, the Indians uſed another, for aſtronomical purpoſes, conſiſting of 365 d. 15 h. 31′ 15″; which Indian days and hours are equal to 365 d. 6 h. 12′ 30″, according to our mode of computation. Or, as this year is ſidereal, if you ſubtract 21′ 35″ on account of the motion of the ſtars in longitude, the Indian tropical year will be 365 d. 5 h. 50′ 55″. The Mexicans received the luni-ſolar year from the Indians or Chineſe, and divided it into 18 months of 20 days; adding five days to the laſt month, and dating the year from March. That the ancient Grecian year was luni-ſolar, is evident from many teſtimonies of Hippocrates, Plato, and Pliny. The Latin year, before Numa's correction of it, conſiſted of 360 days, 304 of which were divided into 10 months; and to theſe were added two private months, not named in the calendar. Plut. in Vit. Numa. Serv. et Virgil Georg. l. i. v. 43.

It has been ſaid that Mercurius Triſmegiſtus added five days to the Egyptian year of 360 days. And, on this footing, Thales is ſaid to have inſtituted the year among the Greeks; though that form of the year did not hold throughout all Greece. Add, that the Jewiſh, Syrian, Roman, Perſian, Ethiopic, Arabic, &c. years were all different.

In effect, conſidering the imperfect ſtate of aſtronomy in thoſe ages, it is no wonder different people ſhould diſagree in the computation of the ſun's courſe. We are even aſſured by Diod. Siculus (lib. i.), Plutarch in Numa, and Pliny (lib. vii. cap. 48.), that the Egyptian year itſelf was at firſt very different from that now repreſented.

The imperfection of the luni-ſolar year became more and more apparent as the arts and ſciences improved; but the neceſſary correction depended upon a competent knowledge of the ſolar year. Every nation, by degrees, invented or adopted the method of intercalating a few days at certain intervals. The author of the diſcovery is not certainly known: the Egyptians have claimed the merit of it; and the Theban prieſts have attributed it to Hermes or Thoth. It appears that they were acquainted with the year of 365 days in a very remote period. (Herodot. l. iv. c. 4. Strabo Geog. l. xvii. Syncull. Chron. p. 121.) The length of the ſolar year was repreſented in a golden circle fixed upon the tomb of Oſymandes; and this circle was 365 cubits in circumference, having on each cubit a day of the year inſcribed, together with the heliacal riſings or ſettings of the ſtars. This Oſymandes is ſaid to have flouriſhed either in the 13th or 11th century before the Chriſtian era. For perpetuating the memory of this correction, though inaccurate, the firſt month of the year was diſtinguiſhed by the title Thoth, or Sothis, which was the Egyptian appellation of the dog-ſtar, the heliacal riſing of which announced the inundation of the Nile. Hence, it is ſaid, originated the fable, invented of the prieſts of Thebes, that Mercury, or Thoth, regulated the civil year by extending it, as we have already obſerved, to 365 days; and, in return, the firſt month was called by his name. See *Egyptian* YEAR, and CANICULAR *Year*.

The method of correcting the civil year, by the addition of five epagomenæ, was communicated by the Chaldæans and Egyptians to other nations; but it has not been aſcertained at what epoch the ſolar year was obſerved to be almoſt 6 hours longer than the civil year of 365 days. The prieſts of Thebes claimed the merit of the diſcovery (Diod. Sicul. l. i. p. 59. Strabo Geog. l. xvii.); but Herodotus takes no notice of it; nor Thales, who, on his return from Egypt, taught the Greeks to form a ſolar year of 365 days without any intercalation. Plato and Eudexus are ſaid to have obtained it, as a ſecret, from the Egyptians, about 80 years after Herodotus, and to have carried it into Greece; which ſhews that the knowledge of this form of the year was then recent, and confined to a few of the learned, while the old form was ſtill retained, and the Egyptians uſed no intercalation until the corrected Julian year was received at Alexandria by the order of Auguſtus; and even at this time the Greeks and Romans, who reſided in Egypt, alone obeyed the imperial mandate. The ſuperſtitious nations refuſed to admit any addition to a form of the year which had been ſo long eſtabliſhed among them.

The reformed year of the Chineſe conſiſted of 365 d. 5 h. 20′, which were divided into 24 months, each of theſe equal parts including 15 d. 5 h. $14\frac{1}{24}'$. (Du Halde. Hyde. Relig. Vet. Perſ.) The quantity of the Indian year was ſomewhat different from that of the Chineſe: the lunar year contained 364 d. 22 gurris, 1 pull; and the ſolar year 365 d. 15 gurris, 30 pulls, 22½ puts; 60 puts = 1 pull, 60 pulls = 1 gurri, and 60 gurris = 1 day: ſo that their ſolar or rather ſidereal year conſiſted of 365 d. 6 h. 12′ 7″. This mode of computation is uſed by the Bramins, by the Moguls, and by other Mahometans in India.

YEAR, *Solar*, is the interval of time in which the ſun finiſhes his courſe through the zodiac; or in which he returns to the ſame point of it from whence he had departed.

This, according to our account, is 365 days, 5 hours, 49 minutes; though ſome aſtronomers make it a few ſeconds, and ſome a whole minute leſs; as Kepler, for inſtance, who makes it 365 days, 5 hours, 48 minutes, 57 ſeconds, 39 thirds. Ricciolus, and Tycho Brahe, 365 days, 5 hours, 48 minutes.

The ſolar year is either *aſtronomical* or *civil.*

YEAR, *Solar Aſtronomical,* is that determined preciſely by the obſervations of aſtronomy; and is of two kinds, *tropical* and *ſidereal* or *aſtral.*

YEAR, *Tropical* or *Natural,* is the time which the ſun employs in paſſing through the zodiac, or from one equinox, or one tropic, to the ſame again; which, as before obſerved, is 365 days, 5 hours, 49 minutes; or, more accurately, 365 d. 5 h. 48′ 48″. This is the only proper or natural year, becauſe it always keeps the ſame ſeaſons to the ſame months.

In order to find the tropical year, obſerve the meridian altitude, a, of the ſun on the day neareſt to the equinox; then the next year take its meridian altitude on two following days, one when its altitude, m, is leſs than a, and the next when its altitude, n, is greater than a, then $n - m$ is the increaſe of the ſun's declination in 24 hours; alſo, when the declination has increaſed by the quantity $a - m$ from the time when the meridian altitude, m, was obſerved, the declination will then become a; and as we may conſider the increaſe of declination to be uniform for a day, we have $n - m : a - m ::$ 24 hours, the interval from the time when the ſun was on the meridian on the firſt of the two days, till the ſun has the ſame declination a, as at the obſervation the year before; and this time, added to the time when the ſun's altitude m was obſerved, gives the time when the ſun's place in the ecliptic had the ſame ſituation in reſpect to the equinoctial points, which it had at the time of the obſervation the preceding year; and the interval of theſe times is the length of a tropical year.

If, inſtead of repeating the ſecond obſervation the next year, there be an interval of ſeveral years, and you divide the interval between the times when the declination was found to be the ſame, by the number of years, you will get the tropical year more exactly.

YEAR, *Sidereal* or *Aſtral,* is the ſpace of time in which the ſun, going from any fixed ſtar, returns to the ſame. This conſiſts of 365 days, 6 hours, 6 minutes, 11,5 ſeconds.

To find the length of a ſidereal year. On any day when the ſun is at Z on the meridian (*Plate* XXI. *fig.* 12.), take the difference, $Z\,m$, between the ſun's right aſcenſion when it paſſes the meridian, and that of a fixed ſtar, S; and when the ſun returns to the ſame part of the heavens the next year, compare its right aſcenſion with that of the ſame ſtar for two days, one when their difference, $b\,m$, of right aſcenſions is leſs, and the other when the difference, $f\,m$, is greater than the difference, $Z\,m$, before obſerved; then $b\,f$ is the increaſe of the ſun's right aſcenſion in the time, t; and as the increaſe of right aſcenſion may be conſidered as uniform for a ſmall time, we have $b\,f : b\,Z :: t :$ the time, T, in which the right aſcenſion is increaſed from b to Z; this time, T, therefore, added to the time of the obſerved right aſcenſion at b, gives the time when the ſun is at the ſame diſtance, $Z\,m$, in right aſcenſion from the ſtar, which it was when obſerved at Z the year before; the interval of theſe times is therefore the length of the ſidereal year. The beſt time for theſe obſervations is about March 25, June 20, September 17, December 20, the ſun's motion in right aſcenſion being then uniform. Inſtead of obſerving the difference of the right aſcenſions, you may obſerve that of their longitudes.

If, inſtead of repeating the ſecond obſervations the year after, there be an interval of ſeveral years, and you divide the obſerved interval of time when the difference of their right aſcenſions was found to be equal, by the number of years, you will have the length of a ſidereal year more exactly.

The preceſſion being given (ſee PRECESSION), and alſo the length of a tropical year, the length of a ſidereal year may be found by this proportion; $360^\circ - 50'',25 : 360^\circ ::$ 365 d. 5 h. 48′ 48″ : 365 d. 6 h. 9′ $11\frac{1}{2}''$ the length of the ſidereal year.

YEAR, *Anomaliſtical,* is the time that elapſes from the ſun's leaving its apogee till it returns to it: and as the progreſſive motion of the apogee in a year is 11″,75, the anomaliſtical year muſt be longer than the ſidereal year, by the time which the ſun takes in moving over 11″,75 of longitude at its apogee; but when the ſun is in its apogee, its motion in longitude is 58′ 13″ in 24 hours: hence 58′ 13″ : 11″,75 :: 24 hours : 4′ $50\frac{2}{3}''$, which added to 365 d. 6 h. 9′ $11\frac{1}{2}''$, gives 365 d. 6 h. 14′ $2\frac{1}{6}''$, the length of the anomaliſtical year. M. de la Lande determined this motion of the apogee from the obſervations of M. de la Hire, and thoſe of Dr. Maſkelyne. Caſſini made it the ſame. This year is ſometimes uſed by aſtronomers. See ANOMALISTICAL *Year.*

YEAR, *Civil,* is that form of year which each nation has contrived for the computation of time: or the *civil* is the tropical year, conſidered as only conſiſting of a certain number of whole days; the odd hours and minutes being ſet aſide, to render the computation of time in the common occaſions of life more eaſy.

Hence, as the tropical year is 365 days, 5 hours, 48 minutes, 48 ſeconds, the civil year is 365 days. And hence, alſo, as it is neceſſary to keep pace with the heavens, it is required that every fourth year ſhould conſiſt of 366 days.

Hence, laſtly, the civil year is either *common* or *biſſextile.*

YEAR, *the Common Civil,* is that conſiſting of 365 days. This, therefore, has ſeven months of 31 days each, four of 30 days, and one of 28 days; according to the well-known canon:

> Thirty days hath September,
> April, June, and November.
> February twenty-eight alone,
> And all the reſt have thirty-one.

YEAR, *Biſſextile,* or *Leap,* is that conſiſting of 366 days; or it has one day extraordinary; which day is called the *intercalary,* or *biſſextile day.*

This intercalary, or additional day to every fourth year, was firſt appointed by Julius Cæſar; who, to make the civil year keep pace with the tropical ones, contrived that the ſix hours which the former wanted of being equal to the latter, ſhould, in four years, make a whole day, and be added before the twenty-fourth, or to the twenty-third of February, which was their ſixth of the calends of March. Hence, as in that year, they reckon this day twice over, or add *bis ſexto calendas,* the year itſelf came to be called *bis ſextus,* and *Biſſextile;* which ſee.

The intercalary day, however, among us, is not introduced by telling the twenty-third of February twice over, but by adding a day after the twenty-eighth of February; which month, in that year, contains twenty-nine days. See LEAP-*Year.*

A farther reformation in this year was made by pope Gregory. See *Gregorian* YEAR, and CALENDAR.

YEAR, *Lunar,* is a ſyſtem of twelve lunar months. See LUNAR.

Hence, from the two kinds of ſynodical lunar months, there ariſe two kinds of lunar years; the one *aſtronomical,* the other *civil.*

YEAR, *Lunar Aſtronomical*, conſiſts of twelve lunar ſynodical months; and therefore contains 354 days, 8 hours, 48 minutes, 36 ſeconds; and is, therefore, 10 days, 21 hours, 0 minute, 12 ſeconds, ſhorter than the ſolar year. This is the foundation of the *Epact*; which ſee.

YEAR, *Lunar Civil*, is either *common* or *emboliſmic*.

YEAR, *the Common Lunar*, conſiſts of twelve lunar civil months; and therefore contains 354 days.

YEAR, *the Emboliſmic* or *Intercalary*, conſiſts of thirteen lunar civil months; and therefore contains 384 days. See EMBOLISMIC.

Thus far we have conſidered years and months, with a view to the principles of aſtronomy, on which the diviſion is founded. By this, the various forms of civil years that have anciently obtained, or ſtill do obtain in divers nations, are to be examined.

YEAR, *Ancient Roman*, or *Latin*, was the lunar year, which, as firſt ſettled by Romulus, only conſiſted of ten months; *viz.* 1. March, containing 31 days. 2. April, 30. 3. May, 31. 4. June, 30. 5. Quintilis, 31. 6. Sextilis, 30. 7. September, 30. 8. October, 31. 9. November, 30. 10. December, 30. In all 304 days, which came ſhort of the true lunar year by 50 days; and of the ſolar, by 61 days. Hence, the beginning of Romulus's year was vague, and unfixed to any preciſe ſeaſon; to remove which inconvenience, that prince ordered ſo many days to be added yearly as would make the ſtate of the heavens correſpond to the firſt month, without incorporating theſe additional days, or calling them by the name of any month. Cenſorinus, Varro, and other Roman authors, agree, that the ancient Latin year was divided into 10 months, which appears from a paſſage in Plutarch, that two intercalary months were added to every year; which two months were not inſerted in the calendar. Romulus retained the former names and number of the months; but adapted their quantity nearly to the courſe of the ſun, aſſigning, as we have ſtated, ſix of them 30 days, and to the remaining four 31 days each, and he transferred the beginning of the year from April to March: December was the 10th month, as its name implies; after which the two intercalary months were inſerted, but no names were affixed to them till the ſucceeding reign.

Numa Pompilius corrected the irregular conſtitution of Romulus's year, and compoſed two new months, January and February, of the days that were uſed to be added to the former year. Thus, Numa's year conſiſted of twelve months; *viz.* 1. January, containing 29 days. 2. February, 28. 3. March, 31. 4. April, 29. 5. May, 31. 6. June, 29. 7. Quintilis, 31. 8. Sextilis, 29. 9. September, 29. 10. October, 31. 11. November, 29. 12. December, 29. In all 355 days, which exceeds the quantity of a lunar civil year by one day; and that of a lunar aſtronomical year by 15 hours, 11 minutes, 24 ſeconds, but comes ſhort of the common ſolar year by ten days; ſo that its beginning alſo was vague and unfixed.

Numa, however, deſiring to have it fixed to the winter ſolſtice, ordered 22 days to be intercalated in February every ſecond year, 23 every fourth, 22 every ſixth, and 23 every eighth year, making in all 90 days.

But this rule failing to keep matters even, recourſe was had to a new way of intercalating; and, inſtead of twenty-three days every eighth year, only fifteen were added; and the care of the whole was committed to the pontifex maximus, who neglecting the truſt, let things run to the utmoſt confuſion. And thus the Roman year ſtood till Julius Cæſar made a reformation. See CALENDAR.

For the manner of reckoning the days of the Roman months, ſee CALENDS, NONES, and IDES.

YEAR, *Julian*, is a ſolar year, containing, commonly, 365 days; though every fourth year, called biſſextile, it contains 366.

The months, &c. of the Julian year ſtand thus: 1. January, 31 days. 2. February, 28. 3. March, 31. 4. April, 30. 5. May, 31. 6. June, 30. 7. July, 31. 8. Auguſt, 31. 9. September, 30. 10. October, 31. 11. November, 30. 12. December, 31. But every biſſextile year, a day is added after the 28th of February; which month then contains 29 days.

The aſtronomical quantity, therefore, of the Julian year is 365 days, 6 hours; which exceeds the true ſolar year by ſomewhat more than eleven minutes; which exceſs, in 131 years, amounts to a whole day. So that the times of the equinoxes go backward, and fall earlier by one day in about 131 or 130 years. And thus the Roman year ſtood, till the reformation made in it by pope Gregory.

For this form of the year, we are indebted to Julius Cæſar; who, in the contrivance of it, was aſſiſted by Soſigenes, a famous mathematician, called over from Egypt for this very purpoſe; who, to ſupply the defect of ſixty-ſeven days, which had been loſt through the fault of the pontifices, and to fix the beginning of the year to the winter ſolſtice, made that year to conſiſt of 15 months, or 445 days; which, for that reaſon, is uſed to be called *annus confuſionis*, the *year of confuſion*. See *Julian* CALENDAR.

YEAR, *Gregorian*, is the Julian year corrected by this rule; that whereas, on the common footing, every ſecular or hundredth year is biſſextile; on the new footing, three of them are common years, and only the fourth is biſſextile.

The error of eleven minutes in the Julian year, little as it was, yet, by being repeated over and over, at length became conſiderable; and from the time when Cæſar made his correction, was grown into thirteen days, by which means the equinoxes were greatly diſturbed. In the year 1582, the equinoxes were fallen ten days, and the full moons four days, more backwards than they were in the time of the Nicene council; *i. e.* the equinox, which in the year 325, when that council was held, fell on the twenty-firſt of March, was in 1582 thrown back to the tenth, and the full moon was removed from the fifth to the firſt of April. To remedy this irregularity, which was ſtill increaſing, pope Gregory XIII., in the year juſt mentioned, called together the chief aſtronomers of his time, and concerted this correction; and, to reſtore the equinoxes to their place, threw out the ten days that had been got from the time of the council of Nice, and which had ſhifted the fifth of October to the fifteenth. He exchanged the lunar cycle for that of the epacts; and in order to reſtore the ſpring equinox to the Nicene ſtandard, ſubtracted ten days out of the month of October, in that year (1582), making the fourth to be the fifteenth; and by this means, the vernal equinox has been reſtored to the twenty-firſt of March. Moreover, it was endeavoured, by the omiſſion of three intercalary days in four hundred years, to make the civil year keep pace with the ſolar for time to come. See CALENDAR.

In the year 1700, the error of ten days was grown to eleven; upon which the Proteſtant ſtates of Germany, to prevent farther confuſion, accepted the Gregorian correction. See *Reformed* CALENDAR, and STYLE.

Yet is even the Gregorian year far from being perfect; for we have ſhewn, that in four centuries the Julian year gains three days, one hour, twenty minutes; but it is only the three days that are kept out in the Gregorian year; ſo that there is ſtill an exceſs of one hour, twenty minutes, in four centuries, which, in ſeventy-two centuries, amount to a whole day.

The Gregorian year is now uſed in moſt countries in Europe. From the difference between this and the Julian year ariſes the diſtinction of the old or Julian, and new or *Gregorian Style;* which ſee.

Year, *Egyptian,* called alſo the *year of Nabonaſſar,* on account of the *epocha of Nabonaſſar,* is the ſolar year of 365 days, divided into twelve months, of thirty days each, beſides five intercalary days, added at the end.

The names, &c. of the months are as follow: 1. Thoth. 2. Paophi. 3. Athyr. 4. Chojac. 5. Tybi. 6. Mecheir. 7. Phamenoth. 8. Pharmuthi. 9. Pachon. 10. Pauni. 11. Epiphi. 12. Meſori; beſide the ἡμεραι επαγομεναι.

Hence, as the Egyptian year in every four years loſes a whole day of the Julian year, becauſe it neglects the ſix hours, which make a leap-day once in four years, its beginning, in the ſpace of 1460 years, runs through every part of the Julian year; which ſpace elapſed, they meet again; and, therefore, it is juſtly called the *erratic year.* And becauſe it returns to the ſame day of the Julian year after 1460 Julian years, this circle is called the Sothic period. See Canicular *Year.*

This year is uſed by Ptolemy, in his Almageſt; ſo that the knowledge of it is of great uſe in aſtronomy, for comparing the ancient obſervations with the modern.

This deſultory form was applied by the Egyptians to civil uſes, till Antony and Cleopatra were defeated; and the mathematicians and aſtronomers uſed it till the time of Ptolemy.

The ancient Egyptians, we are told by Diodorus Siculus (lib. i.), Plutarch (in the Life of Numa), and Pliny (lib. vii. c. 48.), meaſured their years by the courſe of the moon. At firſt, they were only one month, then three, then four, like that of the Arcadians; and then ſix, like that of the people of Acarnania. Thoſe authors add, that it is on this account they reckon ſuch a vaſt number of years from the beginning of the world; and that, in the hiſtory of their kings, we meet with ſome who lived 1000 or 1200 years.

But Herodotus is ſilent on this point: he only ſays, that the Egyptian year conſiſted of twelve months, as we have above repreſented it. Beſides, we learn from Scripture, that from the times of the flood, the year was compoſed of twelve months; Cham, conſequently, and his ſon Miſraim, the founder of the Egyptian monarchy, muſt have had that cuſtom; and it is no way probable his deſcendants ſhould alter it. Add, that Plutarch ſpeaks of it with great uncertainty, and as no more than a report; and Diod. Siculus, as only a conjecture of authors whom he does not name; and who, in all probability, might have framed this hypotheſis to reconcile the Egyptian chronology to that of ſome other nations.

F. Kircher, however, maintains, that beſides the ſolar year, there were ſome of the nomes or cantons of Egypt which uſed a lunar one; and that in the remoteſt ages there were ſome who took a revolution of the moon, that is, a month for a year; and others, who finding the year too ſhort, made it two months, others three, and others four, &c. (Oedip. Egypt. tom. ii. p. 252.) A late author obſerves, that Varro has affirmed of all nations, what we have here quoted of the Egyptians; and adds, that Lactantius takes him to taſk on that ſubject. We do not know in what places of Varro, or Lactantius, he has ſeen this: all we can ſay is, that Lactantius (Divin. Inſt. lib. iii. c. 13.), where he gives Varro's opinion, only repreſents him as ſpeaking of the Egyptians. However, St. Auguſtine (De Civit. Dei, lib. xv. c. 14.) ſhews, that the years of the patriarchs mentioned in Scripture are like ours, and not one of ours equal to ten of theirs, as, it appears, had been the opinion of ſome people.

Upon the Egyptians being ſubdued by the Romans, they received the Julian year, though with ſome alteration; for they ſtill retained their ancient months, with the five ἡμεραι επαγομεναι, and, every fourth year, intercalated another day between the 28th and 29th of Auguſt. Add, that the beginning of their year, or the firſt day of the month Thoth, anſwered to the 29th of Auguſt of the Julian year, or to the 30th if it happened to be leap-year.

This year, thus reformed, and called the fixed Egyptian year, was called the *annus Actiacus,* as being inſtituted ſoon after the battle of Actium.

Year, *Ancient Greek,* was lunar, conſiſting of 12 months, which, at firſt, had 30 days a-piece, then alternately 30 and 29 days, computed from the firſt appearance of the new moon; with the addition of an emboliſmic month of 30 days, every 3d, 5th, 8th, 11th, 14th, 16th, and 19th years of a cycle of 19 years; in order to keep the new and full moons to the ſame terms or ſeaſons of the year. With this correction, though erroneous, it ſubſiſted until the time of Herodotus and Hippocrates. Solon attempted the reformation of the calendar by the introduction of the complete and defective months; *i. e.* months of 30 and of 29 days; for two lunations made 59 days, nearly. Thus amended the year became lunar, and was adopted at Athens; but in other ſtates of Greece the ancient form was retained.

Their year commenced with the new moon, the full moon of which comes next after the ſummer ſolſtice. The order, &c. of their months was thus: 1. ʽΕκατομβαιων, containing 29 days. 2. Μηταγειτνιων, 30. 3. Βοηδρομιων, 29. 4. Μαιμακτηριων, 30. 5. Πυανεψιων, 29. 6. Ποσειδεων, 30. 7. Γαμηλιων, 29. 8. Ανθεστηριων, 30. 9. Ελαφηβολιων, 30. 10. Μȣνυχιων, 30. 11. Θαργηλιων, 29. 12. Σκιροφοριων, 30.

The Macedonians had other names for their months; ſo had the Syro-Macedonians, Smyrnæans, Tyrians; ſo alſo the Cyprians, Paphians; and ſo the Bithynians, &c.

Year, *Ancient Macedonian,* is a lunar year, only differing from the Attic, in the names and order of the months; the firſt Macedonian month agreeing with the Attic Mæmacterion: as the Macedonian year commenced not at the ſummer ſolſtice, but at the autumnal equinox. The months ſtand thus: 1. Διος, 30 days. 2. Απελλαιος, 29. 3. Αυδυναιος, 30. 4. Περιτιος, 29. 5. Δυστρος, 30. 6. Ξανθικος, 29. 7. Αρτεμισιος, 30. 8. Δαισιος, 29. 9. Πανεμος, 30. 10. Λωος. 11. Γορπιαιος, 30. 12. ʽΥπερβερεταιος.

Year, *Modern Macedonian,* is a ſolar year, whoſe beginning is fixed for the firſt of January of the Julian year, with which it perfectly agrees.

This year was particularly called the *Attic year;* and the intercalary month, after Poſideon, was called Ποσειδεων β, or *latter Poſideon.*

Year, *Ancient Jewiſh,* is a lunar year, conſiſting, commonly, of eleven months, which alternately contain 30 and 29 days.

It was made to agree with the ſolar year, either by the adding of 11, and ſometimes 12 days, at the end of the year, or by an emboliſmic month.

Tradition reports, that Abraham preſerved in his family, and tranſmitted to poſterity, the Chaldæan form of the year, which originally conſiſted of 360 days (compare Dan. vii. 25. xii. 7. with Rev. xii. to xiv. xi. 2, 3.), and remained without any correction until the date of the Nabonaſſarean era. If any intercalation was uſed by the Jews, Moſes appears to have been unacquainted with it. After the Babyloniſh captivity, they adopted the ſolar year. When they were ſubjected to the Syro-Macedonian yoke (B.C. 312), they were compelled to admit the lunar year into their calendar. To adjuſt this year to the courſe of the ſun, they added, at certain periods, a month to Adar, and called it Ve-Adar. They compoſed alſo a cycle of 19 years; in ſeven of which they inſerted the intercalary month, *viz.* in the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. The deſign of this correction was, to bring the 15th day of Niſan to the equinoctial point, and to regulate the courſes of the ſeaſons, and of the feaſts, in ſuch a manner, as that the corn might be ripe at the paſſover, as the law required.

The names and quantities of the months ſtand thus: 1. Niſan, or Abib, containing 30 days. 2. Jiar, or Zius, 29. 3. Siban, or Siwan, 30. 4. Thamuz, or Tamuz, 29. 5. Ab, 30. 6. Elul, 29. 7. Tiſri, or Ethanim, 30. 8. Marcheſvan, or Bul, 29. 9. Ciſleu, 30. 10. Tebeth, 29. 11. Sabat, or Schebeth, 30. 12. Adar, in the emboliſmic year, 30. Adar, in the common year, was but 29.

Note.—In the defective year, Ciſleu was only 29 days; and in the redundant year, Marcheſvan was 30.

YEAR, *Modern Jewiſh*, is likewiſe lunar, conſiſting, in common years, of 12 months, but of 13 in emboliſmic years; which in a cycle of 19 years are, the 3d, 6th, 8th, 11th, 14th, 17th, and 19th. Its beginning is fixed to the new moon next after the autumnal equinox.

The names, &c. of the months are, 1. Tiſri, containing 30 days. 2. Marcheſvan, 29. 3. Ciſleu, 30. 4. Tebeth, 29. 5. Schebeth, 30. 6. Adar, 29. 7. Veadar, in the emboliſmic year, 30. 8. Niſan, 30. 9. Iiar, 29. 10. Sivan, 30. 11. Thamuz, 29. 12. Ab, 30. 13. Elul, 29.

YEAR, *Syrian*, is a ſolar year, having its beginning fixed to the beginning of October, in the Julian year; from which it only differs in the names of the months, the quantities being the ſame, as follows:

1. Tiſhrin, anſwering to our October, and containing 31 days. 2. Latter Tiſhrin, containing, like our November, 30. 3. Canun, 31. 4. Latter Canun, 31. 5. Shabat, 28, or 29 in a leap-year. 6. Adar, 31. 7. Niſan, 30. 8. Aiyar, 31. 9. Haziram, 30. 10. Tamuz, 31. 11. Ab, 31. 12. Elul, 30.

YEAR, *Olympic*, was of a ſingular form, the firſt month commenced at the new moon, that the full moon might fall on the 15th day. Four years of 360 days contain 1440 days; 48 lunations are equal to 1417 days, 11 hours, 14 minutes; a 49th lunation added to the 4th year makes 1447 days, nearly. By this adjuſtment, the new moon would have happened on the 8th inſtead of the 1ſt of the month. To correct this error, two days were added to the laſt month of every year, the 4th excepted, when one day was added. By theſe means, the olympic year, which conſiſted of 362 or 361 days, muſt have varied 14 days from the courſe of the ſun in the ſpace of an olympiad; and, at the end of 50 years, the games would have been transferred to the winter ſolſtice; but for preventing this deviation, a month was intercalated at certain intervals. Notwithſtanding this, a conſiderable error ſtill remained. The olympic games were regulated by the CYCLE *of Cloſtratus;* which ſee. See alſo OLYMPIAD and EPOCHA.

YEAR, *Perſian*, is a ſolar year, of 365 days, conſiſting of 12 months of 30 days each, with five intercalary days added at the end.

The months are as follow: 1. Afrudia meh. 2. Ardihaſcht meh. 3. Cardi meh. 4. Thir meh. 5. Merded meh. 6. Schabarir meh. 7. Mehar meh. 8. Aben meh. 9. Adar meh. 10. Di meh. 11. Behen meh. 12. Aſſirer meh.

This year is called the *yezdegerdic* year, to diſtinguiſh it from the fixed ſolar year, called the *gelalean* year, which the Perſians began to uſe in the year 1079, and which was formed by an intercalation made ſix or ſeven times in four years, and then once every fifth year.

The yezdegerdic year, it may be obſerved, is the ſame with Nabonaſſar's year, differing from it only in the names of the months, and the commencement of the epocha; for whereas the Nabonaſſarean began on February 26, this began on June 16. As to the gelalean year, it is abſolutely the beſt and juſteſt of all the civil years yet invented, as being found, by calculation, to keep the ſolſtices and equinoxes preciſely to the ſame days, and anſwering very accurately to the ſolar motions; which no other civil year does, not even the Gregorian, for want of ſo commodious an intercalation. See *Perſian* CALENDAR.

YEAR, *Arabic*, *Mahometan*, and *Turkiſh*, called alſo the year of the *hegira*, (which ſee,) is a lunar year, equal to 354 days, 8 hours, and 48 minutes, and conſiſting of 12 months, which contain alternately 30 and 29 days.

Though ſometimes it contains 13 months; the names, &c. of which are as follow: 1. Muharram, containing 30 days. 2. Saphar, 29. 3. Rabia, 30. 4. Latter Rabia, 29. 5. Jomada, 30. 6. Latter Jomada, 29. 7. Rajab, 30. 8. Shaaban, 29. 9. Ramadan, 30. 10. Shawal, 29. 11. Dulkaadah, 30. 12. Dulheggia, 29; and in the emboliſmic year, 30. An intercalary day is added every 2d, 5th, 7th, 10th, 13th, 15th, 18th, 21ſt, 24th, 26th, 29th, in a cycle of 29 years.

The months commence not from the real new moon, but from its firſt appearance after conjunction.

YEAR, *Ethiopic*, is a ſolar year, perfectly agreeing with the Actiac, except in this, that the names of the month are different. It commences with the Egyptian year, on the 29th of Auguſt of the Julian year.

Its months are, 1. Maſcaram. 2. Tykympt. 3. Hydar. 4. Tyſhas. 5. Tyr. 6. Jacatil. 7. Magabit. 8. Mijazia. 9. Ginbat. 10. Syne. 11. Hamel. 12. Hahaſe. Intercalary days 5.

YEAR, *Actian*. See ACTIAN and *Egyptian* YEAR.

YEAR, *Attic*. See *Macedonian* YEAR.

YEAR, *Canicular*. See CANICULAR.

YEAR, *Yezdegerdic*. See *Perſian* YEAR and CALENDAR.

YEAR, *Gelalean*. See *Perſian* YEAR and CALENDAR.

YEAR, *Nabonaſſar's*. See *Egyptian* YEAR and NABONASSAR.

YEAR, *Sabbatic*, *Annus Sabbaticus*, among the ancients, was every ſeventh year; during which the Jews let their lands lie at reſt. Levit. xxv. 8.

Every ſeventh ſabbatic year, *i. e.* every 49th year, was called the *year of Jubilee* (which ſee); and held with ſolemnity extraordinary.

YEAR, *Anomaliſtical*. See ANOMALISTICAL and YEAR *ſupra*.

YEAR, *Climacteric*. See CLIMACTERIC.

YEAR, *Emergent*. See EMERGENT.

YEAR, *Enneatical*. See ENNEATICAL.

YEAR, *Holy*. See HOLY.

YEAR, *Platonic*, or *Great*. See PLATONIC.

YEAR *of the Hegira*. See HEGIRA, and *Arabic* YEAR.

YEAR'*s Day*, *New*, or the day on which the year commences, has always been very different in different nations; and yet in all has been held in great veneration.

Among the Romans, the firſt and laſt day of the year were conſecrated to Janus; on which account it was that they repreſented him with two faces.

To them we owe the ceremony of wiſhing *an happy new year*, which appears to be very ancient. Before the firſt day was ſpent they not only viſited and complimented each other, but alſo preſented ſtrenæ, and offered vows to the gods for the preſervation of each other.

Lucian repreſents it as a practice of a very ancient ſtanding, even in his time, and refers it to Numa.

Ovid intimates the ſame ceremony in the beginning of his Faſti:

> "Poſtera lux oritur, linguiſque animiſque favete:
> Nunc dicenda bono ſunt bona verba die."

And Pliny more expreſsly, lib. xxviii. cap. 1. "Primum anni incipientis diem lætis precationibus invicem fauſtum ominantur."

In Ruſſia at the new year is annually held a feaſt of the dead, called Raditzli Sabol, on occaſion of which every body viſits the grave of his relations, lays ſome victuals upon it, and then hears maſs, in payment for which the prieſts get the victuals. In our own country, the uſhering in of the new year, or "New Year's tide," with rejoicings, preſents, and good wiſhes, was a cuſtom obſerved, during the 16th century, with great regularity and parade, and was as cordially celebrated in the court of the prince as in the cottage of the peaſant. On the firſt day of the new year, preſents, called new year's gifts, were given and received with the mutual expreſſion of good wiſhes, and particularly that of a "happy new year." The compliment was ſometimes paid at each other's doors in the form of a ſong; but more generally, eſpecially in the north of England and in Scotland, the houſe was entered very early in the morning by ſome young men and maidens ſelected for the purpoſe, who preſented the ſpiced bowl, and hailed you with the gratulations of the ſeaſon. In the reign of queen Elizabeth, the chief officers of ſtate, and ſeveral of the queen's houſehold ſervants, gave new year's gifts to her majeſty, conſiſting, in general, either of a ſum of money, or jewels, trinkets, wearing-apparel, &c. The largeſt ſum given by any of the temporal lords was 20*l.*; but the archbiſhop of Canterbury gave 40*l.*, the archbiſhop of York 30*l.*, and the other ſpiritual lords 20*l.* and 10*l.* Many of the temporal lords and great officers, and moſt of the peereſſes, gave rich gowns, petticoats, ſmocks, kirtles, ſilk ſtockings, cyprus garters, ſweet-bags, doublets, mantles, ſome embroidered with pearls, garnets, &c., looking-glaſſes, fans, bracelets, caſkets ſtudded with precious ſtones, jewels ornamented with ſparks of diamonds in various devices, and other coſtly trinkets. Theſe preſents alſo conſiſted of books, and appropriate gifts from phyſicians, apothecaries, &c. The queen, though ſhe made returns in plate and other articles, took ſufficient care that the balance ſhould be in her own favour. In the country, however, with the exception of the extenſive houſeholds of the nobility, this interchange was conducted on the pure baſis of reciprocal kindneſs and good will, and without any view of ſecuring patronage or ſupport; it was, indeed, frequently the channel through which charity delighted to exerciſe her holy influence, and though originating in the heathen world, became ſanctified by the Chriſtian virtues.

We ſhall here add, that the rejoicings on new year's tide were ſucceeded by the obſervance of the "Twelfth-day," called, from the idea that the Eaſtern magi, who are ſaid to have viſited our Saviour on that day, were kings, the "Feaſt of the Three Kings." The "Twelfth-cake," diſtributed on that occaſion, was almoſt always accompanied by the *waſſail bowl;* which ſee. Drake's Shakſpeare, vol. i.

Year, *Civil*, or *Legal*, in England, formerly commenced on the day of the Annunciation; *i. e.* on the 25th day of March: though the hiſtorical year began on the day of the Circumciſion; *i. e.* the firſt of January, on which day the German and Italian year alſo begins.

Stowe obſerves, that William the Conqueror having been crowned on the firſt of January, that henceforth became the firſt of the year for hiſtorians, &c. though, in all civil affairs, they retained the ancient manner of accounting, which began the 25th of March.

The part of the year between theſe two terms was uſually expreſſed both ways, as 1748-9, or $174\frac{8}{9}$. But by the act for altering the ſtyle, the civil year now commences with January 1. See *New* Style.

Since the Conqueror, the king's patents, charters, proclamations, &c. are uſually dated by the year of the king's reign.

The church, as to her ſolemn ſervice, begins the year on the firſt Sunday in Advent, which is always that next St. Andrew's day, or the 30th of November.

The Jews, as moſt other nations of the Eaſt, had a civil year, which commenced with the new moon in September; and an eccleſiaſtical year, which commenced from the new moon in March.

The month Tiſri, which began about the time of the autumnal equinox, was the firſt month of the Jewiſh year, till it was changed at the time of the coming up of the children of Iſrael out of Egypt. For that happening in the month of Abib, afterwards called Niſan, this month was for this reaſon reckoned the firſt month of the year in all eccleſiaſtical matters. Before this period, Tiſri was reckoned the commencement of the year, becauſe it was thought that the world was created and firſt began at the time of the autumnal equinox. And for this reaſon, the Jews do ſtill in their era of the creation of the world, as well as in their era of contracts, compute the beginning of the year from the firſt of Tiſri, and all their bills and bonds, and all other civil acts and contracts, are ſtill dated among them according to the ſame computation; and from this month alſo they began all their jubilees and ſabbatical years. And therefore, although their eccleſiaſtical year began from Niſan, and all their feſtivals were computed from it, yet their civil year was ſtill reckoned from Tiſri, and the firſt day of that month was their new year's day; and for the more ſolemn celebration of it, the feaſt of trumpets ſeems to have been appointed.

The French year, during the reigns of the Merovingian race, began on the day on which the troops were reviewed; which was the firſt day of March. Under the Carlovingians it began on Chriſtmas-day; and under the Capetians, on Eaſter-day; which, therefore, varied between the 22d of March and the 25th of April. The eccleſiaſtical year in France begins on the firſt Sunday in Advent. But for the civil, Charles IX. appointed, in 1564, that for the future it ſhould commence on the 1ſt of January.

For an account of the change that took place in the year of France, ſee *French* or *Republican* Calendar. The French calendar was of no long duration. It was aboliſhed in the courſe of thirteen years; and the Gregorian was reſtored, and ordered to be uſed in all dates after the 1ſt of January, 1806.

The Mahometans begin their year the minute in which the ſun enters Aries. The Perſians in the month anſwering to our June. The Chineſe, and moſt of the Indians, begin it with the firſt moon in March. The Brachmans begin it with the new moon in April, on which day they hold a feaſt called *ſamwat ſaradi pauduga*, q. d. *feaſt of New-year's day.* The Mexicans, according to D'Acoſta, begin the year on our 23d of February, when the leaves begin to grow green: their year conſiſts of eighteen months, having twenty days each, which make three hundred and ſixty days; the remaining five days are ſpent in mirth, and no buſineſs is ſuffered to be done, nor even any ſervice at the temples. Alvarez relates much the ſame of the Abyſſinians; who begin their year on the 26th of Auguſt, and have five idle days at the end, which they call *pagomen.* At Rome there are two ways of computing the year; the one beginning at the Nativity of our Lord: this the notaries uſe, dating *a Nativitate.* The other on the 25th of March, on occaſion of the Incarnation; and it is by this the bulls are dated, *anno Incarnationis.* The Greeks begin their year of the world from the firſt of September. See Year *ſupra.*

Years are alſo diſtinguiſhed with regard to the epochas whence they are numbered: thus, *years of our Lord,* are thoſe reckoned from the birth of Jeſus Chriſt. *Years of the world,* are thoſe elapſed ſince the Creation. *Years of Rome, of the Hegira, of Nabonaſſar,* &c. See the difference between theſe years, under the article Epocha.

Year is alſo a word uſed by ſome of the chemical writers to expreſs any product of their operations, which may ſerve as a medicine, whether internally or externally.

Year *and Day,* in *Law,* &c. is a time that determines a right in many caſes, and is in ſome an uſucaption, and in others a preſcription.

Thus, in the caſe of an eſtray, if the owner, proclamation being made, challenge it not within a year and day, it is forfeit. In like manner is the year and day given in caſes of appeal, of deſcent, of entry or claim, of non-claim upon a fine, or writ of right, of the death of a man ſore bruiſed, or wounded, of protections, eſſoins in reſpect of the king's ſervice, of a wreck, and on many other occaſions.

Year, *Day, and Waſte, Annus, Dies, et Vaſtum,* is a part of the king's prerogative, by which he challenges the profits of the lands and tenements of perſons attainted for petit treaſon, or felony, for the ſpace of a year and a day, whoſoever is lord of the manor to which they belong.

Formerly the king had only a liberty of committing waſte on the lands of felons, by pulling down their houſes, extirpating their gardens, ploughing their meadows, and cutting down their woods. But this tending greatly to the prejudice of the public, it was agreed in the reign of Henry I. that the king ſhould have the profits of the land for one year and a day in lieu of the deſtruction he was otherwiſe at liberty to commit: and, therefore, Magna Charta provides, that the king ſhall only hold ſuch lands for a year and a day, and then reſtore them to the lord of the fee; without any mention made of waſte. But the ſtatute 17 Edward II. *de prærogativa regis,* ſeems to ſuppoſe, that the king ſhall have his year, day, and waſte, and not the year and day inſtead of waſte; which ſir Edward Coke, and the author of the Mirror, before him, very juſtly look upon as an encroachment, though a very ancient one, of the royal prerogative.

This year, day, and waſte, are now uſually compounded for; but otherwiſe they regularly belong to the crown: and, after their expiration, the land would naturally have deſcended to the heir (as in gavel-kind tenure it ſtill does), did not its feodal quality intercept ſuch deſcent, and give it by way of eſcheat to the lord. Black. Com. book iv.

Year-*Books,* in *Law.* See Reports.

Years, *Eſtate for,* in *Law,* is a contract for the poſſeſſion of lands or tenements for ſome determinate period: and it happens when a man letteth them to another for the term of a certain number of years, agreed upon between the leſſor and the leſſee, and the leſſee enters thereon.

If the leaſe be but for half a year, or a quarter, or any leſs time, this leſſee is reputed as a leſſee or tenant for years, and is ſo ſtyled in ſome legal proceedings; a year being the ſhorteſt term which the law in this caſe takes notice of. An eſtate of this kind, even for a thouſand years, is only a chattel, and reckoned part of the perſonal eſtate; and, therefore, a leaſe for years may be made to commence *in futuro,* though a leaſe for life cannot.

With regard to emblements, or profits of land ſowed by tenant for years, there is this difference between him and tenant for life: that where the term of tenant for years depends upon a certainty, as if he holds from Midſummer for ten years, and in the laſt year ſows a crop of corn, and if it is not ripe and cut before Midſummer, the end of his term, the landlord ſhall have it; for the tenant knew the expiration of his term, and therefore it was his own folly to ſow what he never could reap the profits of. But where the leaſe for years depends upon an uncertainty; as, upon the death of the leſſor, being himſelf only tenant for life, or being a huſband ſeiſed in right of his wife; or if the term of years be determinable upon a life or lives: in all theſe caſes, the eſtate for years not being certainly to expire at a time foreknown, but merely by the act of God, the tenant or his executors ſhall have the emblements in the ſame manner as a tenant for life, or his executors ſhall be intitled to it. But not ſo, if it determine by the act of the party himſelf; as if tenant for years does any thing that amounts to a forfeiture; in which caſe the emblements ſhall go to the leſſor, and not to the leſſee, who hath determined his eſtate by his own default. Blackſt. Com. vol. ii.

YEARLINGS, in *Rural Economy,* a term applied to young neat cattle of the heifer kind in the ſecond year. It is obſerved in the Glouceſterſhire Report on Agriculture, that until within theſe few years, it was there eſteemed a bad practice to let them be put ſo early to the bull, but that now it is even thought that this method improves them as milkers; and that from the increaſed value of ſtock, it is advantageous to anticipate a year, as a heifer in calf, at two years old, will be worth nearly as much as it would be if kept three. See Live-*Stock.*

YEARN, in *Hunting,* ſignifies to bark, as beagles properly do, at their prey.

YEARNING, in *Rural Economy,* a term applied to runnet, uſed for curdling milk in ſome places. See Dairying and Runnet.

YEAST, Yest, or *Barm,* the foam or flower of beer, or other liquor in fermentation.

The yeaſt of beer is uſed for a leaven or ferment in the making of bread: as ſerving to ſwell or puff it up very conſiderably in a little time, and to make it much lighter, ſofter, and more delicate. But when there is too much of it, it renders the bread bitter.

The uſe of yeaſt in bread is but of late ſtanding among us: it is not above a century ſince the avarice of the bakers firſt introduced it; and then it was only done by ſtealth. Though Pliny witneſſes it to have been uſed by the ancient Gauls.

The faculty of medicine of Paris, by a decree of the 24th of March, 1688, ſolemnly maintained it noxious to the health of the people; yet even that cenſure could not prevent its progreſs.

Common ale-yeaſt may be kept freſh and fit for uſe ſeveral months by the following method: Put a quantity of it into a cloſe canvas bag, and gently ſqueeze out the moiſture in a ſcrew-preſs, till the remaining matter be as firm and ſtiff as clay.

In this ſtate it may be cloſe packed up in a tight caſk, for
ſecuring

ſecuring it from the air; and will keep freſh, ſound, and fit for uſe for a long time.

This is a ſecret that might be of great uſe to the brewers and diſtillers here, who, though they employ very large quantities of yeaſt, ſeem to know no method of preſerving it, or raiſing nurſeries of it; for want of which they ſuſtain a very conſiderable loſs; whereas the brewers in Flanders make a very great advantage of ſupplying the malt-diſtillers of Holland with yeaſt, which is rendered laſting, and fit for carriage, by this eaſy expedient. Shaw's Lectures.

Mr. Henry has repeatedly prepared an artificial yeaſt, by impregnating flour and water with fixed air, with which he has made very good bread, without the aſſiſtance of any other ferment: and he propoſes this method of procuring freſh fermented bread at ſea.

The proceſs is as follows: Boil flour and water together to the conſiſtence of treacle; when the mixture is become cold, fill a ſmall caſk with it. This caſk is to be filled up in the manner repreſented in *Plate* XV. *fig.* 7. *Pneumatics*, and deſcribed under PYRMONT *Water*, for the impregnation of water with fixed air; and the proceſs is to be conducted in a ſimilar way, except that the caſk is to be agitated as often as the mixture riſes to about two-thirds of the capacity of the funnel *k*; and after each agitation, which ſhould continue during ſeveral minutes, the unabſorbed air is to be let out, by withdrawing the plug from the orifice *m*, till that part of the mixture which remained in the funnel has returned into the caſk. The orifice at *i* ſhould alſo be larger than is neceſſary in the other operations, on account of the ſuperior viſcidity of the mixture. When, after repeated agitation, the mixture which has aſcended into the funnel does not ſubſide into the caſk, it may be ſuppoſed incapable of abſorbing more air.

Pour the mixture, thus ſaturated, into one or more large bottles, or narrow-mouthed jars; cover it over looſely with paper, and upon that lay a ſlate or board with a weight to keep it ſteady. Place the veſſel in a ſituation where the thermometer will ſtand from 70° to 80°, and ſtir up the mixture two or three times in twenty-four hours. In about two days, ſuch a degree of fermentation will have taken place, as to give the mixture the appearance of yeaſt.

With the yeaſt in this ſtate, and before it has acquired a thoroughly vinous ſmell, mix the quantity of flour intended for bread, in the proportion of ſix pounds of flour to a quart of the yeaſt, and a ſufficient portion of warm water. Knead them well together in a proper veſſel, and covering it with a cloth, let the dough ſtand for twelve hours, or till it appears to be ſufficiently fermented, in the above-mentioned degree of warmth. It is then to be formed into loaves and baked.

Mr. Henry adds, that perhaps the yeaſt would be more perfect, if a decoction of malt were uſed inſtead of ſimple water.

When the operation is finiſhed, the caſk, in order to prevent its contracting a diſagreeable taint, ſhould be well waſhed. Henry's Account of a Method of preſerving Water at Sea, &c. p. 26, 1781.

YEAST, *Chemical Properties of*. The nature of yeaſt has been briefly diſcuſſed under the head of FERMENTATION. Since that article was written, however, ſome additional experiments have been publiſhed on the ſubject, which deſerve to be noticed here.

The active and eſſential principle of yeaſt, as obſerved under the article *Fermentation* above alluded to, appears to be a ſpecies of *gluten*. When yeaſt is kept for ſome time in cylindrical glaſs veſſels, a white ſubſtance, not unlike curd, ſeparates and ſwims upon the ſurface. If this ſubſtance be removed, the yeaſt loſes the property of exciting fermentation. This ſubſtance poſſeſſes many of the properties of gluten, though it differs from it in others. Its colour is much whiter. It has not the ſame elaſticity, and its particles do not adhere with the ſame force. It diſſolves more readily in acids. Dr. Thomſon conſiders this as the real fermentative principle, and thinks it may be conſidered as gluten ſomewhat altered, and rendered much more capable of decompoſition. He thinks alſo that it exiſted in the raw grain originally, but underwent conſiderable modifications by the malting proceſs, and perhaps others during the fermentation of the beer from which it ſeparated.

The ſame diſtinguiſhed chemiſt ſtates, in ſupport of this opinion, the experiments of Fabroni and Thenard. Fabroni, by heating the juice of grapes, and paſſing it through a filtre, ſeparated an adheſive matter, which poſſeſſed the properties of gluten, and deprived of which the juice refuſed to ferment, though it fermented as well as uſual when this principle was again added. Thenard likewiſe found in the juices of all the fruits he examined a ſubſtance ſimilar to that deſcribed by Fabroni, and which, according to him, is abſolutely the ſame with pure yeaſt. This ſubſtance is inſipid, does not change vegetable blues, is inſoluble in water, loſes three-fourths of its weight when dried, and is decompoſed like animal ſubſtances. When eight parts of it were diſtilled, they left 2.83 of charcoal, and yielded 1.61 of water, 1.81 of oil, and a quantity of ammonia, which, when ſaturated with muriatic acid, formed 1.46 of muriate of ammonia. The gas obtained weighed 0.33, and conſiſted of one-fifth of carbonic acid, and four-fifths of carburetted hydrogen, requiring $1\frac{1}{2}$ times its bulk of oxygen to conſume it. Nitric acid, even when much diluted, converts it into a ſpecies of tallow. With potaſh it forms a ſoap, while ammonia is diſengaged. When mixed with ſugar and a ſufficient quantity of water, fermentation takes place, carbonic acid is diſengaged, and a vinous liquor formed. By this action, the ferment loſes the whole of its azote, and becomes incapable of exciting fermentation when mixed with a new portion of ſugar. In farther corroboration ſtill of this opinion, Dr. Thomſon adduces an experiment of Kirchhoff, which he thinks throws conſiderable light on the nature of yeaſt. Barley-meal contains both gluten and ſtarch. Pure ſtarch infuſed in hot water is not converted into ſugar; nor does gluten become ſaccharine matter when heated in the ſame manner. But if a mixture of pure dried pulverized wheat-gluten and potatoe-ſtarch be infuſed in hot water, the ſtarch is converted into ſugar. During the proceſs an acid is ſaid to be evolved. The gluten is little changed in appearance or quantity, and may moſt of it be ſeparated by filtration. What is ſingular, however, it is incapable of inducing the ſame change upon ſtarch a ſecond time.

The following are the conſtituents of yeaſt, according to Weſtrumb, as quoted by Dr. Thomſon. From 15·360 parts he obtained,

Potaſh	13
Carbonic acid	15
Acetic acid	10
Malic acid	45
Lime	69
Alcohol	240
Extractive	120
Mucilage	240
Saccharine matter	315
Gluten	480
Water	13·595
	15·142

Beſides ſome traces of phoſphoric acid and ſilica. But it is evident, as Dr. Thomſon obſerves, that all theſe ingredients are not eſſential, and he conſiders the gluten only as deſerving that appellation.

Some of the French chemiſts have conſidered the principle of fermentation to reſide in an imperfect ſpecies of ſugar, which they have denominated the *ſweet principle*, and which they ſtate to exiſt in combination with real ſugar in all fruits containing that principle. This *ſweet principle* they ſuppoſe to differ from pure ſugar, in being incapable of cryſtallizing. A familiar example of it we have in *treacle* or *molaſſes*, which, according to them, is the *ſweet principle* of the ſugar-cane. This doctrine, however, has not met with many adherents; for, as Dr. Macculloch obſerves, although chemiſtry has not hitherto diſcovered the means of ſeparating the ſugar from the *ſweet principle*, the reſults of fermentation leave no doubt that the latter conſiſts of ſugar combined with the vegetable extractive matter, or gluten, as it is denominated by moſt chemiſts. Thus molaſſes conſiſts of a certain portion of *real ſugar*, in ſuch a ſtate of combination with a variety of ſubſtances, and the fermentative principle among the reſt, that it cannot be made to cryſtallize or be otherwiſe obtained in a ſeparate ſtate. This is demonſtrated by the well-known fact, that molaſſes may be made to undergo the fermentative proceſs, and to yield alcohol, in preciſely the ſame manner as a ſimple mixture of ſugar and yeaſt. The ſweet principle of molaſſes, therefore, muſt be in fact nothing elſe than ſugar, unleſs we ſuppoſe two different ſubſtances capable, by the ſame means, of producing the ſame reſult, which is totally unprecedented in chemiſtry, beſides being in itſelf extremely improbable.

Upon the whole then, in the preſent ſtate of our knowledge, we are obliged to conclude that the eſſential principle of yeaſt, or the real fermentative principle, is either identical with gluten, or cloſely allied to it. Of its real nature, however, and *modus operandi*, we are totally ignorant, and ſhall probably long remain ſo.

The yeaſt of beer is that moſt generally employed, and is of the utmoſt importance in the manufacture of bread, and of fermented liquors from malt. If carefully dried and preſerved from moiſture, it retains its properties for a long time, and it is a pity this practice is not more generally reſorted to, as fluid yeaſt in warm weather ſoon becomes aceſcent and putrid, and not only loſes its properties, but imparts a moſt diſagreeable flavour to the bread, &c. with which it is mixed. Yeaſt may be readily dried by firſt ſeparating its watery parts as much as poſſible, and afterwards expoſing it in ſhallow veſſels to the air, or to a gentle heat in a ſtove. In this way, it may be obtained in thin laminæ, and requires only to be preſerved in cloſe veſſels in a dry place, when it will be always ready for uſe, by diffuſing it in a little warm water. A popular method of preſerving yeaſt is by drying it upon bunches of twigs. See Bread, Brewing, Fermentation, and Wine.

Yeast, *Medicinal Properties of.* Yeaſt has been highly extolled as an antiſeptic remedy in diſeaſes, when a putrid diatheſis was ſuppoſed to prevail; as in low typhus fevers, gangrene, &c. A good method of exhibiting it is, to mix one or two table-ſpoonfuls of it with a quart of infuſion of malt or mild porter, and to take a wine-glaſsful of this mixture frequently. Many practitioners alſo have ſpoken highly of the good effects of a fomenting poultice compoſed partly of yeaſt, when applied to foul and gangrenous ulcers. The good effects of this remedy, if in reality it poſſeſſes any, may probably be attributed to the carbonic acid gas generated by its agency. See Fever.

YEATS, Mrs., in *Biography*, the celebrated tragic actreſs, who, in conjunction with Mrs. Brooke, the noveliſt, a lady of conſiderable literary merit, undertook, in 1773, at all riſks, the conduct and government of the opera, and all its dependencies; an enterpriſe for which they were but ſparingly qualified. In the firſt place, Mrs. Yeats, though poſſeſſed of ſtrong natural parts, and an inherent ſpirit of government, knew no language but Engliſh, was ignorant and indifferent about muſic, dancing, painting, machinery, and decorations. She and her huſband had ſaved a conſiderable ſum by their ſalaries and benefits at our national theatres, and in hopes of accumulation previous to retirement, they quitted employments for which they were extremely well fitted, and in which their ſucceſs was certain, to govern a moſt froward family by deputation, at the extreme hazard of being ruined.

Mrs. Brooke, who had reſided ſome time at Quebec, after its conqueſt, with her huſband, the Rev. Dr. Brooke, chaplain to the army in that colony, indeed knew French, had a good taſte in books, and wrote in a good ſtyle; but was ignorant of muſic, and totally unacquainted with all opera concerns. Yet it was during this female regency, that the beſt compoſers, the greateſt ſingers, and the moſt capital and renowned dancers, were engaged: for during nine years, from 1773 to 1782, we had Sacchini, Truetta, and Anfoſſi, to compoſe; Pacchierotti, Anſani, and the Gabrielli, to ſing; and Madlle. Heynel, the Veſtris, and Le Picq, to dance.

Mrs. Yeats did not enrich herſelf by her opera ſovereignty; but ſhe had the addreſs to eſcape ruin. And Mrs. Brooke, who riſked no property, loſt no reputation by imprudence, or the want of talents in the perſons ſhe engaged.

YECATY, in *Geography*, a town of Hindooſtan, in Myſore; 20 miles N. of Seringapatam.

YECORA, a town of New Mexico, in the province of Hiaqui; 50 miles E. of Riochico.

YEDACOTTA, a town of Hindooſtan, in Myſore; 15 miles N. of Dindigul.

YEDAPADY, a town of Hindooſtan, in the Carnatic; 8 miles N. of Sankeridurgam.

YEDAPILLY, a town of Hindooſtan, in Myſore; 2 miles N.W. of Vencatighery.

YEDDIMUNGALUM, a town of Hindooſtan, in the Carnatic; 18 miles E. of Tanjore.

YEDKAST. See Jezdkast.

YEGUE Hotun, a town of Chineſe Tartary; 418 miles E.N.E. of Peking. N. lat. 43°. E. long. 124° 19′.

YEHENAGUR, a town of Hindooſtan, in Lahore; 15 miles N.N.E. of Jallindar.

YEHUNGSCHAUL, a town of Hindooſtan, in Lahore; 40 miles W.N.W. of Lahore.

YELASURAM, a town of Hindooſtan, in Palnaud; 20 miles W.S.W. of Timerycotta.

YELCHORE, a town of Hindooſtan, in the circle of Guntoor; 3 miles N.E. of Innaconda.

YELCOUR, a town of Hindooſtan, in the Carnatic; 15 miles N. of Chittoor.

YELDOOR, a town of Hindooſtan, in Myſore; 12 miles N.E. of Colar.

YELFOLA, a town of Spain, in Galicia; 18 miles N. of Santiago.

YELION, a word uſed by ſome of the barbarous writers to expreſs glaſs.

YELL Island, in *Geography*, one of the Shetland iſlands, 20 miles long, and about 7 broad, but interſected by a number of bays, by the inhabitants called Voes, which afford good harbours. The principal part of the arable land is confined to the neighbourhood of the coaſt; the inland parts are mountainous,

tainous, and covered with peat moſs: there is but little heath, but abundance of a rough ſort of graſs called *lubbo*, which grows naturally, and affords tolerable paſture for ſheep, horſes, and black cattle. Though the crops raiſed are not ſufficient for above eight months' conſumption, yet the inhabitants, by the advantage of having plenty of fuel, and catching immenſe quantities of ſmall fiſh, live comfortably, and as well as the generality of the peaſants of Scotland. N. lat. 60° 56′. W. long. 1° 20′.

YELLAGOOD, a town of Hindooſtan, in Golconda; 45 miles S.E. of Canoul.

YELLAMOODY, a town of Hindooſtan, in the province of Madura; 25 miles W. of Madura.

YELLANG, a town of Burmah; 14 miles S. of Mellone.

YELLOOR, a town of Hindooſtan, in Baramaul; 6 miles N.N.W. of Namcul.

YELLOW, a bright colour, reflecting the moſt light of any after white. See COLOUR.

The word is formed from the Italian *giallo*, or the German *geel*, which ſignifies the ſame; or from the Latin *galbanus*, *bright*, *gay*.

There are divers yellow ſubſtances that become white, upon wetting and drying them again ſeveral times in the ſun: ſuch as wax, linen cloth, &c. (See BLEACHING.) And the ſame bodies, if they be already white, and continue a long time in the air without being wetted, turn yellow.

Paper and ivory, applied near the fire, become ſucceſſively yellow, red, and black. Silk, when turned yellow, is whitened again with the fumes of ſulphur.

YELLOW, in *Dyeing*, is one of the five ſimple and mother colours. See COLOUR.

The only materials uſed by the calico-printers for the production of fine yellows are the quercitron-bark (ſee QUERCUS), and the *Weld*, or *Reſeda Luteola*, which ſee. In order to obtain calicoes of the fineſt yellow or more delicate lemon colour, it is neceſſary to dry the pieces in the open air, as the ſtove would not fail to injure ſuch colours; ſtove-drying having a tendency to change a yellow into an orange. In the operation of dunging the mordants for theſe pale yellows, care ſhould be taken that it be not done at a higher temperature than 96° or 100°, as ſuch a high temperature would impair their beauty. But beſides, by dunging at this low temperature, the dyeing may be completed at about 110°, which will give a much livelier colour than if a higher temperature had been employed. For all the different ſhades of reds and yellows, the mordant employed by calico-printers is the acetate of alumine; which is prepared by a mixture of the ſulphate of alumine with acetate of lead, both in a ſtate of ſolution; ſo that, on the theory of double decompoſition, ſulphate of lead is formed, which precipitates while the acetate of alumine remains in ſolution. Of late this article has been prepared from the pyroligneous acid, by means of lime and alum, in the following manner:—The pyroligneous acid is firſt paſſed through a ſtill, to diveſt it of a portion of the tar which is always diſſolved in it: it is then ſaturated with lime or whiting; and the acetate of lime thus formed is decompoſed by a heated ſolution of ſulphate of alumine. The reſult of this double decompoſition is ſulphate of lime, which precipitates, and acetate of alumine, which is drawn from the ſediment of the calcareous ſulphate, and preſerved for uſe. Mr. Parkes cautions the manufacturer againſt the uſe of lime in the proceſs for making acetate of alumine; and he ſays that the true mode of making it, though more expenſive, is that recommended by Berthollet, which conſiſts in decompoſing ſulphate of alumine by means of ſaccharum ſaturni, or acetate of lead. Mr. Parkes mentions a method of producing yellows on calico, which, though not often practiſed, has nevertheleſs a very good effect. The proceſs is as follows:—A ſtrong decoction of bark, thickened with gum tragacanth, is to be mixed with a portion of very pure muriate of tin; and this, when printed with the uſual management, will produce a colour of great brightneſs and durability. This mode poſſeſſes one very important advantage; *viz.* that if it ſhould be neceſſary to pad a piece in diluted acetate of alumine to obtain a pale lemon ground, the yellow figures previouſly done by the above proceſs will not give out any part of their colour to the ſecond mordant; whereas, whenever a ſtrong yellow has been produced in the common way, the pattern is very apt to ſpread, and to become irregular, and often to ſtain the ground, when the piece comes a ſecond time into the acetate of alumine. Parkes's Eſſ. vol. ii.

Turmeric likewiſe gives a good yellow, though not the beſt.

Woollen cloth, impregnated with a ſolution of alum and tartar, acquires on being boiled with the watery decoction, an elegant, but not very durable orange-yellow or gold-coloured dye. It is rarely made uſe of by the dyers, on account of its price, and the periſhableneſs of its colour.

There is alſo an Indian wood that gives a yellow colour bordering on gold. This wood, called *fuſtick*, is a ſpecies of mulberry-tree, of a deep ſulphur-yellow colour, which it readily gives out both to water and ſpirit. The watery decoction dyes prepared woollen of a very durable orange-yellow: the colour is imbibed by the cloth in a moderate warmth, without boiling.

The *fuſtet* or *fuſtel* of the French is a yellow wood or root, very different from our fuſtick: it gives a fine orange dye to woollen, but the colour is extremely periſhable in the air. This is called *cotinus coriaria*, or *Venice ſumach*.

The leaves of many kinds of herbs and trees give a yellow dye to wool or woollen cloth that has been previouſly boiled with a ſolution of alum and tartar. There is, indeed, no colour for which we have ſuch plenty of materials as for yellow.

Mr. Hellot obſerves, in his Art de Teindre, that all leaves, barks, and roots, which on being chewed diſcover a ſlight aſtringency, as the leaves of the almond, peach, and pear trees, aſh-bark (eſpecially that taken off after the firſt riſing of the ſap in ſpring), the roots of wild patience, &c. (ſee LEAF), yield durable yellows, more or leſs beautiful, according to the length of time that the boiling is continued, and the proportions of alum and tartar in the preparatory liquor: that a large quantity of alum makes theſe yellows approach to the elegant yellow of weld; that if the tartar is made to prevail, it inclines them to an orange; and that if the roots, barks, or leaves, be too long boiled, the yellow proves tarniſhed, and acquires ſhades of brown. Neumann's Chemical Works, by Lewis, p. 384. 434.

The Chineſe are famous for their yellows in dyeing, which never change with waſhing. They make this dye of the flowers of the acacia, in a manner in which we might uſe ſeveral of our productions to a great advantage.

It is thus: they gather the flowers before they are perfectly ripe, and dry them in an earthen veſſel over a gentle heat, till they criſp up in the manner of tea-leaves: they then add to them the ripe ſeeds of the ſame tree in different proportions; and then boiling them in river water with alum, they give the yellow in any degree that they pleaſe.

They have three kinds of yellow, which they diſtinguiſh by the names of *Ngo-hoang*, *king-hoang*, and *hoang* alone.

The firſt of theſe is the brighteſt yellow: to dye five or ſix ells of ſilk of this colour, they uſe a pound of the flowers of the acacia, about two ounces of the ſeeds, and four ounces of alum.

The *king-hoang* is a ſomewhat deeper yellow: to dye this, they uſe the ſame ingredients in the ſame proportion as in the former caſe; and when the ſilk is dry from the dipping in this, they give it a ſecond dipping in a ſlight tincture of Braſil wood: this brings it to the fine ſtrong yellow we ſee.

The *hoang*, or pale yellow, is made of the ſame ingredients as the firſt, only inſtead of four ounces of alum they put in but three ounces: river water is found to be greatly preferable to any other for the extracting of theſe colours; but even in that there is great difference, ſome doing the buſineſs much better than others.

The Chineſe are ſo expert in judging on this occaſion, that they can tell by the taſte of water whether it will or will not do; and if it taſte faint they know it is faulty; but they dip the pieces twice into it inſtead of once, and the colour ſucceeds well.

The flowers of the acacia, when they have been prepared by roaſting in this manner, may be kept all the year round, and employed in dyeing as occaſion requires, only there is to be longer boiling for the dried flowers than the freſh ones; and it is always found that the freſh flowers give the brighteſt colour. Obſ. ſur les Coutum. de l'Aſie, p. 254.

Greens are uſually made of yellow and blue mixed. With yellow, madder red, and goat's-hair prepared with madder, are made the golden yellow, Aurora, panſy, nacarate, Iſabella, and chamois colour, which are all caſts or ſhades of yellow.

Mr. Peter Woulfe has given the following receipt for making the yellow dye:—Take half an ounce of powdered indigo, and mix it in a high glaſs veſſel, with two ounces of ſtrong ſpirit of nitre, which ſhould be previouſly diluted with eight ounces of water, for preventing the indigo's being ſet on fire by the ſpirit; becauſe two ounces and a half of ſtrong ſpirit of nitre will ſet fire to half an ounce of indigo: let the mixture ſtand for a week, and then digeſt it in a ſand-heat for an hour or more, and add four ounces more of water to it; filtre the ſolution, which will be of a fine yellow colour. If the indigo be digeſted twenty-four hours after the ſpirit of nitre is poured upon it, it will froth and boil over; but after ſtanding about a week, it has not that property.

One part of the ſolution of indigo in the acid of nitre, mixed with four or five parts of water, will dye ſilk or cloth of the paleſt yellow colour, or of any ſhade to the deepeſt, and that by letting them boil more or leſs in the colour. The addition of alum is uſeful, as it makes the colour more laſting: according as the ſolution boils away, more water muſt be added. None of the colour in the operation ſeparates from the water, but what adheres to the ſilk or cloth; and conſequently this colour goes far in dyeing.

Cochineal, Dutch litmus, orchil, cudbear, and many other colouring ſubſtances treated in this manner, will all dye ſilk and wool of a yellow colour.

The indigo which remains undiſſolved in making Saxon blue, and collected by filtration, if digeſted with ſpirit of nitre, dyes ſilk and wool of all ſhades of brown, inclining to a yellow.

Cloth and ſilk may be dyed green with indigo; but they muſt firſt be boiled in the yellow dye, and then in the blue. Phil. Tranſ. vol. lxi. part i. p. 129, &c. See DYEING.

Painters and enamellers make their yellow of maſſicot, or, as ſome write it, maſticot, which is ceruſſe raiſed to a yellow colour by the fire; or with yellow ochre. Limners and illuminers make it with ſaffron, French berries, orcanette, &c.

Mr. Boyle tells us a moſt beautiful yellow may be procured by taking good quickſilver, and three or four times its weight of oil of vitriol, drawing off, in a glaſs retort, the ſaline menſtruum from the metalline liquor, till there remains a dry ſnow-white calx at the bottom: on pouring a large quantity of fair water on this, the colour changes to an excellent light yellow.

He ſays he fears this colour is too coſtly to be uſed by painters, and he does not know how it would agree with every pigment, eſpecially oil colours. Works abr. vol. ii. p. 91. See VITRIOL.

Branton obſerves, that it was anciently the cuſtom to paint a man's door yellow, and ſtrew his houſe with ſalt, to declare him a traitor to his king.

YELLOW *and other Colouring Matters of Flowers*, in *Rural Economy*, the different colouring matters thus produced. The nature of the colouring matters of flowers has not yet been much examined into. Such colouring matters are in general very tranſient, eſpecially thoſe of the blue and red kinds. The yellow colouring matters of this ſort are ſaid to be the moſt permanent. It is noticed by a late writer, that the carthamus contains a red and a yellow colouring matter; that the yellow is eaſily diſſolved by water; that from the red, rouge is prepared by a proceſs which is kept ſecret; that the colours of moſt flowers are changed by alkalies to green, and by acids to red; that an imitation of the colouring matter may be made by digeſting ſolutions of gall-nuts with chalk; a green fluid is produced, which becomes red by the action of an acid; and that has its green colour reſtored by means of alkalies.

YELLOW *Copper*, in *Mineralogy*, copper pyrites. See COPPER *Ores*.

YELLOW *Earth*, a ſoft yellow mineral ſubſtance, found at Wehraw, in Upper Luſatia, aſſociated with clay and argillaceous iron-ſtone: it is ſometimes uſed as a yellow pigment. The characters given of this ſubſtance do not ſeem to entitle it to be regarded as a different ſpecies from ſome of the ochreous clays which occur in the coal-ſtrata in England. It is claſſed by profeſſor Jameſon with the lithomarge family, and is thus deſcribed by him. Its colour is ochre-yellow, of different degrees of intenſity; it occurs maſſive; it is dull in the croſs fracture, but glimmering in the principal fracture. In the large, the fracture inclines to ſlaty; in the ſmall, the fracture is earthy. The fragments are tubular, or indeterminately angular. It becomes ſhining in the ſtreak; it is opaque and very ſoft, paſſing into friable; it ſoils the fingers ſlightly, and adheres to the tongue; its feel is rather greaſy; it is rather light, but the ſpecific gravity is not given. Before the blow-pipe, yellow earth is converted into a black and ſhining enamel. We have no analyſis of this earth.

YELLOW *Tellurium Ore*, an ore of tellurium, hitherto found only at Nagyag, in Tranſylvania. See TELLURIUM.

YELLOW *Cow-Wheat*, in *Agriculture*. See WEED.

YELLOW *Dead Nettle*. See WEED.

YELLOW *Devil's Bit*. See WEED.

YELLOW or *French Berries*. See AVIGNON, and LYCIUM.

YELLOW *Fever*, an epidemic diſeaſe of frequent occurrence in America and the Weſt Indies. See FEVER, *Yellow*.

Veſſels arriving in Great Britain or Ireland, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man, from places where the yellow fever is known to exiſt, or where it is deemed likely to break out, are ſubjected by various laws and orders of his majeſty in council to the reſtraint of quarantine; the ſame as ſhips arriving from countries ſubjected to the *Plague*, for the details of which, ſee that article in the *Addenda*.

YELLOW-*Hammer*, in *Ornithology*, the name of a very common Engliſh bird, called by authors *emberiza lutea;* and by Linnæus *emberiza citrinella;* and by ſome *hortulanus;* by others *luteus;* and by others *chloreus*.

The bill is of a duſky hue; the crown of the head is of a pleaſant pale yellow; in ſome almoſt plain, in others ſpotted with brown; the hind-part of the neck is tinged with green; the chin and throat are yellow; the breaſt is marked with an orange-red; the belly yellow; the leſſer coverts of the wings are green; the others duſky, edged with ruſt colour; the back of the ſame colours; the rump of a ruſty red; the quill-feathers duſky, edged on their exterior ſides with yellowiſh-green; the tail is a little forked; the middle feathers are brown; the two middlemoſt edged on both ſides with green, the others on their exterior ſides only; the interior ſides of the two outmoſt feathers are marked obliquely near their ends with white.

This ſpecies makes a large flat neſt on the ground, near a buſh or hedge, of moſs, dried roots, and horſe-hair: it lays ſix eggs, of a white colour, with dark purple veins; and in winter frequents our farm-yards with other ſmall birds. Pennant.

There is beſide this another kind, which is much ſmaller, and of a browner colour on the back; this is called by ſome authors *zivolo*.

YELLOW *Hawkweed*, in *Agriculture*. See WEED.

YELLOW *Jaundice*, in *Medicine*. See JAUNDICE.

YELLOW, *King's*, is a pure orpiment, or arſenic coloured with ſulphur, uſed for painting in oil and varniſh; of an extreme bright colour, and when good a true yellow: when uſed alone, it will ſtand well; but mixed with white lead, and ſeveral other pigments, its colour flies or changes. It is ſometimes mixed with blue pigments, to form a green colour. This pigment may be prepared by mixing ſulphur and arſenic by ſublimation: taking of arſenic powdered, and flowers of ſulphur, in the proportion of twenty parts of the firſt to one of the ſecond, and putting them into a ſublimer, and ſubliming them in a ſand-heat by means of a furnace particularly adapted to the purpoſe. When the operation is completed, the king's yellow will be found in the upper part of the glaſs, which muſt be ſeparated with care from any foul parts adhering to it in the glaſs, and levigated into an uniform powder. It may be alſo obtained from common orpiment by ſubliming it in the ſame manner. This pigment may be rendered warmer, or more inclined to orange, by increaſing the proportion of the ſulphur, and *vice verſâ*. Handmaid to the Arts, vol. i. p. 17.

YELLOW *Ladies' Bed Straw*. See WEED.

YELLOW *Meat*, in *Rural Economy*, that which is much tinged with a yellow colour. It is ſaid to be a peculiar property in ſome ſorts of animals, of both the ſheep and cattle kinds, to afford meat which has a yellow caſt or appearance.

It is ſuggeſted that this defect muſt be hereditary, as no paſture or particular food can either produce or remove it, as ſheep which have been tried in the manner here deſcribed and found yellow have been ſent to the Thames marſhes, kept there a year, and when ſlaughtered have proved as yellow as gold. It may probably depend upon ſome phyſiological principle, which mere examination after death has not yet ſhewn. Theſe remarks are equally applicable to beef as mutton, and are the reſult of information on the ſubject derived from a well-experienced Smithfield ſaleſman.

YELLOW, *Naples*. See GIALLOLINO.

YELLOW *Oat-Graſs*, in *Agriculture*, a ſort of graſs which thrives well in meadows and paſtures, as well as upon hills where the ſoil is of a calcareous nature, flowering in the middle of ſummer. It is a rather coarſe graſs, which, though tolerably ſweet, is thought by many to be much inferior to the meadow and feſcue graſſes; and which Withering has aſſerted not to be reliſhed by cattle; but which Swayne thinks one of the beſt graſſes of this kind for the uſe of the farmer.

The proportional value which the graſs, at the time the ſeed is ripe, bears to that at the time of flowering, is as 9 to 15.

The proportional value which the graſs of the latter-math bears to that at the time of flowering, is as 5 to 15; and to that at the time the ſeed is ripe, as 5 to 9.

It is remarked, that this ſpecies of graſs is pretty generally cultivated in many diſtricts and parts of this country; and that it would appear from the above details to be a valuable graſs, though inferior to many others. See AVENA *Flaveſcens*, GRASS, and GRASS-*Land*.

YELLOW *Ochre*. See OCHRE.

YELLOW *Rattle*. See WEED.

YELLOW *Scour* or *Milk*, a diſeaſe in lambs, which takes place while they are young, and in which they appear quite dull and ſpiritleſs; their ears inſtead of being upright lie flat and aſunder on their heads; they are very lank in the ſides and bellies, and their breathing is very ſhort and unequal. Theſe appearances are ſucceeded by a purging of a yellowiſh milky coloured matter, which, in ſome caſes, has come on before the diſeaſe is noticed; but at other times, the lambs die without having had any or only a ſlight diſcharge of excrement. The body or carcaſe appears well fed; the excrement in the inteſtines, which laſt are ſometimes in ſome degree ſwelled, reſembles in colour that paſſed at the anus, while the ſtomach is particularly full of coagulated milk.

It is a diſeaſe which never appears or ſhews itſelf in hard ſeaſons, but only when the weather is warm, growing, and genial, and there is great plenty of new graſs. In general it does not affect them after they are three weeks old. It is moſtly aſcribed to their ſucking more milk than they can digeſt; and it is even ſaid, that they not unfrequently ſuck until their ſtomachs burſt.

The lambs being young, and of little value, remedies to prevent or remove the diſeaſe are ſeldom tried; but thoſe of the aromatic cretaceous kind, with a little opium, may often be uſed with much advantage in preventing and curing the complaint.

YELLOW *Vetchling*, in *Agriculture*, a plant of the tare kind, that may be cultivated by the farmer in many caſes with profit. The writer of the Eſſays on Rural Affairs ſtates, that it grows with great luxuriance on ſtiff clayey ſoils; that it continues annually, for any length of time, to afford a great weight of produce, which is of the very beſt quality; that it is equally fit for paſture herbage or for hay, and that it may be applied to one or other of theſe purpoſes at any period as convenient; that it has likewiſe this advantage, that as it continues to grow with equal ſtrength in the end as in the beginning of the ſummer ſeaſon, it may admit of being paſtured upon in the early ſpring, when neceſſary, without endangering the loſs of the hay-crop, which cannot be the caſe with any other plant uſually cultivated, except clover, which is unfit both for early paſture and for hay; and that it is ſtill more valuable, as growing to the greateſt perfection on ſuch ſoils as are wholly unfit for producing ſain-foin, the only ſort of plant yet cultivated in the field, which ſeems to have qualities approaching to thoſe of this plant.

The principal objection to its cultivation is the difficulty of procuring the ſeeds of it in plenty, which may probably be obviated by proper management. It is, however, an abiding plant, and one which increaſes faſt by its running roots, and which may readily be propagated in this way in the field. See LATHYRUS *Pratenſis*.

YELLOW-*Berry Waſh*, is a ſolution of the gum of the French berries in water; and may be prepared by boiling a pound of the berries in a gallon of water with half an ounce of alum, in a pewter veſſel, and filtering the fluid; and by evaporating the fluid in the boiler till the colour appears to be of the requiſite degree of ſtrength.

This is uſed as a waſhing colour in water-painting: it will ſtand extremely well, and being more diluted, or laid on thicker, will, in conſequence of its tranſparency, give a variety of ſhades.

YELLOW *Waſh of Saffron.* See *Tincture of* SAFFRON.

YELLOW *Waſh of Turmeric.* See TURMERIC.

YELLOW *Breeches Creek*, in *Geography*, a river of Pennſylvania, which runs into the Suſquehanna, N. lat. 40° 13′. W. long. 76° 52′.

YELLOW *Creek*, a townſhip of Ohio, in the county of Columbiana, with 491 inhabitants.—Alſo, a river of America, which runs into the Ohio, N. lat. 40° 34′. W. long. 80° 44′.

YELLOW *River*, a ſmall river of Ireland, in the King's county, which joins the river Boyne.

YELLOW *River*. (See HOANG.) Mr. Barrow, ſuppoſing, without the poſſibility of exaggeration, that the breadth of the Yellow river, where Macartney's embaſſy paſſed it, about 70 miles from the ſea, was only three-fourths of a mile, the mean depth five feet, and the velocity of its courſe four miles an hour, concludes, from theſe data, that the river diſcharges into the Yellow ſea, in every hour, a volume of water equal to 418,176,000 ſolid feet, or 2,563,000,000 gallons of water, or 1100 times as much as appears to be furniſhed by the Ganges. By another computation, he eſtimates the quantity of mud wafted into the ſea by this river in every hour to be equal to 2,000,000 ſolid feet, or 48,000,000 in every day, or 17,520,000,000 in every year. Suppoſing the mean depth of the Yellow ſea to be 20 fathoms, or 120 feet, the quantity of earth brought down by the Yellow river would, if accumulated together, be ſufficient to fill up, even to the ſurface of the ſea, an iſland one mile ſquare in 70 days. By extending the calculation, a curious inquirer may find in what ſpace of time the Yellow ſea itſelf might be filled up by the ſucceſſive depoſitions from the Yellow river alone; for ſuppoſing that ſea to extend northward from that river, and to include the gulfs of Pe-che-lee and Leao-tong, the number of ſquare miles on the ſurface of this extent would be about 125,000, which, multiplied by the number (70) of days neceſſary for conſolidating one mile ſquare, would make 8,750,000 days, or 24,000 years.

The velocity of the Yellow river at the place where the embaſſy croſſed it was ſo great, as to require, agreeably to the ſuperſtitious notions of the Chineſe crews, a ſacrifice to the ſpirit of the river, in order to enſure a ſafe paſſage over it. With this view, the maſter preſented a cock, and having wrung off his head, which he threw into the ſea, conſecrated the veſſel with the blood ſpouting from the body, by ſprinkling it upon the deck, the maſts, the anchor, and the doors of the apartments, and ſtuck upon them a few of the feathers of the bird. Various kinds of proviſions were then ranged acroſs the deck; and when the captain had made three profound inclinations of the body with his hands uplifted, he muttered a few words, as if of ſolicitation to the Deity. The loo, or brazen drum, was in the mean time beaten forcibly; lighted matches were held towards heaven; papers, covered with tin or ſilver-leaf, were burnt; and crackers fired off in great abundance by the crew. The captain afterwards made libations to the river, by emptying into it from the veſſel's prow the ſeveral cups of liquids which he had provided, and concluded with throwing in alſo that which held the ſalt. All the ceremonies being finiſhed, and the bowls of meat removed, the people feaſted on it; and afterwards launched with confidence the yacht into the current. As ſoon as ſhe had reached the oppoſite ſhore, the captain returned thanks to heaven, with three inclinations of the body. Sacrifices are alſo offered to obtain a fair wind, and to avert any impending danger.

Beſides theſe offerings, great exertions were neceſſary to overcome the violence of the Yellow river, and to tranſport large yachts in ſafety to the oppoſite ſhore. Embaſſy to China, vol. ii.

YELLOW *Sea*, an extenſive but ſhallow inland ſea between Corea and China, hardly any where exceeding forty-five fathoms in depth, and often not more than twenty; with a bottom of clay or mud: the alluvion, without doubt, of the rivers that are poured into it from the mountains and plains of China. See LEAO-TONG.

YELLOWS, in *Animals*, is a diſeaſe which is incident to horſes, neat-cattle, and ſheep, in which there is a yellow jaundice-like appearance, eſpecially in the eyes.

It is a diſeaſe that takes place in horſes in all ſtates of them, but which in thoſe of the young kind is often unaccompanied with fever, or any ſort of irritation.

It ſhews itſelf by a particular yellowneſs in the eyes and the inſide of the mouth, with a conſiderable degree of conſtipation of the bowels in ſome caſes.

The complaint is frequently much relieved by the uſe of a ball compoſed of one ounce of aloes in powder, with one drachm of calomel, and half an ounce of Caſtile ſoap, made up with a ſufficient quantity of treacle; and the ſecond morning afterwards giving one conſtituted of half an ounce each of nitre, reſin, and Caſtile ſoap, made up with honey; and if the yellowneſs ſhould continue in the eyes and mouth, repeating the latter after an interval of four days.

Some, however, adviſe to have firſt recourſe to bleeding, clyſters, and purges; in the laſt of which intentions the compoſition directed below may be found uſeful: One ounce and a half of Indian rhubarb, two drachms of ſaffron, and ſix drachms of ſoccotrine aloes, formed into a ball with ſyrup of buckthorn. But if the rhubarb ſhould be thought too expenſive, it may be omitted, and the ſame quantity of cream of tartar, and half an ounce of Caſtile ſoap, with four drachms more of aloes, be added. This may be repeated two or three times, giving intermediately the remedies directed below: Half an ounce of Æthiops' mineral, and one ounce of Caſtile ſoap, formed into a ball, and one of them given every day, waſhing it down with a pint of the following decoction: Madder and turmeric-root, each four ounces; burdock-root ſliced, half a pound; monk's rhubarb, four ounces; and liquorice ſliced, two ounces; boiled in one gallon of forge-water to three quarts; the liquor then ſtrained off, and ſweetened with honey.

In this diſeaſe, balls of Caſtile ſoap and turmeric alone are likewiſe often had recourſe to, even to the quantity of three or four ounces or more in the day; and not unfrequently ſucceed in recent caſes.

By means of this ſort, the diſeaſe for the moſt part abates in the courſe of a week or ten days, which may be known by the alteration in the eyes and mouth of the horſe; but the remedies are to be continued until the yellowneſs is wholly removed. Should, however, the diſeaſe prove obſtinate, and not give way to ſuch modes of treatment, it will be neceſſary to have recourſe to more powerful remedies, ſuch as thoſe of the mercurial purging kind, repeated two or three times at proper intervals, and then to give the balls compoſed of the ſubſtances directed below: Two ounces of ſalt of tartar, four ounces of cinnabar or antimony, three ounces of filings of ſteel, and ſoap half a pound, formed with honey into balls the ſize of a pullet's egg, giving one night and morning in a pint of the above decoction drink.

On the recovery of the horſe, ſome adviſe two or three mild purges; and if he be ſtrong and fat, to put in a rowel.

He ſhould have maſhes and warm water frequently, and be exerciſed daily, and warmly covered with cloths.

In order to prevent a relapſe, the firſt purging-ball may ſometimes be uſed with great advantage; and a powder formed of the following ingredients be mixed, with the feeds of corn every night for a fortnight: Æthiops' mineral, nitre, and aniſeeds, each half an ounce, mixed together.

Salt-maſhes, too, have often been found very uſeful in the cure of this diſorder, and when taken in time rarely fail in reſtoring the animal.

The yellows in neat-cattle is a common diſeaſe, ariſing from obſtruction in the gall-ducts, and conſiſts in a diffuſion of the obſtructed bile through the whole body of the animal. It is firſt diſtinguiſhed in the white of the eyes, which has a particular yellow appearance; and as it increaſes, the whole of the ſkin becomes tinged with the ſame yellow colour: but the ears, tail, eyes, and mouth, are the parts in which it is the moſt conſpicuous. The animals are affected with great weakneſs and debility in every ſtage of the diſeaſe, and there is a liſtleſſneſs, with indiſpoſition to move, and a want of appetite for their food. When in the paſtures, they moſtly wander about by the ſides of the hedges, or other fences, in a lonely manner. Milch cows are particularly ſubject to the diſeaſe in the ſpring and at the fall of the year; though they are not exempt from having it at all other ſeaſons. The moſt unfavourable ſtate of the diſeaſe is when it proceeds from an induration of ſome part of the liver, as there is then but little hope of the diſeaſe being permanently removed. As the changing ſtate of the weather has often a great effect in retarding or haſtening the removal of the diſeaſe, care ſhould be taken to houſe the animals in all unfavourable ſeaſons.

On the firſt appearance of the diſeaſe, it may often be removed by the compoſition directed below: Salt of tartar, Caſtile ſoap, and grains of Paradiſe, each one ounce; turmeric-root, and coriander-ſeeds, in powder, each two ounces; the whole being made into a drink, by pouring three pints of hot ale upon the ingredients in a proper cloſe veſſel, firſt ſlicing the ſoap in a thin manner, and covering them well up until they become about new milk warm, when two ounces of honey or treacle may be added, and the whole given as a drink. It muſt be repeated at the diſtance of every day or two, for two or three times, or as there may be occaſion.

Where the beaſt is ſtrong, a little blood may ſometimes be taken away with advantage; but it ſhould not be turned out into the paſture the ſame day.

When the diſeaſe does not give way to theſe remedies, it may be neceſſary to have recourſe to a ſtrong purge or two. After which a drink compoſed as below may be given: Salt of tartar, one ounce; Caſtile ſoap ſliced, two ounces; well rubbed down with an ounce of balſam of copaiva, and then two ounces each of valerian-root, ginger-root, and Peruvian bark in powder added, and the whole given in ale or gruel as above, repeating it every other day.

It is neceſſary to keep the bodies of the animals well open through the whole of the diſeaſe; in which intention a drink compoſed as below may often be uſeful: Barbadoes aloes, in powder, one ounce; caſtor-oil, four ounces; ſyrup of buckthorn, two ounces; mixed and given in a quart of oatmeal-gruel when about new milk warm, and repeated until the proper effect be produced, uſing the firſt ſaponaceous drink at the ſame time.

When this complaint is removed, the general health of the animals may ſoon be reſtored by the proper uſe of cordial ſtrengthening drinks, formed of the different aromatic pectoral ſeeds in the powdered ſtate.

The yellows is not a very common diſeaſe among ſheep, and conſequently has not been very accurately deſcribed; but probably confounded with many other affections to which they are ſubject. It is ſuppoſed by ſome to be in general confined to the South-Down and new Leiceſter breeds, which, from their more tender conſtitutions, are more liable to complaints.

The appearances of the diſeaſe are a yellowneſs over the whole body, but particularly diſtinguiſhable in the white of the eye. The wool, too, has a little of the tinge, and is ſlightly hard. The paſſages of the belly are of a whitiſh colour, and the urine is found to tinge any thing immerſed in it of a yellow hue. Sometimes there is a degree of fullneſs and hardneſs in the right-ſide, about the ſeat of the liver. The cauſes are any thing which has a tendency to obſtruct the gall-ducts, but they are by no means evident; their effect, however, ſeems generally to harden the liver, and invariably to impede the paſſage of the bile from it into the bowels. In ſome caſes, ſmall ſtones, formed in the gall-bladder, produce it; and at other times, it is cauſed, as in the rot, by the ſwelling of the glands impeding the flow of the bile in the ducts, in which caſe it is moſtly incurable.

The removal of the diſeaſe is to be attempted by the uſe of ſtrong purgatives, and ſuch remedies as act ſtrongly on the ſtomach. A ſtrong ſolution of purging ſalts will partly tend to produce this effect; and ten grains of ipecacuanha, given every three hours in a little warmed ſtrong beer, is ſaid to be attended with the moſt beneficial effects, when continued for five or ſix days together, and a doſe of purging ſalts given after it, ſo as to clear the bowels. Calomel and ſoap may likewiſe be often given with great benefit, as well as ſome of the above ſaponaceous remedies.

YEMANA, or Jemama, in *Geography*, a country and city of Arabia, which M. D'Anville, probably miſled by ſome map and uncertain accounts, places on a river called Aſtan, and which he repreſents as a ſtream in Neged, though Niebuhr mentions it merely as a wali or brook, which runs after rains. D'Anville ſays, that Jemama is in Al Kardjé, which is the grand province of Kerjé of Niebuhr, on the E. of Hedjaz and Yemen; and in this province, according to the Daniſh geographer, is the city of Amamé or Imamé, renowned for the prophet Moſeilama, whom the hiſtorian Gibbon aſcribes to Yemama, and which town is in the diſtrict of Surſa. But this cannot correſpond with D'Anville's Jemama, which is in the province of Ared, bounded only by that of Lahſa on the E. Niebuhr alſo informs us, that Aijana, a town of Ared, is remarkable for the new prophet Wahhab; and therefore Gibbon ſeems to have erred by ſuppoſing it to be the ſame with Yemama, the latter being probably a town of Kerjé, not far to the E. of Hedjaz. After all, the province and city of Jemama are probably mere fictions, which ſhould be excluded from the maps, together with the river of Aſtan, which, if it exiſted, would certainly be followed by the caravans from Lahſa to Mecca, while they ſeem to prefer a ſandy deſert. Pinkerton's Geography.

YEMBA. See EMBA.

YEMELLA, a town of Hindooſtan, in Golconda; 24 miles E.N.E. of Rachore.

YEMEN, a province of Arabia, comprehending the fineſt and moſt fertile part of Arabia, repreſenting, as Gibbon has obſerved, the Arabia Felix of antiquity, ſurrounded by the Red ſea, or Arabic gulf, and by the province of Hadramaut, Nedsjed, and Hedsjas. Yemen is naturally divided into two parts, differing greatly in ſoil and climate: that bordering on the Red ſea is a dry and ſandy plain, nearly two days' journey in breadth, and is ſcorched by the moſt torrid heats; the other, extending immediately beyond this, is a high-lying country, full of precipitous yet fertile hills, and enjoying a much more temperate air. Yemen is, like the reſt of Arabia, parcelled out among a number of different ſovereigns in unequal portions. Some of them are princes of conſiderable power; but many are petty ſchiecks, who are, however, perfectly independent: the moſt conſiderable of theſe princes is the imam, who reſides at Sana. There are ſeveral other independent ſtates, as Aden, Kaukeban, Kobail or Haſchid-u-Bekil, Abu-Ariſch, a large diſtrict between Abu-Ariſch and Hedsjas, inhabited by free Bedouins; Khaulan, Sahan, comprehending the principality of Saade; Nedsjeran, Kachtan, Nehhm, Eaſt Khauſan, Dsjof or Mareb, Jafa, and ſeveral others. The ſame intermixture of fertile and barren territory, and the ſame productions, appear every where through the whole province: the imam, however, ſeems to be maſter of the richeſt, the moſt agreeable, and the moſt intereſting part of this tract of country. It would not be eaſy to explain diſtinctly the extents and limits of this ſovereign's territories, as they are ſo interſected by the domains of a number of petty princes. The general diviſion of Yemen into Tehama the Lowlands, and Djebal the Highlands, obtains in the imam's dominion as well as elſewhere. Upon this grand diviſion depends the ſubdiviſion of the kingdom of Sana into thirty governments or counties. Tehama contains ſix of theſe governments, and the Highland country twenty-four: the ſmall governments are not all alike populous or remarkable. There are in the territory of the imam many ſchiecks diſperſed among the mountains, who acknowledge not his authority, and are but in a very ſlight degree dependent upon him. From the expulſion of the Turks in the year 1630, the reign of the imams began; their great anceſtor Khaſſem Abu Mahomed was the chief author of that revolution. The throne of Yemen is hereditary; if generally approved of by the ſubjects, the eldeſt legitimate ſon of an imam is his rightful ſucceſſor. But in the deſpotic governments of the Eaſt, indeed, no order can be cloſely obſerved, becauſe there are no fundamental laws. The imam is an abſolute prince, and the more ſo by uniting in his own perſon ſupreme authority, both ſpiritual and temporal, over his ſubjects. His juriſdiction in eccleſiaſtical matters, however, extends not over the dominions of other ſovereigns of the ſame ſect: theſe ſtates have each a mufti, or cadi, for its ſpiritual uſe. Although the imam be abſolute, he is checked in the exerciſe of his authority by the ſupreme tribunal of Sana, of which he is only preſident: this tribunal, conſiſting of a certain number of cadis, poſſeſſes the ſole power of life and death. The imam may not order any of his ſubjects for execution, but ſuch as have been condemned in conſequence of a criminal proſecution before this court. The cadis are generally eſteemed to be perſons of incorruptible integrity, of blameleſs lives, and devoted to the faithful diſcharge of their duties: they are not changed here ſo often as in Turkey, but hold their offices uſually for life. Every petty diſtrict in the dominions of the imam has its governor: if not a prince, or one of the higher nobility, this governor is called wali and dola, or ſometimes emir, when he happens to be a perſon of low birth. In every little town, a ſub-dola, with a ſmall garriſon, conſiſting ſometimes of five or ſix ſoldiers, reſides to maintain order. The chief of a large village is a ſchieck; he of a ſmall one a hakin. Every city in which a dola reſides has alſo a cadi, dependent on the chief cadi of Sana; the cadi is ſole judge in civil and eccleſiaſtical affairs, nor may the dola interfere to contradict his ſentences, or render them inefficacious. The cadis in the provinces, no leſs than in the capital, are in high reputation for wiſdom and integrity. The revenue of the imam is fluctuating and precarious; Niebuhr ſtates it at about 500,000 crowns a month. This revenue ariſes from a land and poll tax, and from duties payable upon articles of merchandize. The military force conſiſts ordinarily of 4000 infantry and 1000 cavalry. Theſe armies uſe no artillery, nor do the Arabs know how to manage cannon. As the imam has no dread of enemies or corſairs upon the Arabic gulf, he has no occaſion for a naval force; and his ſubjects are therefore generally unſkilled in navigation. The fiſhermen venture far to ſea in ſmall canoes ſcarcely furniſhed with oars. The manufactures of a people of ſo little induſtry cannot but be very trifling: no ſabres are manufactured in Yemen, nor any edged weapon, except a kind of crooked knives, called *jembea*. The making of match fire-locks has been attempted here within theſe few years: it ſucceeds but indifferently. It is only of late that glaſs works have been eſtabliſhed at Mocha; ſome coarſe cloth is manufactured here, but not ſo much as is required for the uſe of the country: broad cloths are neither made nor worn here. The Engliſh brought ſome goods of this ſort to Mocha, but were obliged to carry them back to India unſold. A country which affords ſo few articles for ſale cannot have a great trade. Coffee is almoſt the ſole article exported from Yemen; a valuable commodity, in exchange for which many of thoſe things which this country needs from abroad may well be obtained. All the commerce of Yemen is carried on by Mocha, except only that ſome ſmall quantities of coffee are exported by Loheia and Hodeida. Agriculture ſeems to be farther advanced in Yemen than in the other parts of the Eaſt. Wheat, in the beſt cultivated diſtricts, is ſaid to yield an increaſe of fifty-fold; durra, in the Highlands, 140; and in the Tehama from 200 to 400: and the inhabitants of Tehama reap three ſucceſſive crops from the ſame field in the ſame year. In many parts of Yemen, whole fields are cultivated like a garden, and watered in the rainy ſeaſon by canals from the hills. The inhabitants of the plain are obliged to encompaſs their fields with dykes, that the water may remain for ſome time upon the ſurface of the ground. In the upper parts of Yemen, the inhabitants collect the water neceſſary for their fields in dams formed at the foot of the hills. In ſome diſtricts of Yemen, maize and durra are planted with the hand. The huſbandry of Tull and Du Hamel, ſays Niebuhr, although novel in Europe, is very old in Arabia. In order to guard their fields from depredation of birds and other deſtructive animals, the peaſants watch them by turns. In the Highlands, he who watches ſeats himſelf on a tree; in the Tehama, on a ſort of ſcaffold, with a roof raiſed over it. Niebuhr's Travels.

YEN, a river of China, which runs into the Hoang, 17 miles S.E. of Yen-tchang.

YEN-CHIN-TCHING, a town of China, in Chantong; 45 miles E.S.E. of Tci-nan.

YENDON, a river of England, in the county of Stafford, which runs into the Churnet.

YENGHI Iman, a town of Curdiſtan; 70 miles S.E. of Kerkuk.

YENGI, a town of Corea; 25 miles N.E. of Kang.

YENISSEI, or Yenissey, or *Eniſſei*, a river of Ruſſia, which the Tartars and Mongoles, who inhabit the ſuperior regions of it, above the Tunguſka, call Kem, and the Oſtiaks, Gub or Kheſes, ſignifying the Great river, and which is at firſt compoſed of two rivers, the Kamſara and the Veikem, originating in the Chineſe Soongaria, or Bucharia, and forming a conjunction in N. lat. 51° 30′, and E. long. 111°. About the mouth of the Bom-Kemtſhyug it enters on Ruſſian ground, and hence firſt takes the name of Yeniſſey. After various windings it turns northward, and in N. lat. 70′, and E. long. 103° 30′, forms a bay containing ſeveral iſlands; and at laſt, in 3° 30′ of length, falls into the Frozen ocean. In autumn, when its water is at the loweſt, its breadth, *e.gr.* at the town of Yeniſſeiſk, is about 570 fathom, whereas in the ſpring it is 795 fathom and upwards. The coaſts of the Frozen ocean, between the mouths of the Yeniſſey and Oby, are called the Yuratzkoi ſhore. The more conſiderable ſtreams taken up by the Yeniſſey are the following: on the right, the Uſs, the Tuban, the Kan, and the three Tunguſkis, *i.e.* the Upper, the Middle, or Podkammenaia, and the Lower Tunguſka; on the left, the Abakan, the Yelovi, and the Turukhan. In its ſuperior regions, the Yeniſſey flows over a very ſtony bed; and its ſhores, particularly the eaſtern, are moſtly beſet with lofty mountains and rocks. Its courſe is in general very rapid, though near its mouth it flows ſo gently, that the current is hardly perceptible. In the neighbourhood of Turukanſk and elſewhere it forms ſome conſiderable iſlands; and between the cities of Yeniſſeiſk and Kraſnoyarſk ſeveral cataracts are to be ſeen. The Yeniſſey is navigable from its mouth as far as Abakan, and affords abundance of the beſt fiſh. Near this river, as well as in ſome other ſteppes of Ruſſia, are ſtone-tombs, which repreſent in rude ſculpture human faces, camels, horſemen with lances, and other objects. Between this river and the Oby, or Ob, is a vaſt ſpace extending from the north of Tomſk to the Arctic ocean, which is regarded as a ſteppe, being a prodigious level with no appearance of a mountain, and ſcarcely of a hill. The ſame term is applied to the wider ſpace between the Yeniſſey and the Lena, between the Arctic ocean in the N., and the river Tunguſka, or Angara, in lat. 65°; and to the parts beyond the Lena as far as the river Kolyma or Covima. Tooke's Ruſſ. vol. i.

YENISSEISK, or Enisseisk, a ſmall town of Ruſſia, in the government of Tobolſk, ſituated on the above deſcribed river, the forges of which yield a conſiderable tax to the Ruſſian revenue. Its juriſdiction is extenſive, and it pays annually a tribute in ſkins to the crown of Ruſſia; 400 miles E.N.E. of Kolivan. N. lat. 58° 16′. E. long. 91° 50′.

YENITE, in *Mineralogy*, *Lievrite*, Werner, a mineral found in the iſland of Corſica, which from the great quantity of iron that it contains might properly be claſſed with the ores of iron. It is arranged by profeſſor Jameſon with the chryſolite family, but it differs greatly in the proportions of its conſtituent parts from all the other ſpecies which he has claſſed with this family. The appearance of this mineral reſembles hornblende, or rather black epidote; it occurs both cryſtallized and maſſive. The form of the cryſtals is that of a rhomboidal priſm, the alternate angles of which meaſure about 113 and 67 degrees: the priſms are terminated by low four-ſided pyramids, the faces of which are ſet on the lateral planes of the priſm. It is alſo cryſtallized in rectangular priſms, bevelled on the extremities, and the bevelling planes ſet on the obtuſe edges. Theſe figures are alſo variouſly modified by the edges or angles being bevelled. The cryſtals are ſometimes very minute or acicular, and ſometimes half an inch in thickneſs; they are frequently aggregated in diverging radii, and ſometimes imbedded. The priſms are ſtriated longitudinally. The ſtructure is imperfectly lamellar, with joints parallel to the ſides, and to the ſhort diagonal of the rhomboidal priſm. The fracture of yenite is uneven, and imperfectly conchoidal, with a luſtre between vitreous and reſinous. The colour is black paſſing into brown; it does not change its colour in the ſtreak. The hardneſs of yenite is about equal to that of common felſpar; it is eaſily frangible. The ſpecific gravity of yenite varies from 3.825 to 4.061.

It is fuſible with eaſe by the blow-pipe into a black glaſs, which has a metallic aſpect, and is attracted by the magnet, but does not poſſeſs polarity; it diſſolves with borax with a ſlight ebullition. It is acted upon by the mineral acids, but does not gelatinize with them. When expoſed to heat it becomes magnetic. Its colour is changed by heat from black into dark reddiſh-brown, and it loſes about two *per cent.* of its weight.

The conſtituent parts of yenite are,

Silex	from	28 to 30
Alumine		1
Lime		12 - 14
Oxyd of iron with manganeſe		51 - 58

Yenite decompoſes gradually on expoſure to the air, and is reduced to a yellowiſh-brown ochre. According to Brongniart, yenite occurs in diſperſed cryſtals and groups, and in compact kidney-ſhaped maſſes, in a thick bed of a greeniſh ſubſtance nearly reſembling yenite, but which has not been accurately examined. It is accompanied with epidote, quartz, and arſenical pyrites. This bed at Rio la Marino, in Corſica, covers a rock of primitive marble mixed with talc. At the Cap de Calamite, it is accompanied with magnetic iron-ſtone, garnets, and quartz.

YEN-KING, in *Geography*, a city of China, of the ſecond rank, in Pe-tche-li; 52 miles N.N.W. of Peking. N. lat. 40° 30′. E. long. 125° 30′.

YENLADE, or Stray, a channel between the Thames and Medway, which ſeparates the iſland of Graine from the coaſt of Kent. It was formerly the uſual paſſage for veſſels to and from London.

YENNE, a town of France, in the department of Mont Blanc, near the Rhône, ſuppoſed to be the ancient Epanna, where Sigiſmund, king of Burgundy, aſſembled a council at the end of the fifth century; 14 miles N.W. of Chambery.

YEN-NGAN, a city of China, of the firſt rank, in Chen-ſi, on the river Yen; 390 miles S.W. of Peking. N. lat. 36° 44′. E. long. 108° 49′.

YEN-PING, a city of China, of the firſt rank, in Fo-kien; 820 miles S. of Peking. N. lat. 26° 40′. E. long. 117° 54′.

YEN-TCHEOU, a city of China, of the firſt rank, in Tche-kiang. Near this town are mines of copper, and trees that yield varniſh, which give a value to the cabinet-work ſo much eſteemed in Europe; when this varniſh is once dry, it never melts again, and will bear boiling water.

The paper manufacture of this place is in equal eſteem, and for which they have a great demand. Six towns of the third order are under its juriſdiction ; 650 miles S.S.E. of Peking. N. lat. 29° 38′. E. long. 119° 14′.—Alſo, a city of China, of the firſt rank, in Chan-tong. The territory depending upon this capital is incloſed between two conſiderable rivers, which abound with fiſh, and make the ſoil very fruitful. The country is very well cultivated, the mountains are covered with woods, and the air is mild and temperate. There are twenty-ſeven towns within the juriſdiction of this capital ; four of the ſecond order, and twenty-three of the third ; 267 miles S. of Peking. N. lat. 35° 44′. E. long. 116° 36′.

YENTCHERU, a town of Hindooſtan, in the circar of Cuddapa ; 20 miles N.N.E. of Combam.

YEN-TCHING, a town of China, in Chan-tong, where a peculiar ſpecies of glaſs is manufactured, of ſo delicate a nature, that it will not endure the inclemency of the air ; 45 miles S.E. of Tci-nan.

YEO. See Yeovil.

YEOMAN, the firſt or higheſt degree among the plebeians of England ; next in order to the gentry.

The yeomen are properly the freeholders, who have land of their own ; ſo called from the Saxon *gemane*, or *geman*, *common*.

The word *yongman* is uſed for yeoman in the ſtatute 33 Hen. VIII., and in old deeds it is ſometimes alſo written *jeman*, which, in the German, ſignifies *any-body*.

According to ſir Thomas Smith, a yeoman is a free-born Engliſhman, who can lay out of his own free land in yearly revenue to the ſum of forty ſhillings ſterling.

The yeomanry of England are capable of holding lands of their own to a good value ; are adjudged capable of certain offices, as conſtables, churchwardens, jurymen ; and are alſo to vote in elections to parliament, and to ſerve in the army, and to do any other act where the law requires one that is *probus et legalis homo*.

The yeomen were famous, in ancient times, for military valour, being particularly expert at the management of the bow ; whence the infantry was compoſed chiefly of them.

They frequently conſtituted the body-guard of our kings ; and in proceſs of time gave riſe to the inſtitution of *yeomen of the guard*.

In many caſes, the law conceives a better opinion of the yeomanry that occupy lands, than of tradeſmen, artificers, &c.

By a ſtatute, 2 Hen. IV., it is enacted, that no yeoman ſhall take or wear a livery of any lord, upon pain of impriſonment, and a fine at the king's pleaſure.

Yeoman is alſo a title of office in the king's houſehold, of a middle place or rank between a gentleman and a groom. Such are the yeoman of the buttery ; yeoman of the ſcullery ; yeoman of the wine-cellar, ewry, wood-yard, &c. There are alſo the yeoman of the mouth, yeoman of the kitchen, yeomen-porters, &c.

Yeoman, in *Sea Language*, an officer under the boatſwain or gunner of a ſhip of war, uſually charged with the ſtowage, account, and diſtribution of their reſpective ſtores.

Yeomen-*Warders*. See Warders *of the Tower*.

Yeomen *of the Guard*, properly called *yeomen of the guard of the king's body*, were anciently a body of men of the beſt rank under gentry, and of larger ſtature than ordinary ; every one being required to be ſix feet high.

Their number has varied in almoſt every reign, and formerly conſiſted of a certain number in ordinary, and an indefinite number extraordinary ; and in caſe of a vacancy in the former, it was ſupplied out of the latter number. In the reign of king Edward VI. this corps was very numerous. In the reign of queen Elizabeth, the yeomen attending her in her different progreſſes were occaſionally mounted. In the reign of queen Anne, the arms of half this band were arquebuſes, which are ſaid by Chamberlain to have been diſuſed ever ſince the reign of king William ; the other half had partiſans, and thoſe of both claſſes had ſwords. They had their wages and diet allowed them ; ſo that in a MS. of the expences of the royal eſtabliſhment for the year 1727, the charges of the table of the yeomen of the guard were 273*l.* 15*s.* But their diet has been diſcontinued ſince that reign. Their duty was to wait upon the queen in her ſtanding-houſes ; forty by day, and twenty by night. At St. James's, they waited in the firſt room above ſtairs, called the guard-chamber. It is alſo their duty to attend the ſovereign abroad by land or water.

At preſent there are but one hundred yeomen in conſtant duty, at 39*l.* 11*s.* 3*d.* *per annum* each ; eight of whom are called uſhers, who have 10*l.* *per annum* each more than the other yeomen ; ſix are called yeomen hangers, and two, yeomen bed-goers, who have the ſame pay as the uſhers ; and ſeventy more not on duty ; and as one of the hundred dies, his place is ſupplied out of the ſeventy.

The officers are, a captain, who has 1000*l.* *per annum ;* a lieutenant, at 500*l.* *per annum ;* an enſign, at 300*l.*; and four exons, at 150*l.* *per annum* each ; and a clerk of the checque at the ſame ſalary.

Their origin is traced to the year 1485, when king Henry VII. aſcending the throne, immediately after his coronation, inſtituted a guard of fifty archers to attend him and his ſucceſſors. They were probably then, as they are now, called the *yeomen of the guard*.

It is obſerved, that this is the firſt inſtance of any eſtabliſhed or permanent military guard in England : its kings, till that time, except in times of war and inſurrection, contenting themſelves with the guard of their proper domeſtics and retinue. And. Hiſt. Com. vol. i. p. 302.

Moſt of the writers, however, againſt ſtanding armies commence that eſtabliſhment with the ſerjeants at arms, who were firſt inſtituted by king Richard I. Their dreſs is that which was worn in the reign of king Henry VIII., and which on many occaſions was put on by that king : it conſiſts of a ſcarlet coat reaching down to the knees, guarded with garter blue velvet, and with badges of the roſe and crown on their breaſts and backs ; their breeches alſo are ſcarlet, guarded with blue velvet ; their caps are of black velvet, with broad round crowns, adorned with ribbands of the royal colours, *viz.* red, white, and blue.

The officers and yeomen are at the diſpoſal of the captain ; but the captain is at the appointment of the king.

Yeoman *of the Salt Stores*. See Acatery.

YEOMANRY Cavalry, a denomination given to thoſe troops of horſe which were levied in the late war among the gentlemen and yeomen of the country, upon the ſame principle with the volunteer companies. The yeomanry cavalry were to be allowed pay when called out on actual ſervice, and each corps was liable to be put upon duty within its diſtrict : all contingent expences, properly and unavoidably incurred, were to be reimburſed after an inveſtigation at the war-office. One ſerjeant and a trumpeter *per* troop were to have conſtant pay, with the ſame allowances as ſerjeants and trumpeters of regular cavalry. Some accoutrements were to be furniſhed by the ordnance, or an equivalent in money to be given in lieu of them, and 14*s*. 2*d*. *per* man for holſters.

YEOVIL, in *Geography*, a large and populous market-town in the hundred of Stone, county of Somerſet, England, is ſituated on the confines of the county, at the diſtance of 9 miles S.S.E. from Somerton, and 122 miles W.S.W. from London. It derives its name from the river Yeo, which riſes near Sherborne, and paſſes this place under a ſtone bridge of three arches, ſeparating the counties of Somerſet and Dorſet. The town of Yeovil conſiſts of upwards of twenty ſtreets and lanes; many of the former are of conſiderable width: the houſes in general are reſpectable, and many of them are built of ſtone. Part of the town is called the Borough, and is governed by a portreve and eleven burgeſſes, out of whom the portreve is annually choſen. Here is a ſpacious market-houſe, ſeventy feet in length, and twenty in breadth, ſupported by ſtone pillars, in the centre of which are the remains of an ancient croſs. A conſiderable market is held on Fridays for corn, cattle, pigs, butter, cheeſe, and flax: here are alſo two annual fairs. The woollen trade was formerly extenſive here, but has decreaſed: the chief buſineſs of the town is the manufacture of leather gloves. In the return of the year 1811, the population of this pariſh was eſtimated at 4118; the number of houſes at 459. The church, a large ancient ſtructure, conſiſts of a nave, chancel, two aiſles, and tranſept: the length of the whole is 146 feet; the breadth 50. At the weſt end is a plain tower, ninety feet high, with a ſtone baluſtrade at the top. Diſſenters have ſeveral meeting-houſes in the town. Here is an alms-houſe, founded in the year 1476, by the Rev. Mr. Woburne, minor canon of St. Paul's, London, and by him endowed with conſiderable landed property for the maintenance of a maſter, two wardens, and twelve poor perſons of either ſex. He alſo built a chapel for the uſe of his poor, and ordained divine ſervice to be performed in it every day.—Collinſon's Hiſtory of Somerſetſhire, vol. iii. Beauties of England and Wales, vol. xiii. Somerſetſhire.

YEOUNGBENZAH, a town of Birmah, on the Irawaddy; 36 miles N.N.W. of Rangoon. N. lat. 17° 30′.

YEOU-TUN-OUEI, a town of Chineſe Tartary. N. lat. 41° 8′. E. long. 121° 9′.

YEOU-YU, one of the ſmall iſlands in the Chineſe Archipelago; 62 miles S.W. of Macao.

YEOWAH, a town of Birmah; 15 miles S. of Pegongmew.

YEPES, a town of Spain, in New Caſtile; 17 miles E. of Toledo.

YERAPATTA, a town of Hindooſtan, in Myſore; 8 miles S. of Dalmacherry.

YERCO, a town of Thibet; 90 miles S.E. of Laſſa.

YERE, a river of France, in the department of the Lower Seine, which runs into the Engliſh Channel, at Eu.

YERGHIEN. See Yarkan.

YERK, in *Horſes*, a term ſignifying to ſtrike out backwards. A horſe is ſaid to yerk, or ſtrike with the hind legs, when he flings and kicks with his whole hind quarters, ſtriking out the two hinder legs near together, and even to their full extent. Horſes of this ſort are very dangerous, and ſhould be parted with as ſoon as poſſible, whether they are of the farm or the ſaddle kind.

YERKIE, in *Geography*, a town of Ruſſia, on an iſland at the mouth of the Volga, where veſſels take their departure for the Caſpian ſea. Here ſhips formerly entered and cleared, but the iſland is now almoſt overflowed, and the trade of the place much decayed ſince 1747; 60 miles S. of Aſtrachan.

YERMA. See Jermah.

YERMUK. See Yarmuc.

YERTNAGOODAM, a town of Hindooſtan, in the circar of Rajamundry; 17 miles S.W. of Rajamundry.

YERVA-MORA, in *Botany*. See Bosea.

YERVILLE, in *Geography*, a town of France, in the department of the Lower Seine; 12 miles N.N.E. of Caudebec.

YESCOKING Creek, a river of North Carolina, which runs into Pamlico ſound, N. lat. 35° 29′. W. long. 76° 14′.

YESD. See Yezd.

Yesd, a town of Perſia, in the province of Lariſtan; 40 miles N. of Lar.

YESDECAST. See Jezdkast.

YESID, a town of Perſia, in the province of Chuſiſtan, or Kuziſtan; 18 miles N. of Toſtar.

YEST. See Yeast.

YETCHERADAW, in *Geography*, a town of Hindooſtan, in Myſore; 9 miles E. of Rydroog.

YETEOPAUK, a town of Hindooſtan, in the circar of Cicacole; 15 miles S.W. of Coſſimcotta.

YETHAN, a river of Scotland, which runs into the German ſea, 10 miles N. of Aberdeen.

YETHOLM, or Zet-ham, a market-town in the diſtrict of Kelſo, and ſhire of Roxburgh, Scotland, is ſituated nine miles S.E. from Kelſo, on the ſmall river Bowmont, which divides it into two parts, reſpectively named Town Yetholm and Kirk Yetholm. A weekly market is held on Wedneſdays; and two fairs annually. Many tinkers and gypſies reſide in this town. The pariſh extends about four miles in length, and two in breadth; and is bounded on the eaſt and ſouth by the Engliſh border. The ſurface is hilly, but the hills are covered with verdure, and paſtured by a very conſiderable number of ſheep. In the population return of the year 1811, this pariſh is ſtated to contain 213 houſes, and 1138 inhabitants. King Robert III. granted the barony of Yetholm in the fourteenth century to Archibald Mac Dougal, whoſe deſcendant ſtill enjoys it.—Carliſle's Topographical Dictionary of Scotland, 1813.

YETTUS, in *Natural Hiſtory*, a name given by the writers of the middle ages to a ſpecies of marble of a deep red, which was uſed by ſome as a touch-ſtone.

YEU, in *Geography*, a ſmall and inſignificant iſle, ſituated on the W. coaſt of France.

YEVA Charrum, in *Natural Hiſtory*, a name given by the people of the Eaſt Indies to a kind of litharge, which is very common in that part of the world, and is ſaid to be made partly from lead and partly from zinc.

It is leſs heavy than our yellow litharge, and of a paler colour. It is uſed as a cauſtic in all the occaſions of ſurgery there.

YEVERING, in *Geography*, a village of England, in the county of Northumberland, where the Scots were defeated in 1415, by ſir Robert Humphrevil and the earl of Weſtmoreland. Near it is a mountain called Yevering Bell, belonging to thoſe called Cheviot; 6 miles W.N.W. of Wooller.

YEULA, a town of Hindooſtan, in Baglana; 5 miles E. of Bahbelgong.

YEVRE le Chateau, a town of France, in the department of the Loiret; 6 miles S.E. of Pithiviers.

YEW, or Eugh, in *Botany*. (See Taxus.) De Theis traces theſe Engliſh words, whoſe antiquity cannot be doubted, to the Celtic *If* or *Iw*, green, alluding to the evergreen foliage of this tree. The French have retained *If* unaltered to the preſent day.

Yew, as ſome ſay, may be derived from the Greek ἶπτω, *to hurt;* and probably becauſe before the invention of guns our anceſtors made their bows of this wood: they therefore took care to plant the trees in the church-yards, where they might be often ſeen and preſerved by the people.

Yew is alſo a term uſed by the ſalt-workers of Lymington, and ſome other parts of England, to expreſs the firſt riſing of a ſcum upon the brine in boiling.

In the places where they uſe this term, they add no clarifying mixtures to the brine, for it ferments in the ciſterns, and all its foulneſs ſinks to the bottom in form of a thin mud; they admit only the clear liquor into the pan, and boil this briſkly till it yews, that is, till a thin ſkin of ſalt appears upon its ſurface; they then damp the fire, and carefully ſkim off this film, and clear only the ſcratch or calcareous earth, which ſeparates to the bottom.

They do not collect this into ſcratch-pans, as at many of the other works, but they rake it up to one ſide of the pan, and take it out; they there add a piece of butter, and continue the fire moderately ſtrong till the ſalt is granulated. They keep a briſker fire on this occaſion at Lymington than in moſt of the other works; ſo that they will work three pans in twenty-four hours. See Salt.

Yew-*Tree*, in *Agriculture* and *Rural Economy*, a well-known evergreen tree, the timber of which is much eſteemed for different uſes and purpoſes in huſbandry, and where toughneſs, elaſticity, and durability, are required.

Trees of this ſort may be eaſily propagated, in moſt caſes, by ſowing their berries when diveſted of the pulp in autumn, as ſoon as they are ripe, upon a bed of freſh undunged ſoil, either over the whole or in drills, covering them over about half an inch thick with the ſame earth: but the latter is the better mode. In the ſpring, the bed muſt be carefully cleared from weeds, and if the ſeaſon prove dry, it will be proper to refreſh it with water now and then, which will promote the growth of the ſeeds; many of which will come up the ſame ſpring, but others will remain in the ground until autumn or ſpring following; but when the ſeeds are preſerved above ground till ſpring before they are ſown, the plants never come up till the year after, ſo that by ſowing the ſeeds as ſoon as they are ripe there is often a whole year ſaved.

The plants, when they come up, ſhould be kept conſtantly well cleared from weeds, which, if permitted to grow amongſt them, would cauſe their bottoms to be naked, and frequently deſtroy the plants when they continue long undiſturbed.

In this bed, the plants may remain two years; after which, in autumn, there ſhould be a ſpot of freſh undunged ſoil prepared, into which they ſhould be removed about the beginning of October, planting them in beds about four or five feet wide, in rows about a foot aſunder, and ſix inches diſtant from each other in the rows, obſerving to lay a little litter or mulch upon the ſurface of the ground about their roots, as alſo to water them in dry weather until they have taken root; after which they will require no farther care, but to keep them clear from weeds in ſummer, and to train them according to the purpoſe for which they are deſigned, —for timber in a ſtraight manner.

In theſe beds they may remain two or three years, according as they have grown, when they ſhould again be removed into a nurſery, placing them in rows at three feet diſtance, and the plants eighteen inches aſunder in the rows, obſerving to do it in the autumn, as before directed, and continue to trim them in the ſummer for what they are intended; after they have continued three or four years in this nurſery, they may be tranſplanted where they are to remain, always obſerving to remove them in autumn where the ground is very dry; but on cold moiſt land it is better in the ſpring.

Theſe trees are very ſlow in growing, but there are many very large trees upon ſome barren cold ſoils.

It is obſerved in the Glouceſterſhire Report on Agriculture, that the yew-tree ſhould not be ſuffered to grow in or near cow-paſtures. The leaves are poiſonous to horned cattle and horſes, though the berries are eſteemed inoffenſive. In January 1805, in conſequence of ſome fences being broken down by a violent wind during the night, a number of cows belonging to a farmer in Sandhurſt entered an incloſed ſhrubbery, where there were many yew-trees growing, and continued in it till the morning. Soon after they were driven out, all of them were ſeized more or leſs with a kind of madneſs, or ſuch acute pains as made them run about in a very furious manner, ſometimes leaping to a conſiderable height, then beating their heads againſt whatever oppoſed them, and at laſt falling inſtantly dead. Oils of different ſorts were poured down their throats, as there was an opportunity of ſecuring them, which ſeemed to produce a good effect on ſome; but notwithſtanding every effort, nine out of thirty died in a few hours after they were diſcovered. On their being opened, it appeared that the whole quantity they had eaten, put together, would not have filled a peck.

An opinion prevails, that the leaves are not poiſonous in the ſummer: this, however, is probably erroneous, at leaſt it is not confirmed ſufficiently by fact to juſtify the farmer in ſubjecting his cattle to the experiment. If cattle come within reach of the yew-tree at that time of the year, they may perhaps reject it altogether, giving the preference to other green food, more palatable, and in plenty around them.

Theſe trees ſhould therefore in all caſes be carefully kept out of the hedge-rows and all other parts of fields, where cattle are ſuffered to feed and paſture.

YEYEAPOUR, in *Geography*, a town of Hindooſtan, in Lahore; 16 miles S. of Nagorcote.

YEZD, or Yesd, a large and populous city of Perſia, ſituated in a ſandy deſert, contiguous to a high range of mountains running nearly E. and W. This is the grand mart between Hindooſtan, Bucharia, and Perſia, and is, therefore, a place of conſiderable trade. The bazaar is well ſupplied, and the city contains 20,000 houſes; beſides thoſe of the Guebres, or worſhippers of fire, which are eſtimated at 4000. The Guebres were an induſtrious people, but are greatly oppreſſed, being taxed at twenty piaſtres a-head, in addition to the various other exactions of the Perſian government. Many opulent Hindoos formerly reſided here; but the late governor, wiſhing to enrich himſelf by plundering their property, they all fled in one night towards Candahar, where they have ſince eſtabliſhed themſelves. The preſent khan has, in vain, endeavoured to recall them, and there are now only nine Hindoos in Yezd. The city imports the greateſt part of its corn from the neighbourhood of Iſpahan. Cattle are alſo ſcarce, and an aſs will ſometimes ſell as high as fifty tomauns. The manufacture of ſilk ſtuffs is ſuperior to any in Perſia; and the numuds or thick felts of Tuft, a ſmall village, diſtant eight miles, are equally famous. The fort of Yezd has but a mean appearance; and the town is deſtitute of a wall.

That territory which lies between Yezd and Iſpahan is the moſt arid part of Irak. The ſoil is poor, light, and ſandy; and here is a general ſcarcity of wood and water: the climate alſo is hot, though not unhealthy. The ſmall towns of Ardiſtan, Nain, Aujdah, Mynboot, and Sezdabad, are badly built, and contain from 100 to 200 houſes each. M'Kinneir's Perſia.

YEZDEGERDIC Year, in *Chronology*. See Persian *Year*.

YEZDICAN, in *Geography*, a river of the Perſian empire, in the province of Azerbijan, which has its ſource about 60 miles to the E. of the lake of Van, and which, purſuing a N.E. courſe, paſſes under the walls of Yezdican and Kurs, and meets the Araxes a little to the N. of Nuchſhivan.

YEZEDI, the name of a Perſian ſect, of which ſeveral tribes inhabit the mountains of Sinjar, about eight or ten miles from Niſibis. They are numerous in the vicinity of Moſul, and are ſaid to worſhip, or rather deprecate, the devil, entertaining an idea that he poſſeſſes an unlimited power over mankind. They even diſlike to hear the name of the evil ſpirit mentioned in their preſence. They are the deſcendants of thoſe Arabs who followed the banners of Yezid, and fought againſt Houſſein, in the battle of Kerbela; and ſcheik Ade, the founder of the ſect, is interred near Moſul. They adore one Supreme Being as the creator and benefactor of the human race, drink wine and other ſtrong liquors, and circumciſe like the Mahometans. The Yezedi are hated by the Turks, to whom they are mortal enemies, and who have never been able to ſubdue them. They lie in ambuſh behind the riſing grounds which ſkirt the road between Moſul and Merdin; and as travellers are obliged to paſs a lonely wild, twenty furlongs in length, they are liable, if not numerouſly attended, to be murdered by theſe miſcreants. Sinjar affords abundance of paſturage, and alſo yields a ſufficient quantity of grain for the conſumption of its ſavage inhabitants. M'Kinneir's Perſia.

YFFINIAC, a town of France, in the department of the North Coaſts; 6 miles S.E. of St. Brieuc.

YGEA, a town of Spain, in Old Caſtile; 12 miles S. of Calahorra.

YGGEDE, or Uggade, in *Ancient Geography*, a place of Gallia Lyonnenſis. Anton. Itin.

YGIN, in *Geography*, a town of Corea; 28 miles S.S.W. of Haimen.

YGROMETER. See Hygrometer.

YGUALADA, in *Geography*, a town of Spain, in Catalonia; 28 miles N.W. of Barcelona.

YGUISAN, a ſmall iſland among the Philippines, near the north coaſt of Panay. N. lat. 11° 35'. E. long. 122° 32'.

Y-HO, a river of China, which riſes in Chan-tong, and runs into the Hoang, near Sou-tcheou, in the province of Kiang-nan.

YIAN-CHAN, a town of Corea; 28 miles E. of Hetſin, or Etſin.

YICHKENISH, one of the ſmaller Weſtern iſlands of Scotland; 1 mile N. of Benbecula.

YIELD or *Slack the Hand*, in the *Manege*. See Slack.

YIELDING *and Paying*, a law phraſe, formed by corruption from the Saxon *geldan*, or *gildan*, *to pay*. Hence, in Domeſday, *gildare* is frequently uſed for *ſolvere*, *reddere*; the Saxon *g* being eaſily converted into a *y*. See Geld, and Gild.

YIETI, in *Geography*, a town of South America, in the province of Paraguay; 120 miles S.E. of Aſſumption.

YIN, a word uſed by ſome of the chemical writers to expreſs verdigriſe.

YISSER, in *Geography*, a river of Algiers, anciently called Serbetis, which runs into the ſea at Jinnett.

YKINA, a town of Sweden, in the province of Finland; 45 miles N. of Biorneborg.

YLANE, a town of Sweden, in the government of Abo; 27 miles N. of Abo.

YLAY. See Ila.

YLIGAN, a town on the north coaſt of Mindanao.

YLIKANNUS, a town of Sweden, in the government of Waſa; 24 miles E.N.E. of Gamla Karleby.

Y-LIN, a city of China, of the ſecond rank, in Houquang; 617 miles S.S.W. of Peking. N. lat. 30° 52'. E. long. 110° 44'.

YLISTARO, a town of Sweden, in the government of Waſa; 24 miles E.N.E. of Waſa.

YLIVIESKA, a town of Sweden, in the government of Ulea; 38 miles S. of Ulea.

YLO, or Ilo, a ſea-port town of Peru, in the dioceſe of Arequipa, ſituated near the mouth of a freſh-water river of the ſame name, which is dry from the beginning of October to January; 25 miles W. of Moquegna. S. lat. 17° 38'.

YLST. See Ilst.

YLUM Oe, a ſmall iſland of Denmark, in the Little Belt. N. lat. 55° 8'. E. long. 10° 7'.

YLWISKA, a town of Sweden, in Eaſt Bothnia; 28 miles S. of Braheſtad.

YNATILAN, a town on the weſt coaſt of the iſland of Sibu. N. lat. 10° 21'. E. long. 123° 22'.

YNCA, Yncan, or Inca, an appellation anciently given to the kings of Peru, and the princes of their blood; the word ſignifying literally, *lord*, *king*, *emperor*, and *royal blood*.

The king himſelf was particularly called *capac ynca*, *i. e.* great lord; his wife, *pallas*; and the princes ſimply *yncas*. Theſe yncas, before the arrival of the Spaniards, were exceeding powerful. Their people revered them to exceſs, as believing them to be ſons of the ſun, and never to have committed any fault. If any perſon offended the royal majeſty in the ſmalleſt matter, the city he belonged to was totally demoliſhed.

When they travelled, whatever chamber they lay in on the road was walled up as ſoon as they departed, that nobody might ever enter in after them. The like was done to the room in which the king died; in which, likewiſe, all the gold, ſilver, and precious furniture, were always immured, and a new apartment was built for his ſucceſſor.

His beloved wives, domeſtics, &c. likewiſe ſacrificed themſelves, and were buried alive in the ſame tomb along with him. See the Hiſtory of the Yncas, by Garcilaſſo de la Veſia. See alſo Inca.

YNG, or Yn, in *Geography*, a city of China, of the ſecond rank, in Chan-ſi. N. lat. 39° 40'. E. long. 112° 49'.

YNIESTA, a town of Spain, in New Caſtile; 20 miles S.E. of Alarcon.

Y-NING, a town of Corea; 33 miles E.N.E. of Tſintcheou.

YN-PING, a town of Corea; 38 miles S.W. of Koangtcheou.

YN-TCHENG, a town of Corea; 25 miles E. of Outchuen.

YN-YUEI, a city of China, of the ſecond rank, in Yun-nan; 1300 miles S.W. of Peking. N. lat. 25° 58′. E. long. 98° 24′.

YOAK, in *Agriculture*. See Yoke, and Yoking.

Yoak, *Jugum*, in *Antiquity*. The Romans made the enemies they ſubdued paſs under the yoke, which they called *ſub jugum mittere;* that is, they made them paſs under a ſort of *furcæ patibulares*, or *gallows*, conſiſting of a pike, or other weapon, laid acroſs two others planted upright in the ground. This done they treated them with humanity enough, and ſent them home again. See Furca.

The ſame meaſure was ſometimes dealt them by their enemies upon the ſame occaſion. Thus Cæſar (lib. ii.) obſerves, that the conſul L. Caſſius had been killed by the Swiſs, and his army defeated, and made to paſs under the yoke.

Yoak *of Land*, *jugata terræ*, in our *Ancient Cuſtoms*, was the ſpace which a yoke of oxen, that is, two oxen, may plough in one day. See Hide, Yard-*Land*, &c.

YO-CHIN, in *Geography*, a town of Corea; 10 miles N.E. of Han-tcheou.

YOCKLET. See Jocklet.

YOCOM Creek, in *Geography*, a river of Virginia, which runs into the Potomack, N. lat. 38° 6′. W. long. 76° 36′.

YOCOTE, a town of Hindooſtan, in Dowlatabad; 27 miles S.S.W. of Mahur.

YOGESWARA, in *Hindoo Mythology*, a name of the Hindoo god *Siva;* which ſee. It means lord of ages, or of time; yug, or yog, being vaſt periods of time into which Hindoo chronologiſts arrange the paſt. The addition of Iſwara, the powerful, a name of Siva, ſeems to give a ſatisfactory derivation. (See Iswara.) For an account of thoſe periods, ſee Jogues. Some have derived the name of Yogeſwara from lord of Yogis, ſuppoſing the ſect of ſanctified beggars ſo deſignated as being more immediately under the protection of Siva; but this is in fact nearly the ſame thing, for yog ſignifies *union* or *junction*, and theſe periods of time re-unite all things in the Deity; and the Yogi by intenſe contemplation effects a ſimilar union. But this metaphyſical dogma cannot be explained here. See Kalpa, Yogi, and Yug.

YOGI, a deſcription of wandering ſaints, much reſpected by many of the natives of India, though by others they are ſtrongly ſuſpected to partake more of the impoſtor than the enthuſiaſt. There are many deſcriptions of theſe itinerants among the Hindoos; and we are not aware that the diſtinctions between them have been accurately pointed out. The appellation Yogi means a devout man, devoted to ſpiritual things, eſpecially to the contemplation of the attributes of the Deity. It is derived from yog or yug, which, among very many ſignifications, means primarily *union* or *junction*, and is applied in this ſenſe to one who by intenſe meditation is united to the divine nature; a myſticiſm eaſily underſtood by the initiated and enthuſiaſtic Hindoos, though not recognizable by others. There is a difference, we believe, between the Yogi and Saniaſſy, but we cannot exactly ſay in what it conſiſts. In the latter part of the article Sects *of Hindoos*, ſome particulars of theſe two will be found. Perhaps the Yogi may be the deſignation of the Vaiſhnava, and Saniaſſy of the Saiva ſect. (See Saiva, Vaishnava, and Yogeswara.) Both profeſs poverty, purity, and auſterities. When the latter are carried to any extent, the zealot is honoured with the title of Tapaſwi, of whatever ſect he be. Of ſuch, and their auſterities, ſee under Tapas. We ſometimes read of female anchorets denominated Yogni; but they are, we believe, merely enthuſiaſtic females, who become aſcetics and not the wives of the ſanctified males. Among the oriental manuſcripts preſented to the Royal Society by ſir W. Jones, is one entitled "Hatha Pradipaca, or Inſtructions for the Performance of the religious Diſcipline called Yoga."

In the Gita, Kriſhna deſcribes the Yogi as being "more exalted than the Tapaſwi, the zealot who haraſſes himſelf in performing penances: he is reſpected above the learned in ſcience, and ſuperior to thoſe attached to moral works." This paſſage is quoted in the latter part of our article Sects *of Hindoos*, but being erroneouſly pointed is ſcarcely intelligible. This article being thence referred to, we take the opportunity of correcting another error or two in it:—In the ſecond column, the name of the Mahratta Brahman general, Purſeram Bhow, is twice ſpelled Bhon; in the fifth column, the name of Vopadeva, the author of the Sri Bhagavata, is ſpelled Vapadeva; in the next column, line 21 from the bottom, a comma is wanted after Kriſhna. Having referred above to the article Tapas, we will here correct an error in that alſo:—In ſecond column, line 11, for inflexions read inflictions.

YOHOGANY, in *Geography*. See Youghiogeny.

YOIDES, in *Anatomy*, the bone of the tongue, commonly called hyoides. See Hyoides.

YOINGT, or Joingt, in *Geography*, a town of France, in the department of the Rhône and Loire; 7 miles E. of Roanne.

YOITSBACH, a river of Sileſia, which runs into the Queis, near Friedberg.

YOKE, in *Agriculture*, a frame of wood hollowed out and lined for receiving the neck part of the ox or other cattle in working. Yokes are conſtructed in different manners, as ſingle and double, in order to be uſed differently. They are fixed with bows over the necks of the oxen or other cattle when in uſe; by which means, in the latter ſort, the two animals are coupled together, and attached to the plough or other vehicle. See Yoking.

Yoke, in *Sea Language*, a name formerly given to the tiller, when communicating with two blocks or ſheaves affixed to the inner end of the tiller. It is now applied to a ſmall board or bar which fits on the upper end of a boat's rudder at right angles, and having two ſmall cords extending from its oppoſite extremities to the ſtern-ſheets of the boat, by which ſhe is ſteered as with a tiller.

YOKED Leaf, in *Botany*, *folium conjugatum*, or *binatum*. See Leaf.

YO-KEOU, in *Geography*, a town of Corea; 38 miles S. of Haimen.

YOKING, in *Agriculture*, the practice of putting the animals into the yoke or other ſort of team.

In the buſineſs of yoking or harneſſing oxen for the purpoſe of draught, different methods have been followed by different farmers. And the modes of harneſſing and yoking oxen are even different in different counties, and diſtricts of the ſame county. The moſt common practice in the ſouthern parts of this kingdom, is that of working them in harneſs in the manner of horſes; while in the northern counties, the yoke and bows are ſtill much employed. On the continent, as in France, Portugal, &c. the head is the part to which the draught is chiefly attached.

In the firſt caſe, the ſhoulder is made the principal point of draught; but in the ſecond method, the neck and ſhoulder conjointly have the weight of the draught; and in the laſt mode, the principle of draught is, in one caſe the head, and in the other the joint power of the neck and baſe of the horn, which lord Somerville has conſidered a purchaſe as great perhaps as can be given to the animal.

It is "effected by a long leathern ſtrap, wrapped round the baſe or bottom of the horns, and again faſtened to the yoke." It has been obſerved by a writer in the ninth volume of the Agricultural Magazine, that with reſpect to the ſecond method which has been noticed above, the "uſual form of the yoke is a frame of wood fitted over the necks of the oxen, by which they are coupled, and harneſſed to the plough. It conſiſts of ſeveral parts, as the yoke properly ſo called, which is a thick piece of wood, lying over the neck; the bow, which compaſſes the neck about; the ſtitchings and wreathings, which hold the bow faſt in the yoke, and the yoke-ring and ox-chain," which is ſuppoſed "a method which is evidently founded on a total miſtake in the anatomy of the ox."

And that in the firſt we have "imitated the gear uſed with the horſe, without conſidering that the ſtrength and agility of the ox are placed by nature in a different ſituation. The neck of the ox is a tower of ſtrength; if the ſoil reſiſt, he projects this part of his form with that prodigious muſcular force with which nature has provided him for his own defence; but without attending to her operations, we impoſe a load of timber on his withers, we lacerate his fleſh, and preſs him down to the earth."

The third or French mode of yoking is thus deſcribed in the words of Mr. Hughes. "The labourer paſſes a piece of wood, of about one-ſixth of the weight of the Engliſh yoke, acroſs the forehead of his cattle, having previouſly neatly hollowed out the extremities of it to fit the mould of the head, and lined thoſe hollows with a piece of woolly ſheep-ſkin, to anſwer the purpoſe of a ſoft pad or cuſhion. This light and eaſy yoke he braces to the horns with a ſmall thong of leather, attaches the beam of his plough to the middle part of it, and the animal is completely equipped for his labour."

It has been obſerved by lord Somerville, in his Syſtem of the Board of Agriculture, that oxen, "whether worked in harneſs, or in the yoke and bow, as in England, by the joint power of the yoke and horn, as in Portugal, or by the head, as in France, they cannot fail to benefit their employer. As, however, the yoke and bow have prevailed for a conſiderable length of time, it is probable that the practice may ſtill prevail, in which caſe the Portugueſe mode of draught will apply with the utmoſt eaſe and ſucceſs to our yoke and bow, ſo as gradually and imperceptibly to cheat oxen into its uſe. This in itſelf is an obvious advantage, becauſe it gives two points of draught inſtead of one, and thereby relieving each admits of a lighter yoke, which in this country has ever been far too heavy and oppreſſive; and if hereafter the French method ſhould be preferred, for which there are not wanting advocates, it is the beſt preparatory ſtep to its introduction. It would be almoſt ſuperfluous to remark that the ſtrong points of an ox are in his head and neck. It is ordained by nature, that where the ſtrength of an animal lies, there he will reſort for defence; the horſe to his heels, the man to his arms, and the ox to his head; and in caſes of the greateſt exertion, the beaſt ever puts his noſe cloſe to the ground."

In objection to the harneſſing of oxen, it has been obſerved in the paper noticed above, that "the article of gear is an oppreſſive annual charge, from the periſhable nature of the commodity employed. The tackle there recommended for twelve oxen would not amount to ſix-and-thirty ſhillings, whereas the leathern harneſs for the ſame number of animals, according to the new method, would coſt ſix-and-thirty pounds, and the annual expence of repairs would exceed thrice the original coſt of the former." And that "by the French mode of yoking, at leaſt one-third more of the power of the animal is obtained. In the common way, the ſhoulder being bruiſed by the unyielding bow, no vigour is exerted, excepting what is imparted by the goad; and the ſinews of the neck are not brought into employment: hence the ſublime and gigantic force with which he is endowed is not rendered ſubſervient in the important duties he has to perform for the ſupply of human ſubſiſtence. The cattle proceed in the French team bold and erect: no pain oppreſſes them, and they chew the cud cheerfully as they pace along the furrow. On the contrary, in this country the painful preſſure obſtructs the progreſs of the animals, they lean againſt each other, ſcarcely capable of ſupporting their own weight, and the fine intelligent eye which nature has given them to expreſs the generoſity of their temper is clouded with anxiety." That "the trial of this method has at leaſt two recommendations; it may be made at very little expence, and under the fair expectation of ſucceſs." See Team.

The methods of yoking cattle in ploughs are alſo different in different places; but the only circumſtance worthy of being conſidered is, whether the cattle ſhould be yoked in pairs, or in a line before each other. It may, therefore, be uſeful to conſider the advantages and diſadvantages attending each mode, and to compare them.

The moſt common way of yoking cattle in ploughs is in pairs. There are ſome diſadvantages attending this way that are obvious. In ploughing the furrows betwixt ridges, the land-cattle go upon the ploughed land, and tread it down with their feet: this, eſpecially if the land be wet, poaches and hurts it very much. And there is another diſadvantage which is very obvious. When there is but as much of the ridge unploughed as to allow the land-cattle to go upon it with difficulty, they are frequently either going into the oppoſite furrow, and thereby giving the plough too much land, or, which is worſe, they are joſtling the furrow-cattle upon the ploughed land.

In order to remove the inconveniences which attend the ploughing with cattle yoked in pairs, ſome yoke them in a line before each other. It is obvious, that cattle yoked in this manner, going always in the furrow, neither tread upon the ploughed land nor joſtle one another. In theſe reſpects, the yoking the cattle in a line before each other ſeems to have the advantage. It is to be obſerved, however, that this method is not quite free from inconveniences. When examined, it may, perhaps, be found attended with as great inconvenience as the other. Where cattle are yoked in a line, they go all in the furrow. This makes it neceſſary to give the plough more land than ordinary, either by the ſock or the muzzle; for if this be not done, the head and ſock being in the ſame direction with the beam, and the cattle yoked to the middle of it, the plough will directly follow the cattle without taking any thing off from the land. Now it is inconvenient to be obliged to give the plough land either by the ſock or muzzle; for when the ſock is turned out of the plane of the beam, it makes the plough heavy to draw; and when the muzzle puts the draught too much to one ſide of the beam, it prevents the plough from going upright. The yoking of the cattle in pairs is attended with none of theſe inconveniences; for in this caſe, the quantity of land which the plough has naturally, when right made, is ſufficient to make it take off a proper furrow.

There is another inconvenience that attends yoking cattle in a line, ariſing from the nature of the animals, which is, that as they like their eaſe, they are diſpoſed to throw the burden upon their fellows. This they have a better opportunity of doing when yoked in a line before each other than when yoked in pairs. When yoked in a line, each pulls by the traces of the one behind him; and therefore, though it may be known when the foremoſt neglects his work, by the ſlackening of his traces, it cannot be known when any of the reſt neglect their work; for though one of them does this, yet by the pulling of the one before him his traces may be fully ſtretched. But this is eaſily diſcovered when the cattle are yoked in pairs; for then every one of them has a ſeparate draught.

There is ſtill another inconvenience that attends the common way of yoking cattle in a line before each other. When the fore cattle are all yoked to the traces of the hindmoſt, it is obvious, that as the beam to which the draught is fixed is much lower than his ſhoulders, by which the reſt pull, ſuch a weight muſt be laid upon his back or ſhoulder, as muſt render him incapable of giving any aſſiſtance. Beſides, as the whole force is applied in the direction of the traces of the hindmoſt, it cannot have ſuch influence on the plough, as when a part of it is in a direction more horizontal. When a body is to be moved forward in any direction, the nearer that the direction of the force applied approaches to the direction of the body, it acts with greater influence; and, therefore, as the plough moves horizontally, and as the direction of the united draught of a plough with the cattle yoked two abreaſt is more horizontal than the direction of the draught in a plough with cattle yoked in a line, the ſame force applied will have greater influence.

When theſe two different ways of yoking cattle in ploughs are thus conſidered and compared together, it is difficult to determine which ought to be preferred. Each of the two ſeems preferable to the other in a certain ſituation. When the land is ſtiff, and the labour ſevere, the yoking the cattle in pairs ſeems preferable, as it is certainly the ſtrongeſt draught; and when the land is wet, and in danger of being much hurt by the treading of the cattle, the yoking them in a line before each other ſeems preferable; as thereby they are confined to the bottom of the furrow, which is the firmeſt part of the land, and prevented from doing harm.

In wet lands and ſeaſons, as long teams anſwer beſt, for the moſt part, collars and trace-chains become of conſiderable utility in moſt caſes in yoking of cattle; and in whichever way neat cattle are geared for work, they ſhould conſtantly have bridles or bit-halters, with blinders, as by ſuch means they are rendered docile, tractable, and eaſy to manage in the buſineſs of team labour. Much information on this ſubject may be ſeen in the Corrected Report on Agriculture for the County of Suſſex.

YOKULS, in *Geography*, the higheſt mountains in Iceland, perpetually clothed with ſnow. Of theſe, Snæfial, hanging over the ſea on the S.W. part of the iſland, is ſaid to be the higheſt, its height being computed at 6860 feet. The mountains are ſaid to be chiefly ſand-ſtone, pudding-ſtone, with petroſilex, ſteatite, and argillaceous ſchiſtus.

YOLK, or YELK, in *Natural Hiſtory*, the yellow part in the middle of an egg. See EGG.

The chicken is formed out of and nouriſhed by the white alone, till it be grown to ſome bulk: after which the yolk ſerves it for nouriſhment; which it likewiſe does, in part, after it is hatched. For a good part of the yolk remains after excluſion; being received into the chicken's belly: and being there reſerved, as in a ſtore-houſe, is by the ductus inteſtinalis, as by a funnel, conveyed into the guts, and ſerves inſtead of milk. Willughby's Ornithol. lib. i. cap. 3.

This was even known to Pliny:—" Ipſum animal ex albo liquore ovi corporatur: cibus ejus in luteo eſt." Lib. x. cap. 53.

YOLK, in *Rural Economy*, the peculiar munctuous ſecretion which exudes through the ſkins of ſheep, and which by intermingling with the pile of the wool renders it ſoft, pliable, and in proper condition. It has ſomewhat the ſame effect on it which oil has upon a thong of leather, when kept in and perfectly ſaturated with it. The diſpoſition to the production of this ſubſtance in ſheep is favourable to the valuable properties of the wool, and ſhould be attended to by the ſheep-farmer in fixing and regulating his ſtock. It is noticed by a late writer on Agricultural Chemiſtry, that wool often waſhed in calcareous water becomes rough and more brittle than uſual, as the carbonate of lime has the power of diſſolving or decompoſing the yolk of it, which is an animal ſoap that naturally defends it; that the fineſt wool, ſuch as that of the Spaniſh and Saxon ſheep, is moſt abundant in yolk; that M. Vauquelin has analyſed ſeveral different ſpecies of yolk, and has found the principal part of all of them a ſoap, with a baſis of potaſſa, that is, a compound of oily matter and potaſſa, with a little oily ſubſtance in exceſs; and that he has likewiſe found in them a notable quantity of acetate of potaſſa, and minute quantities of carbonate of potaſſa and muriate of potaſſa, and a peculiar odorous animal matter.

The ſame chemical writer has ſtated, that he found ſome ſpecimens of wool loſe as much as forty-five *per cent.* in being deprived of their yolk; and that the ſmalleſt loſs in his trials was thirty-five *per cent.*

It is ſuggeſted in the above work, that the yolk is the moſt uſeful to the wool on the back of the ſheep in cold and wet ſeaſons; and that probably the application of a little ſoap of potaſſa, with exceſs of greaſe, to the ſheep brought from warmer climates in our winter, that is, increaſing their yolk artificially, might be uſeful in caſes where the fineneſs of the wool is of great importance. A mixture of this ſort is more conformable to nature, it is thought, than that ingeniouſly adopted by the late Mr. Bakewell; but that at the time his labours began, the chemical nature of the yolk of wool was not known. See WOOL, WASHING *Sheep*, &c.

YOLK *of the Seed*, *Vitellus*, in *Botany* and *Vegetable Phyſiology*, a part firſt deſcribed by Gærtner, and thus named by him, from its ſuppoſed analogy with the yolk of an egg. This analogy, and even the exiſtence of the part in queſtion, have been diſputed, as Mr. Brown hints, in *Prodr. Nov. Holl.* v. 1. 306, by M. Correa de Serra, and by the writer of the preſent article. We have never at any time communicated on this ſubject with our learned and ſagacious friend, now the Portugueſe miniſter at New York; ſo that we are ignorant how far his objections extend, or on what they are founded. Nor does Mr. Brown know more of this matter, than a ſimple record of M. Correa's opinion, in De Candolle's Flore Françaiſe, v. 1. 157. This coincidence, however, from ſuch a quarter, gives us great confidence in our own opinion, which was firſt offered to the public in *Introd. to Botany*, chap. 19, publiſhed in 1807. On a more attentive and full conſideration of the queſtion, the ſame ſentiments were more explicitly detailed and defended in a paper read before the Linnæan Soc. Nov. 3, 1807, and printed in that Society's Tranſactions, v. 9. 204.

Gærtner ſtates the *Vitellus*, or Yolk of the Seed, to be "diſtinct from the *Cotyledons*, as well as from the *Albumen*, and for the moſt part ſituated between the latter and the *Embryo*." (See SEED, where a reference is made to VITELLUS, under which head the ſubſtance of the preſent article was deſigned to have been inſerted.) Gærtner conſiders the part of which we are about to treat, as "of all the internal parts of a ſeed the moſt ſingular, and by far the moſt unfrequent." Its importance therefore cannot be very conſiderable. The principal diagnoſtics of the *Vitellus*, according to this eminent carpologiſt, are the following: 1ſt, "It is moſt cloſely connected with the *Embryo*, ſo as not to be ſeparable therefrom, without injury to its own ſubſtance. 2dly, Notwithſtanding this intimate connection, it never riſes out of the integuments of the ſeed, as the *Cotyledons* uſually do, in germination, ſo as to become a ſeminal leaf; but, rather like the *Albumen*, its whole ſubſtance is deſtroyed by the ſeedling plant, and converted into its own nouriſhment. And 3dly, If the *Albumen* be likewiſe preſent, the *Vitellus* is always ſituated betwixt that and the *Embryo*, in ſuch a manner, however, that it may be ſeparated from the *Albumen* with great eaſe, and without injury." For theſe reaſons, Gærtner conſiders the organ in queſtion as "allied on the one hand to the *Albumen*, on the other to the *Cotyledons*," but truly diſtinct in nature from both.

We preſume to diſſent from this deciſion of the great writer, whoſe words have juſt been quoted, for the following reaſons: 1ſt, The *Vitellus* is certainly not more cloſely connected with the *Embryo* than the greater number of *Cotyledons* are, as any perſon may find by examining ſeeds in the firſt ſtage of their germination, and as the faithful delineations of Gærtner himſelf every where ſhew. 2dly, That the *Vitellus* never riſes out of the ground, is a circumſtance likewiſe common to many *Cotyledons*, allowed by Gærtner to be ſuch, as in various leguminous plants, as well as in *Æſculus*, *Cyamus*, *Tropæolum*, and many others. The difference between *Cotyledons* which grow up into ſeminal leaves, and thoſe which remain and decay under ground, is of ſo little importance as to the claſſification of plants, that the moſt natural order of *Papilionaceæ*, or *Leguminoſæ*, contains decided inſtances of both; *Lupinus* and *Vicia* affording examples of the former mode of growth, *Lathyrus* of the latter. And 3dly, The ſituation of the *Vitellus*, between the *Albumen*, if the latter be preſent as a ſeparate organ, and the *Embryo*, is only a neceſſary conſequence of the more intimate connection between the *Vitellus* and the *Embryo*, than either of them has with any other part, except that of the *Cotyledons* and *Embryo*, which is as ſtrict as can poſſibly be. Hence we cannot conſider the *Vitellus* of Gærtner to differ from the ſubterraneous *Cotyledons* abovementioned. We preſume their offices muſt be exactly ſimilar, to perform the neceſſary functions relative to air or oxygen, till the leaves come forth, and aſſume thoſe functions in greater perfection, with the co-operation of light. This appears to us more ſatisfactory than the hypotheſis of Gærtner, that the organ of which we are treating affords nouriſhment to the *Embryo;* becauſe this is abundantly ſupplied by the copious *Albumen* of a multitude of ſeeds, whoſe *Vitellus* is very inconſiderable, ſuch as graſſes; and it is recurring to two cauſes to explain what is evidently accounted for by one alone. If the vegetation of corn be obſerved, the *Vitellus* will be found to dwindle away, with ſcarcely any change in its very inconſiderable bulk, when the firſt leaves are unfolded, exactly as happens to the ſubterraneous *Cotyledons* of *Lathyrus odoratus*, &c. The ſame thing very often takes place as ſpeedily in *Cotyledons* which riſe out of the ground. Some which are more permanent, as in cruciform and umbelliferous plants, being only more of the nature of leaves. In graſſes, the ſcale taken by Gærtner for a *Vitellus* is moſtly ſo thin and unſubſtantial, as not poſſibly to contain any material portion of nouriſhment; ample ſupplies of which are furniſhed by the plentiful *Albumen* of thoſe plants. But its expanded figure is very well calculated, like that of the leaves, for functions analogous to vegetable reſpiration; and it has the evident aſpect of a ſubterraneous leaf, quickly rendered ſuperfluous by the production of real leaves, and withering away, as the firſt of thoſe leaves themſelves do, when more vigorous ones come forth. It is remarkable, that the pretended *Vitellus* appears not to be neceſſary to all plants furniſhed with this diſtinct kind of *Albumen*, as *Palmæ* and *Orchideæ* have it not; while, on the other hand, no inſtance preſents itſelf of a ſuppoſed *Vitellus*, and a real *Cotyledon*, or *Cotyledons*, in the ſame plant. Gærtner takes the *Plumula* for *Cotyledons* in *Rhizophora* (ſee his t. 45.), as well as in ſome of the *Scitamineæ;* for we cannot conceive the tubular part, embracing the Embryo, in *Amomum*, (ſee Gært. t. 12, which he erroneouſly calls *Zingiber*,) to be any thing but a *Cotyledon*, notwithſtanding the opinion of our learned friend Mr. Brown, who, like Gærtner, terms it a *Vitellus*. The name would be of little importance, if the ſuppoſed uſe of it did not convey, as we preſume to think, an erroneous idea; in attributing to theſe ſeeds two diſtinct and ſeparate ſources of nouriſhment. That two ſuch diſtinct parts exiſt in this natural order, and perhaps, as Mr. Brown obſerves, in *Nymphæa* and *Nuphar* likewiſe, we are ready to admit; and we are therefore more ſatisfied to attribute to each a ſeparate and appropriate office. We have had no opportunity of obſerving the germination of *Amomum*, or any true ſcitamineous plant; but as far as we have been able to judge, it appears that the *Albumen* of every ſeed, when ſeparate from the other parts, is always totally abſorbed, or removed, leaving its ſkin empty; whereas a *Cotyledon* withers and ſhrinks in its whole ſubſtance, like a decaying leaf. If the albuminous matter, neceſſary for the temporary nouriſhment of perhaps every ſeed, in one form or other, be lodged in the ſubſtance of the *Cotyledons*, as in *Zamia*, the leguminous and cucurbitaceous tribes, and many others, ſuch parts ſhrink the more, but do not loſe any one particular portion of their ſubſtance, ſo as to have only a ſkin left behind. Perhaps a confuſion of ideas has ariſen, from the firſt conſideration of this ſubject, in conſequence of the term monocotyledonous as contraſted with dicotyledonous. The firſt had an evident reference to the *Albumen*, in corn, palms, &c.; and when Gærtner had emancipated himſelf from this error, he ſeems to have tranſferred the idea to the *Embryo*, which he calls *monocotyledonous*, as if he meant by that word to expreſs its own ſimple form. Prepoſſeſſed with this idea, when a ſeparate organ manifeſted itſelf, as in the *Scitamineæ*, he thought a new appellation requiſite. Mr. Brown objects to the term *Cotyledon* in this caſe, becauſe he ſays there is no point of union between the part in queſtion and the *Embryo*. If ſuch be the caſe, which we cannot underſtand, it would be not at all leſs difficult to conceive how this part could, as a *Vitellus*, ſupply the *Embryo* with nouriſhment, than it would be to imagine how it could perform any ſervices towards that organ with reſpect to air, in its capacity of a *Cotyledon*.

It ſeems to us, that by conſidering the *Vitellus* of Gærtner as a *Cotyledon*, all ambiguity reſpecting the anatomy or component parts of any ſeed is removed. When the *Cotyledons* are two or more, the albuminous matter is either lodged in their ſubſtance, or forms a ſeparate part. In the latter caſe, it has no more connection with the *Embryo* than is abſolutely neceſſary, being in fact not an organic part, but a mere reſervoir of food or nouriſhment, immediately undergoing a chemical change, after which its whole ſubſtance is ſpeedily abſorbed. Such is the economy of corn and palms; even the large *Albumen* of the cocoa-nut ſoon diſappearing, for the evolution and ſuſtenance of the little *Embryo*, lodged in a cavity of its baſe; while the *Cotyledon* of the not very diſtant genus *Zamia* ſhrinks indeed conſiderably, from loſing the albuminous part of its ſubſtance, but does not diſappear; becauſe the remaining part deſtined to perform the eſſential office of a *Cotyledon*, reſpecting air, merely decays when its purpoſe is anſwered, and ſloughs off, like any other dead portion of the vegetable body.

We have already (ſee GERMINATION) adverted to theſe two different ſituations of the albuminous matter. That ſubſtance muſt be preſent, in ſome ſhape or other, for the nouriſhment of the young *Embryo*, at the firſt period of its evolution, when ſo great an alteration of bulk takes place, till it can ſupply itſelf from the earth. The idea of this nutritious ſubſtance, whether of an oily, mucilaginous, or farinaceous nature, being always, when not a diſtinct body, lodged in the *Cotyledons*, throws additional light on the nature and phyſiology of theſe laſt-mentioned parts, and in a very beautiful manner confirms their analogy with leaves. The ſap of plants (ſee CIRCULATION *of the Sap*) being carried into the leaves, and there acted upon by air, light, heat, and moiſture, is returned in the form of various ſecretions, into the different parts of the vegetable body. Under the influence of light, the upper ſurface of their leaves abſorbs carbonic acid gas, and the under gives out pure oxygen. But in the dark, leaves abſorb oxygen. So the *Cotyledons* of ſeeds, in their dark ſubterraneous ſituation, being moreover often guarded expreſsly from light by a brown or even black ſkin, abſorb oxygen, which, as we have ſaid in the article above cited, is known to be neceſſary to germination. They are already ſtored with albuminous matter, abounding with the carbonic principle. This, by the action of oxygen, becomes ſaccharine and milky, fit to be tranſmitted, through the returning veſſels, which the *Cotyledons*, in common with *Leaves*, poſſeſs, into the ſtem of the *Embryo*; all theſe important parts having already begun to ſwell, from the abſorption of moiſture, and the ſtimulant effects of heat. Hence we ſee why light proves hurtful to incipient germination, and why carbonic acid gas may be given out by ſeeds during that proceſs. It is evident that the proper functions of *Cotyledons* are beſt performed under ground, and that when they riſe into the air and light, it is not till after their primary deſtination is fulfilled, and then only becauſe, being fundamentally of the nature of leaves, they are moſtly capable of aſſuming the functions of thoſe organs, with reſpect to light. *Cotyledons* of ſeeds are ſubterraneous leaves, juſt like the ſcales of a bulbous root. Both are ſtored with albuminous or nutritious matter, and when acted upon by oxygen perform under ground thoſe functions, which leaves perform in the open air, with the aſſiſtance of light. It is worthy of notice that the *Cotyledons* are ſo placed, in all ſeeds, that the oxygen gas muſt be imbibed by their under ſurface only, that very ſame part which, in leaves, gives out this kind of gas during the day, and probably abſorbs it at night. "It would," as we have elſewhere obſerved, Tr. of Linn. Soc. v. 9. 213, "have evinced a ſtrange contrariety in the conſtitutions of two organs otherwiſe ſo analogous, the *Leaves* and *Cotyledons*, if the *upper* ſurface of the latter, while in the unexpanded ſeed, had been preſented to receive the oxygen gas."

By taking the *Vitellus* of Gærtner for a *Cotyledon*, we throw no new difficulties in the way of the claſſification of plants by this organ. Its form is always, as far as we know, ſimple and undivided, ſo that the plants in which it occurs remain only the more ſteadily fixed in their place of *Monocotyledones*, as oppoſed to the *Dicotyledones*; witneſs *Gramina*, *Scitamineæ*, &c. thus indeed acquiring a right to ſuch an appellation, which they could otherwiſe ſcarcely claim, having, according to Gærtner's principle, no *Cotyledon* at all.

YOLOTOU, or YULDUZ, or *Cyalis*, or *Chialiſh*, in *Geography*, called by the Turks Keraſher, or the Black City, a town of Little Bucharia, ſituated in a country abounding with ſprings and fine meadows; 85 miles N.N.W. of Hami.

YOM-NIM-KIEN HOTUN, a town of Chineſe Tartary, on the E. coaſt of the gulf of Leao-tong; 263 miles E. of Peking. N. lat. 40°. E. long. 121° 34′.

YOM-TA-HOTUN, a town of Corea; 648 miles E.N.E. of Peking. N. lat. 42° 55′. E. long. 129° 37′.

YON, a river of France, in the department of the Vendée, which paſſes by La Roche ſur Yon.

YONGHELAHE, a river of the iſland of Madagaſcar, which runs into the ſea on the weſt ſide of the iſland, S. lat. 23° 30′. E. long. 47° 4′.

YONG-LI, a town of Corea; 30 miles S.E. of Koang-tcheou.

YONG-NGAN, a city of China, of the ſecond rank, in Quang-ſi; 1027 miles S.S.W. of Peking. N. lat. 24°. E. long. 110°.

YONG-NGAO, a ſmall iſland near the coaſt of China, in Quang-tong; 20 miles S.S.E. of Macao.

YONG-NING, a city of China, of the firſt rank, in Yun-nan, on the borders of Thibet. A little to the E. of this town is a lake; 1095 miles S.W. of Peking. N. lat. 27° 50′. E. long. 100° 24′.—Alſo, a city of China, of the ſecond rank, in Quang-ſi; 977 miles S.S.W. of Peking. N. lat. 25° 6′. E. long. 109° 14′.

YONG-NING, or *Yung-ning*, a city of China, of the ſecond rank, in Koei-tcheou; 1027 miles S.S.W. of Peking. N. lat. 25° 55′. E. long. 104° 57′.

YONG-PE, a city of China, of the firſt rank, in Yun-nan; 1150 miles S.W. of Peking. N. lat. 26° 42′. E. long. 100° 34′.

YONG-PING, a city of China, of the firſt rank, in Pe-tche-li, on a river which runs into the gulf of Leao-tong. This city is advantageouſly ſituated, but its juriſdiction is not very extenſive; it contains but one city of the ſecond order, and five of the third. It is environed by the ſea, by rivers, and by mountains, covered for the moſt part with fine trees: this makes the country leſs fertile, but the neighbouring bay ſupplies its want with great plenty of all the neceſſaries of life. Not far from this city ſtands a fort named *Chun-hai*, which is the key of the province of Leao-tong. This fort is near the beginning of the great wall, which is built, for a league together, in a boggy marſh, from the bulwark in the ſea; 115 miles E. of Peking. N. lat. 39° 55′. E. long. 118° 34′.

YONG-SIN, a town of Corea; 113 miles E. of Han-tcheou.

YONG-TCHANG, or YUNG-TCHANG, a city of China, of the firſt rank, in Yun-nan. This city is large and populous, and is built in the midſt of high mountains, on the borders of the province, in the neighbourhood of a ſavage people, whoſe genius and manners the inhabitants of this country partake of. The country produces gold, honey, wax, amber, and a vaſt quantity of fine ſilk. It has within its diſtricts one town of the ſecond order, and two of the third; 270 miles S.W. of Peking. N. lat. 25° 6′. E. long. 99°.

YONG-TCHEOU, a city of China, of the firſt rank, in Hou-quang; 882 miles S.S.W. of Peking. N. lat. 26° 10′. E. long. 111° 15′.

YONG-TONG, a town of Corea; 40 miles E. of Het-ſin.

YONI, in *Metaphyſics*, the name of a myſterious ſymbol among the Hindoos; which, although contemplated with reſpect and awe by that ſuperſtitious race, is yet of ſuch a nature as not to be diſcuſſed without difficulty in the living language of a country which has happily ſhaken off the trammels of prieſtcraft; and views with pity, mixed with juſt abhorrence, the idolatrous propenſities of thoſe ſtill retained in mental bondage; accompanied, as we find they were, among many ancient people, by the indecencies of impure rites, ſcarcely yet diſuſed, even in Europe, and exiſting in almoſt undiminiſhed groſſneſs in the ſtill unenlightened regions of Aſia.

The reader is ſuppoſed to be more or leſs aware of the nature of the orgia incident to the worſhip of ſuch deities as Pan, Priapus, Bacchus, Venus, &c. We do not here inquire particularly into the origin of ſuch rites. In their earlier ſtages, they were probably an innocent ebullition of gratitude for the experienced bounties of nature. In the lapſe of time, a concourſe of people of both ſexes, warmed by exerciſe and beneficent feelings, at a genial ſeaſon moſt likely of the year, found, as is ever the caſe, their unreſtrained devotion ſublimed into enthuſiaſm; and hurried by ſuch feelings beyond the ſcope of unaſſiſted reaſon, gave themſelves up to the extravagances of myſticiſm, and in the end to exceſſes which not only Chriſtians, but the decent of every ſect and country muſt unite in reprobating. Theſe Bacchic phrenzies were accordingly ſuppreſſed or mitigated as to their oſtenſible uſages and tangible abominations. Nature, in the phraſeology of certain ſects, was no longer propitiated through the indulgence of feelings of her own prompting, excited farther by the preſence of unequivocal exhibitions. She, ſtill perſonified, was more decently repreſented by certain ſymbols ſubſtituted for the earlier types. The cunning prieſt no longer daring to exhibit their obſcenities in ſhameleſs nudity, permitted only a portion of indecency to remain in the hands and eyes of their deluded votaries, and concealed their origin and meaning in the various myſteries and hieroglyphics denominated Bacchic, Eleuſinian, Phallus, Linga, Yoni, Cone, &c. &c. Some notice of theſe things, and of the ordinary courſe and conſequences, will be found under the appropriate articles of our work; alſo in MYSTERY, MYSTICS, and others thence referred to.

By ſuch people Nature was contemplated chiefly under her attribute or property of fecundity; and ſymbols of generative alluſion were thoſe under which her prolific potencies were exhibited. Thoſe prone, like the Hindoos, to reſolve almoſt every thing into ſexual allegory, of courſe fancied the male and female pudenda omni-archetypal. Theſe, in the early days of ſuch perverted devotion, were probably pourtrayed in India, as elſewhere, without reſerve; but were, in moſt caſes, ſoon corrected into the comparative decency of the hieroglyphics; and the deluded people were cajoled by mummery and myſtery, that became leſs and leſs underſtood, and therefore, perhaps, the more reverenced. We have ſaid in moſt caſes; for in Egypt and Greece the groſſneſs of Phalliſm is known only in the remains of antiquity; in India it doubtleſs exiſts, but diveſted of obtruſive or conſpicuous indelicacy; and too true it is that among Chriſtians was the primeval infamy of the ſymbol and uſage moſt tenaciouſly retained. We can but juſt allude to the diſcovery of this curious though lamentable fact, by ſir William Hamilton, in the neighbourhood of Naples. His communication, with ample commentary and illuſtration, has been printed, but very properly not publiſhed; concealed, though not ſuppreſſed; and we therefore make no direct reference to the ſufficiently inſtructive, though too diſgraceful volume, in which this diſguſting worſhip is proved to exiſt in Chriſtian Europe, and is traced almoſt all the world over.

Among the Egyptians, Greeks, and Romans, the Phallus and the Cone ſeem to have been the earlieſt of the groſſer and corrected emblems; the latter contained both the Linga and Yoni, nature active and paſſive; and ſimilar, familiar, or recondite meanings and alluſions were thus readily revived in the minds of the vulgar and the initiated, ſuitable to the eſoteric or iſoteric nature of their capacities and feelings. Theſe fooleries, to give them no harſher name, thus found to have exiſted among the people juſt mentioned, and others, have, with great appearance of reaſon, been ſuppoſitively derived from the ſtill more ancient uſages of India. Much might be ſaid in ſupport of this, were it worth while; and thus far the inquiry will probably be repaid, that it may bring to light many ſtrange coincidences. If ſuch writers as Colebrooke, Wilford, Faber, and others, who bend their minds to the developement and elucidation of Eaſtern literature and myſteries, continue for a while in the ſame line of reſearch, we anticipate a confirmation of the ſurmiſes long entertained, that nearly all the learning, ſcience, and art, as well as the religion of Egypt and Greece, originated in India, or at leaſt with the Brahmans; however much they may have been improved or embelliſhed by the hands through which they reached us.

India then, or the country of the Brahmans, wherever that was, being in our judgment the region where the ſuperſtitious practices now under our conſideration originated, we may expect to find its early hiſtory teeming with alluſions to it. This is indeed the caſe; though ſuch alluſions are not, perhaps, found in its *earlieſt* works on theology. But as no people have changed ſo little as the Brahmans and their flock by the innovations of ſtrangers, or the lapſe of time, (for frequent ſubjugations by conqueſts ſeem to affect them but little, and perſecutions ſerve only to confirm their prejudices,) we may expect to find their religious inſtitutions and practices more in accordance with thoſe of their early days than the uſages of other people who have not diſdained to become wiſer by the operation of reaſon and philoſophy; and who have been taught to look on the follies of their anceſtors with the pity they deſerve. In India, we thus find certain hieroglyphics ſtill receiving the external adoration ſo little their due. There we find the inſidious Brahman ſtill teaching his ignorant ſuppliant to fall down and worſhip the Linga and Yoni; ſymbols, in whatever ſhape exhibited to the public eye, no doubt fitter for the brothel than the temple. The former of theſe is the attribute of Siva, the Maha-deva, or great divinity preſiding over reproduction, or regeneration in the abſtract; and the other of his conſort Devi, or Parvati, the Magna-Mater, the Bona Dea of the Eaſt.

In preceding articles, we have neceſſarily touched on the character and attributes of the two juſt mentioned grand divinities of the Hindoos; and refer our readers to PARVATI and SIVA for our remarks thereon, and to LINGA for a brief notice of the Phallic worſhip of India. In this article, we propoſe to diſcuſs that ſtill offered to the Juno, the Venus, the Iſis, the many-named all-abſorbing goddeſs of the Hindoos, whoſe emblem is the Yoni.

Writers on this ſubject generally, perhaps unavoidably, commix their ſpeculations on the Linga and Yoni. Crude nature is perſonified, and called Prakriti ; ſhe is declared to be nature, or the earth, the womb of nature ; ſhe is thence any thing conceiving or containing, or the power or ſakti of ſuch faculties. In its firſt ſtate that *power* was rather a tendency, an aptitude, and laid dormant until excited by the *bija*, or vivifying principle, the *aura* of nature perſonified in Siva, who in this character is called Paruſha, or the primeval male. Here we find nature paſſive and active : the power or aptitude of nature is ſymbolized by the Yoni ; the vivifying principle by the Linga. Prakriti is found to be one of the names and forms of Parvati, as Paruſha is of Siva. Under theſe names we have taken ſome notice of their character ; but it is not eaſy, in the ſhort articles to which, in theſe matters, we muſt reſtrict ourſelves, to explain fully, were we able, the nature and alluſions of theſe abſtract perſonifications.

The faculty or power of containing, of which the Yoni is the type, is alſo called Argha by Hindoo myſtics. The name is given to a cup or diſh, or *veſſel*, in which fruits and flowers are offered in oblation. Theſe veſſels, they ſay, ought always to be *boat-ſhaped ;* and ſo they frequently are, but ſometimes round, oval, or ſquare ; moſtly, however, circular. All this is myſterious and profound. The rim of the Argha is more eſpecially the Yoni, while the contents of the veſſel repreſent the Linga, which is ſometimes more unequivocally figured by an image of Siva ſtanding erect in the centre of the Argha. Hence one of his names is Arghanatha, or lord of the boat-ſhaped veſſel. We may ſtop a moment here to remark how readily Bryant, Faber, and the race of Noetics, would have recognized the ark, in the arga or arka, or ark, as it may without much licence be written, of the Hindoos. We do not heſitate to hint our belief that many of the fables connected with Colchis, Juno, Io, Ionia, Jonah, &c. are traceable upwards to Hindoo words: many alſo connected with the names of places or perſons, beginning with Col or Kal, or containing its root, that are ſcattered in unmeaning profuſion through the geography and early biography of Europe. But this is not the place to enlarge on this ſubject.

The Argha, as a type of the *power of conception*, excited and vivified by the Linga or Phallus, Mr. Wilford (Aſ. Reſ. vol. iii.) ſuppoſes to be one and the ſame with the ſhip Argo, which, according to Orpheus (Argon. v. lxvi.), was built by Juno and Pallas, or, according to Apollonius (b. ii.), by Pallas and Argus, at the inſtance of Juno. The word Yoni, as it is uſually pronounced, nearly reſembles the name of the principal Etruſcan goddeſs ; and the Sanſkrit phraſe Arghanatha Iſwara ſeems accurately rendered by Plutarch (on Iſis and Oſiris), when he aſſerts that Oſiris was commander of the Argo. That the Sanſkrit words *p'hala*, meaning fruit, and *p'hulla*, a flower, had ever the ſenſe of *phallus*, is not affirmed ; but as theſe are the chief oblations in the Argha, and are confeſſed to be a repreſentation of the Linga, their ſounds may eaſily have been ſo transferred. We have ſeen, too, that Mahadeva himſelf, the prototype of the Linga, is ſometimes placed erect in the Argha : this is to complete a myſtical triunion of powers ; for Viſhnu, the principle of humidity and of conſervation, is ſymbolized by a convexity or emboſſment in the centre of the Argha, over which the image of Mahadeva, or the p'hala and p'hulla, as repreſenting the Linga or Phallus, are placed. The idea that the Sanſkrit p'hala or p'hulla may in ſenſe as well as ſound be cognate with and the ſource of the Greek phallus, derives ſtrength from the fact that Mahadeva, in his character correſponding with that of Jupiter Marina, or Neptune, bears, like his Roman kinſman, a trident, called Triſula, and ſometimes Triphala, denoting trifurcation and trifloreſcence. Jupiter Triphylius is thus identified with the three-eyed Siva, who in this form is named Trilokan and Triſula.

That the Sanſkrit language is very widely ſpread, and is traceable in various dialects, we have the authority of Mr. Colebrooke for believing. In the names of places, we are inclined to think its extenſion is proved as much as in any point : and we do not deem the idea very extravagant (ſays our correſpondent) that derives the name of Trafalgar, the ſcene of the laſt grand triumph of the Britiſh Neptune, from the mythological language of our fellow-ſubjects of India.

To return to the Yoni or Argha, we have ſeen that the veſſel under the latter denomination is boat-ſhaped, and a type of the world. In the general Deluge, the generative powers of nature, male and female, reduced to their ſimpleſt elements, the Linga and Yoni, aſſumed this ſhape for the preſervation of mankind. Brahma, the creative power, is repreſented to have been aſleep at the bottom of the abyſs. This alludes, we ſuppoſe, to the deſtruction of mankind ; man being repreſented in the abſtract by Brahma. The Yoni becoming boat-ſhaped, the Linga was the maſt, and protected by Viſhnu rode upon the waters. This, though ſufficiently groſs, is doubtleſs an arkite allegory. Every thing hollow or concave having the property of containing, remind myſtics of their type the Argha or Yoni, as aſpiring objects do of the Linga. Enthuſiaſts ſee theſe two principles ; that is, they ſay, nature paſſive and active, dormant and revivified, every where and in every thing,—the earth, the ſea, a boat, a well, a pond, the hollow of the hand, clefts in rocks, excavations, caves, commiſſures of branches, &c. partake of relationſhip with the one,—mountains, eſpecially if inſulated and conical, pyramids, cones of any ſort, fire, a maſt, a tree, eſpecially if denuded of branches, obeliſks, &c.—all theſe connect themſelves with ideas of Mahadeva and the Linga. The earth is typified by a boat ; the Argha of the Hindoos, and the Cimbium of the Egyptians. Oſiris is repreſented in a boat carried by men : in India, Mahadeva erect in the Argha refers to the ſame allegory. All over India, the Argha, and Linga of ſtone inſerted in it, is found an object of worſhip. It is ſtrewed with flowers, and water is poured on the Linga, and conveyed off by the rim or Yoni ; the foſſa navicularis or myſtical boat of Iſis.

Caves we have noticed as types of the Yoni, from their property of hollowneſs or containing, and alſo from the ſhape of their mouth. It will be recollected, that the moſt ancient oracle and place of worſhip at Delphos was that of the earth in a cave, which was called Delphi ; an obſolete Greek word, ſynonymous, according to Mr. Wilford (Aſ. Reſ. vol. vi.), with Yoni in Sanſkrit. Similar ſuperſtitions have prevailed farther weſtward. Perforations and clefts in ſtones and rocks were called Cunni Diaboli by early Chriſtians, who uſually beſtowed the appellation of devils on the deities of the heathens. One of the wonders of the peak in Derbyſhire retains an appellation ſtill coarſer : but Mr. Wilford thinks improperly ; for this wonderful cave, or one he ſays very like it, particularly noticed in the Puranas, is declared to be the ſacred Yoni. The cleft called Guhyaſthan, in Nepal, anſwers fully and literally to the coarſe appellation of its relative in Derbyſhire, (Guhya, or Podex,) and is devoutly worſhipped by numerous pilgrims from all parts of India. Perforated rocks or ſtones, as well as the mouths of caves, are myſtically contemplated in India. A regeneration is effected by paſſing through them ; or, if the hole be too ſmall, a hand or a foot thruſt through, with a ſufficient faith, will nearly anſwer the ſame purpoſe.

It is difficult to diſcuſs ſuch ſubjects as theſe without feeling a certain degree of contempt, pity, and wonder, at the fooleries of creatures called rational. But when we recollect that many millions, hundreds of millions probably, of our fellow mortals are, or have been, thus miſled, and have been ſimilarly miſled in all parts of the world, the origin and ſpread of ſuch uſages become a ſubject not unworthy the inquiry of the philoſopher: as connected probably with the hiſtory of ſtupendous events in ſacred hiſtory, it claims alſo the attention of the theologian; and the total diſuſe of all ſuch irrational ſuperſtition among ourſelves is a matter of gratulation to us as reformed Chriſtians. We are diſpoſed, however, to view it in all caſes as an invention and engine of prieſtcraft, and not much more to be charged on the religion of the Hindoos and others, than the mummeries practiſed at Loretto, Naples, and elſewhere, are juſtly chargeable on Chriſtianity.

Connected with the ſymbols and rites of the Yoni, we had prepared to offer ſome remarks ſhewing the ſpread of ſimilar ſuperſtitions almoſt all over Europe, as well as in other regions. And, indeed, although their origin and alluſion are now wholly forgotten, curious obſervers may diſcern in ſtill exiſting uſages occaſional relics of this ſpecies of devotion even in England. It is inexpedient, however, to indulge in this extended view.

Adoration of ſtones is found ſimilarly ſpread through the ſuperſtitious ages of all nations. The Hindoos retain it with undiminiſhed bigotry; and will affirm, and indeed go nigh to prove, that ſuch objects, from the ſacred monolithic ſubject of the Kaaba at Mecca, or the obeliſks of Egypt, to the trilithic temple at Stonehenge, with many intermediate, are no other than their Linga, under various forms and denominations. The Bætilia of antiquity are nearly related to it. Under BÆTYLOS, CROMLECHE, KISTVAEN, STONEHENGE, and other articles of this work thence referred to, the reader may, if deſirous, ſee the extent of ſpeculation to which the ſuperſtition connected with *Lithiſm*, if ſuch a term may be allowed, has given riſe.

Clefts in rocks, rent by the hand of nature, may therefore be ſuppoſed to be profoundly venerated by ſuch enthuſiaſts as are Hindoo myſtics. One of the moſt celebrated in India, as far as we have heard, is at the promontory on the iſland of Bombay, called by the Engliſh Malabar point. The promontory itſelf, thruſting its apex into the ſea, which there forms a ſandya, or junction, (ſee JUNCTIONS,) is *Lingaic*. It uſed to be much reſorted to, and its ſin-expelling potency much relied on, before its purity and privacy were polluted and interrupted by the preſence of ſtrangers, and the increaſing population of the iſland. The unequalled denſity of its preſent population, and the extending prevalence of foreign manners, have leſſened the ſanctity of this ſpot, now the conſtant reſort and abode of perſons who look on the local ſuperſtitions with an eye too rational or curious—or ſevere ſhall we ſay?—to encourage their continuance. Like the Lithic Linga temple of its neighbouring iſland of Elephanta, as the Engliſh call it, the Yoni of Malabar point will ſoon ceaſe to be reſorted to. Its fine temple is levelled to the rock whence it aroſe, and ſome of its ſpoils adorn the Muſeum at the India Houſe. The neighbourhood of Bombay was in former times a grand aſſemblage of Hindoo temples. The great beauty and ſalubrity of the ſituation, the forms of the hills and iſlands, and other real and fanciful advantages, combined to give it high charms to the taſteful and cunning Brahman. An iſland riſing conically is, we have ſeen, itſelf a Linga, its ſhores a Yoni, the ocean an Argha. The demoralizing effect of this perverted philoſophy on the mind of the ſimple Hindoo might be exemplified by a citation from our great dramatic poet, ſlightly altered:

> " —— And this their life, exempt from public haunt,
> Found Lingas in ſtones, Arghas in running brooks,
> Yonis in rocks, and gods in every thing."

Paſſing through ſuch clefts as we have juſt noticed with a piacular or expiatory view is, or rather has been, of extenſive prevalence. We could ſhew it to have exiſted in many parts of Europe. Relics of it ſtill exiſt in England. And indeed ſuch is the recent rage of theological innovation, and the amazing increaſe of credulity, that a zealous ſectarian need not deſpair of ſeeing theſe, or uſages equally ridiculous, revived among us. But it would not ſuit the crafty Brahmans to allow rich delinquents ſo eaſy an expiation as the paſſage through a cleft or Yoni of rock. In certain caſes of defilement, it is required that an image of pure gold be made of the female power of nature, either in the form of a woman or of a cow: in this ſtatue, the perſon to be regenerated is encloſed, and is protruded through the uſual channel. As this evidently muſt be enormouſly expenſive, it is of courſe rarely reſorted to. An inſtance is given in the Hindoo Pantheon, p. 398. of a recent caſe where a Yoni of gold was the medium of regeneration to two Brahmans, who had ſuffered pollution by coming to England. The defilement of a natural birth is done away by the protruſion of the perſon or head through a ſacred thread called *Zennar*. (See that article.) This regeneration is eſſential to Brahmanical purity, and is alſo required of the two next tribes. The individuals thereafter are denominated *twice-born*. The fourth tribe is not allowed to be thus purified, and is therefore conſidered as baſe and unclean. See SECTS *of Hindoos*.

Enough has been ſaid under this article to ſhew the myſterious bearing of its title. It is a ſubject which, connected with the Linga, meets the obſerver or inquirer directly or alluſively, though not oſtenſibly, or very often in an offenſive form, at every ſtep he takes in the inveſtigation of Hindoo literature or antiquities. Reſpecting the non-offenſiveneſs of their appearances, we refer to our article LINGA; of which indeed this may be conſidered as a continuation. The ſubject is inexhauſtible, but to us not inviting, though it muſt have been ſo to others. It might not be exaggeration, if it appear ſo, to ſay, that more ſpeculation exiſts hereon in the languages of India than would fill a volume equal to our whole Cyclopædia! Reference to earlier articles deſcriptive of the Yoni and its attributes and alluſions enables us to abridge this, which is, however, even combined with what is ſaid in thoſe articles, ſtill and neceſſarily incomplete. See KAMALAYONI, LILESWARA, LOTOS, MERU, PATRA, RADHA, SAIVA, SAMI, SAMI-DEVI, and SECTS *of Hindoos*. From the article SAMI reference is made to this, and we take this occaſion to correct an error in the former: in col. 2, line 24 from bottom, for *fiction* read *friction*.

Individuals, chiefly of the ſect called Sakta, meaning worſhippers of the Sakti, or female energy of Mahadeva, the deity of reproduction, propitiate the goddeſs under the form of the Yoni, the myſtical matrix of nature. Of this, ſee under SAKTA and SAKTI. Such individuals have the ſectarial appellation of Yonija. In what they differ from the Sakti, if they differ at all, we are not informed. Theſe ſects may be ſuppoſed to compriſe but few perſons; but this is a point on which information is obtained with difficulty. Reſpectable individuals, if there be any ſuch belonging to it, are aſhamed to avow being Saktas; and from perſons of a different ſort information is not to be relied on.

Writings, too, on theſe ſubjects, are very obſcure; their endleſs Scholia equally ſo, and can be critically underſtood by very few Europeans, even with the aſſiſtance of a learned native, who, aſhamed probably of what he is deſired to explain, will, with almoſt laudable delicacy or deceit, gloſs over the half-revealed obſcenities of his brethren.

The common tendency in the nature of the adoration of the Linga and of the Yoni might, one would think, have united their worſhippers in a community of object and view. But ſuch are the anomalies and perverſities of the human mind, that it appears to be an hiſtorical fact, that the Lingajas and Yonijas have actually not only diſputed and quarrelled reſpecting the comparative merits of their reſpective hieroglyphics, or, in other terms, the paramount potentiality of the archetype; but that bloody wars have ariſen between them on the queſtion, which, as far as now appears, ſeems really to have been one of phyſiology: the only inſtance, probably, in which ſuch a queſtion hath ever operated as a cauſe of holy war, manifold as thoſe cauſes unhappily have been. The Yonijas inſiſted, it ſeems, on a ſuperior influence in the *female* over the *male* nature in the production of a perfect offspring. The conſequent diſputes and warfare the Hindoo writers have, as uſual, recited in extravagant allegories, which we ſhould call obſcene, but which they conſider as awfully ſacred.

"This diverſity of opinion," ſays Wilford, "ſeems to have occaſioned the general war which is often mentioned in the Puranas (ſee PURANA), and was celebrated by the poets of the Weſt as the baſis of the Grecian mythology: I mean that between the gods led by Jupiter, and the giants, *or ſons of the earth*, or, in other words, between the followers of Iſwara (ſee ISWARA) and the Yonijas, or men produced, as they aſſerted, by Prithu, a form of Viſhnu (ſee PRITHU and VISHNU); for Nonnus (Dionyſ. b. xxxiv. v. 241.) expreſsly declares, that the war in queſtion aroſe between the partiſans of Jupiter and thoſe who acknowledged no other deities than water and earth. According to both Nonnus and the Hindoo mythologiſts, it began in India, whence it was ſpread over the whole globe, and all mankind appear to have borne a part in it.

"Theſe religious and phyſiological conteſts were diſguiſed in Egypt and India under a veil of the wildeſt allegories and emblems. On the banks of the Nile, Oſiris was torn in pieces; and on thoſe of the Ganges, the limbs of his conſort Iſi, or Sati, (ſee OSIRIS, ISIS, ISI, and SATI,) were ſcattered over the world, giving names to the places where they fell, and where they are ſtill ſuperſtitiouſly worſhipped. In Sanſkrit books, we find the Grecian ſtory concerning the wanderings of Bacchus; for Iſwara, having been mutilated through the imprecation of ſome offended Munis, (ſee MUNI and SAMI-DEVI,) rambled over the whole earth, bewailing his misfortune; while Iſi wandered alſo through the world ſinging mournful ditties in a ſtate of diſtraction. There is a legend in another book, of which the figurative meaning is more obvious. When Sati, after the cloſe of her exiſtence as the daughter of Dakſha, ſprang again to life in the character of Parvati, or mountain-born, (ſee MERA and MENA,) ſhe was re-united in marriage to Mahadeva. This divine pair had once a diſpute on the comparative influence of ſexes in producing animated beings, and each reſolved, by mutual agreement, to create apart a new race of men. The race produced by Mahadeva was very numerous, and devoted themſelves excluſively to the worſhip of the male deity; but their intellects were dull, their bodies feeble, and their complexions of different hues. Parvati had at the ſame time created a multitude of human beings, who adored the female power only. Theſe were well-ſhaped, with ſweet aſpects, and fine complexions. A furious conteſt enſued between theſe Lingancitas and Yonijas: the former ſtood their ground pretty well at firſt, but were in the end defeated, and ſhamefully routed in the battle, through the potency of the ſacred Yoni. Mahadeva enraged was about to deſtroy them by the fire of his eye: but Parvati interpoſed; and to appeaſe him, made uſe of the ſame artifice that Baubo did to put Ceres into good humour, and ſhewed him the prototype of the Lotos. Mahadeva ſmiled, and relented on condition that the Yonijas ſhould inſtantly leave the country.

"It is evident that this ſtrange tale was invented to eſtabliſh the opinion of the Yonijancitas, or votaries of Parvati or the Yoni, that the good ſhape, ſtrength, and courage of animals depend on the ſuperior influence of the female parent, whoſe powers are only excited and put into action by the male *aura*. But the Lingancitas maintain an oppoſite doctrine. There is alſo a ſect of Hindoos, by far the moſt numerous of any, who, attempting to reconcile the two ſyſtems, tells us, in their allegorical ſtyle, that Parvati and Mahadeva found their concurrence eſſential to the perfection of their offspring; and that Viſhnu, at the requeſt of the goddeſs, effected a reconciliation between them: hence the *navel* of Viſhnu, by which they mean the *os tincæ*, is worſhipped as one and the ſame with the ſacred Yoni." Wilford, in Aſ. Reſ. vol. iii.

YONIJA, the name of a ſect of Hindoos, who worſhip the hieroglyphic of Parvati, called *Yoni;* which ſee.

YONKERS, in *Geography*, a poſt-townſhip of the ſtate of New York, in Weſt Cheſter county, on the E. bank of the Hudſon, above New York iſland, 20 miles N. of New York, extending near eight miles along the Hudſon, and having a medial breadth of near three miles. The ſurface is broken, but the lands are cultivated and productive. In 1810 the whole population conſiſted of 1365 perſons, with 93 electors, and 204 taxable inhabitants.

YONNE, a river of France, which riſes about four miles S. from Château-Chinon, in the department of the Nyevre, paſſes by or near to Monceaux, Clamecy, Coulanges, Cravant, Auxerre, Joigny, Villeneuve, Sens, Pont ſur Yonne, &c. and joins the Seine at Montereau.

YONNE, one of the nine departments of the central region of France, formerly *Yonne*, E. of Loiret, in N. lat. 47° 50′, about 70 miles long, and from 30 to 40 broad, containing 7740 kiliometres, or 373 ſquare leagues, and 333,278 inhabitants; bounded on the N.E. by the department of the Aube, and on the S.E. by the department of the Côte d'Or, on the S. by that of the Nyevre, on the W. by that of the Loiret, and on the N.W. by that of the Seine and Marne. The river Yonne, from which it receives its name, croſſes it from S.E. to N.W. It is formed of the Auxerrois, formerly reckoned a part of Burgundy. Its capital is Auxerre. It is divided into five circles, or diſtricts, 34 cantons, and 484 communes. The circles are, Sens, comprehending 57,285 inhabitants; Joigny, 81,933; Auxerre, 103,882; Tonnerre, 47,394; and Avallon, 42,784. According to Haſſenfratz, its extent in French leagues is 29 in length, and 25 in breadth: its circles are 7, its cantons 69, and its population conſiſts of 364,969 perſons. In the 11th year of the French era, the total of its contributions was 3,093,023 fr.; and its expences, adminiſtration, judiciary, and for public inſtruction, were 297,935 fr. 66 cents. The ſoil is various; it has ſome dry and indifferently fertile tracts, diverſified with little hills; the weſtern part is of a clayey ſoil, covered with woods and pools: the cantons to the S. and E. are planted with vineyards; and the northern diſtrict is tolerably cultivated. The department, in general, is fertile, producing grain in abundance, with wine, fruits, and excellent paſtures.

YOOL Islands, a cluſter of ſmall iſlands in the Pacific ocean, ſo called by captain Forreſt, in the year 1774. In 1788 they were by Mr. Meers called Tattee iſlands.

YOO-MIOU, a large town of the Birman empire, ſituated on a ſmall river, which enters the Irawaddy at a place called Yoo-wa. An extenſive tract of country is inhabited by a people called Yoo, who are ſaid to be exceedingly ugly, having protuberant bellies, and white teeth. Theſe Yoos are ſubjects of the Birman ſtate, and obſerve the ſame religious worſhip. They ſpeak the language of Tavay, which is merely a provincial dialect of the Birman tongue. Symes's Embaſſy to Ava, vol. ii.

YOPA, a town of Mexico, in the province of Culiacan; 100 miles E.N.E. of Culiacan.

YOPAS, Las, or *Topez*, a river of Mexico, which riſes in Tlaſcala, and runs into the Pacific ocean, N. lat. 17° 10′.

YO-PING, a town of Corea; 33 miles S.W. of King-ki-tao.—Alſo, a town of Corea; 28 miles S.S.E. of Tſin.

YORK, the *Eboracum* of the Romans, is the capital of the great county to which it gives name, the ſee of an archbiſhop, who is primate and metropolitan of England, and the ſecond city in rank in the kingdom. It is of unqueſtionable antiquity, and eminently diſtinguiſhed in Engliſh hiſtory by the important political, eccleſiaſtical, and military tranſactions which have occurred within its walls, or with which it has been in other ways intimately connected. Seated in the midſt of a vaſt plain, by the ſide of a river which was navigable for the largeſt ſhips of ancient times, and too remote from the open ſea to be immediately expoſed to predatory invaſion, York muſt have early attracted the attention and become the favourite abode of the chiefs of the northern ſtates, and of their ſucceſsful invaders from foreign lands. Eboracum was accordingly ſelected by Roman emperors and commanders as a principal reſidence during their protracted conteſts with the ungovernable inhabitants of the northern parts of Britain. The metropolis of a ſhire unparalleled in the kingdom for extent, population, and productions, York is placed at the point of junction, although independent of them all, of the three ridings or diſtricts into which the ſhire is ſubdivided. The cathedral is ſituated in N. lat. 53° 58′, and in W. long. from Greenwich 1° 7′. The city is diſtant, by the ſhorteſt roads, from London, N. by W. 198 miles; from Edinburgh, S.S.E. 201 miles; from Durham, S. by E. 67 miles; from Hull, W.N.W. 38 miles; and from Liverpool, E.N.E. 100 miles. The neareſt point of the ſea-coaſt on the E. is at Bridlington bay, diſtant 33 miles, and on the W. at Lancaſter 90 miles. The poſition of the city is central, with reſpect to both the limits of the county, and the great body of the population, induſtry, and commerce, by which it is diſtinguiſhed. The ancient ſtation of Eboracum was confined between the river Ouſe on the W. and the collateral ſtream, the Foſs, on the E., which falls into the Ouſe at the ſouthern extremity of the old city. In later times, however, the limits were extended conſiderably on the oppoſite ſides of both rivers. Such a poſition, defended on three ſides by rivers and marſhes, and acceſſible by an enemy on the N. ſide alone, although in the midſt of a plain, but conſequently overlooked by no neighbouring eminence, would, even in the modern art of war, be ſuſceptible of powerful defence: in ancient times it might have been rendered nearly impregnable. In conſtructing the walls, and laying down the ſtreets, on ground previouſly occupied by their camps, it was the practice of the Romans to preſerve as much as poſſible the form and diſtribution of the prior intrenchment. Of this practice frequent inſtances are found in Britain, as well as in Gaul, and other parts of the continent. The ſame, notwithſtanding the many changes to which the city has been ſubjected, may ſtill be traced in York, where evident remains of Roman architecture are yet preſerved, and where monuments of antiquity of various claſſes have often been diſcovered.

In its preſent ſtate, the plan of York forms an irregular pentagon, extending from S. to N. about 1340 yards, and from W. to E. about 1360 yards: the area within the walls is therefore about 300 acres. It is divided into four wards, which take their names from the four gates. Bootham-gate-ward, in the N.W., contains three pariſhes; Micklegate-ward, on the W. ſide of the Ouſe, contains ſix pariſhes; Monk-ward, in the N.E., five pariſhes; and Walmgate-ward, on the S.E., ſeven pariſhes. But the cloſe of the cathedral is not included in any ward. Some of theſe pariſhes extend beyond the walls; and the two churches of St. Lawrence and St. Maurice, ſituated on the outſide of the city, are ſtill commonly reckoned to belong to it. The number of churches, excluſive of the cathedral, is therefore twenty-three. In former times they amounted to forty-five. Although no regular plan can now be traced in the diſtribution of the ſtreets, yet ſome of them are of reſpectable appearance, having of late years been much improved by widening and paving; and new and handſome buildings, public and private, have been erected. The river Foſs, long a piece of ſtagnated water, has again been rendered navigable, and now materially contributes to the ornament of the city as well as to the health of the inhabitants.

York, ſtill inhabited by many genteel families, maintains its importance in no inconſiderable degree; but in point of population and wealth, it has been far excelled by many manufacturing and trading towns in the county, of comparatively modern foundation. According to the reports of the population of the kingdom in 1811, the inhabitants of York were then only 18,217, and the houſes 2743.

Civil Hiſtory.—York, under its romanized name, *Eboracum*, early appears in Britiſh hiſtory. In the year 208, the emperor Severus, with his ſons Caracalla and Geta, viſited Britain; and returning from an expedition againſt the northern inſurgents in the following year, Severus reſided at Eboracum, while his troops were employed in conſtructing acroſs the iſthmus, between the mouths of the Eden and the Tyne, the great wall of defence ſtill known by his name. In this enterpriſe, he followed the example and completed the fortification of his predeceſſor Hadrian, which had been formed in the year 121. While Severus's great work was in progreſs, the emperor died at York in 210; and his ſucceſſor Caracalla, more intent on the deſtruction of his envied brother Geta than on the enlargement or the preſervation of the Roman dominion in Britain, ſoon afterwards returned to the continent. During his reſidence in York, Severus ſtruck money, on which he ſtyled himſelf *Britannicus*; and alſo iſſued a decree reſpecting the recovery of ſlaves, which decree is ſtill preſerved in the Roman code, dated at Eboracum, on the 3d of the nones of May, in the conſulate of Fauſtinus and Rufus, correſponding to the year A.D. 209.

Turning his arms againſt the Caledonians, and other Britons, who ſtruggled for freedom in the north, Conſtantius fixed his head-quarters in York, and there ended his life in 306. York was alſo the ſcene of the inauguration of his ſon and ſucceſſor Conſtantine, who, learning in Aſia the indiſpoſition of his father, haſtened to York, where he arrived in time to receive his laſt inſtructions; and was there proclaimed emperor by the army.

Among the towns ſpecified in the geography of Ptolemy, the Itinerary of Antoninus, and the much later work of Richard of Cirenceſter, Eboracum is ranked firſt as a colony, and afterwards as a municipal town. As a colony, or ſettlement of veteran troops, the inhabitants were citizens of Rome, and governed by the laws of the ſtate. When advanced to the higheſt ſtation, that of municipium, the inhabitants retaining the privileges of Roman citizens were no longer under thoſe particular laws, but inveſted with the power of ſelf-government, under magiſtrates of their own appointment. Beſides Eboracum, Britain contained but one other municipal town, Verulamium. In the liſt of Roman troops ſtationed in York, the ſixth legion, called the victorious, appears to have been there for three ſucceſſive centuries, down to 446, when the Romans finally renounced all dominion in Britain. The Britiſh name of York is loſt; but although ſoftened into Eboracum by the Romans, and by their colonies, who copied from them, traces of the original may ſtill be perceived in the Kair-Ebrauc of Nennius and Henry of Huntingdon, and in the Cair-Effroc, or Efroc, of the Welſh. In Britiſh compound appellations of places, the deſcriptive part precedes the proper name: in the language of the Saxons a contrary mode prevailed. Hence Cair-Effroc was by them converted into Efroc-wyc, and Yevor-wyc, from which the preſent name of York ſeems to be derived.

York was the capital of Deira, one of the diſtricts into which the Provincia Maxima of the Romans, or the county of Northumberland, was divided; and there, in the beginning of the ſeventh century, reſided Edwyn, who re-united thoſe kingdoms, and acquired the principal aſcendency over Saxon-England. To this prince are aſcribed the conſtruction of the caſtle, and the foundation of the city of Edinburgh (Edwyn's burgh), now the capital of Scotland. He alſo founded a cathedral in York; but in 633 he fell in the defence of his dominions, againſt the combined attack of the Saxons of Mercia and the Britons of Wales. Under Oſwald, who came to the crown in the following year, Northumberland was again united into one kingdom; and afterwards governed by the celebrated Egbert, who, in 827, out of the Saxon heptarchy, formed the great kingdom of England. After a long ſeries of diſaſters from Daniſh invaſion, and the internal diſorders of the kingdom, York was expoſed to utter deſtruction from the memorable expedition of Harold Hardrad, king of Norway. On the death of Harold of England, an unſucceſsful attempt was made by the people of York to place Edgar Atheling on the throne. For this ſtep, William of Normandy beſieged the city in 1070, which, after many months, was compelled by famine to ſurrender. The conqueror inflicted the moſt horrible vengeance on the inhabitants, the ſurrounding country was laid waſte, and caſtles were erected within the walls, to keep the conquered citizens in ſubjection. With the exception of the conteſts between the metropolitans of York and Canterbury, little is recorded of the former city until 1137, when the cathedral church, thirty-nine pariſh-churches, and the greater part of the houſes, were accidentally burnt down. About 1160, one of the firſt parliaments of England was held there by Henry II.; and in the reign of his ſucceſſor, Richard I., in 1190, occurred the horrible maſſacre of the Jews, which was perpetrated and accompanied with circumſtances of peculiar atrocity. In 1299, the courts of juſtice were removed from London to York by Edward I. during his expeditions againſt Scotland. In his reign this city was claſſed among the ſea-ports of England, and required to furniſh one ſhip for his uſe. In the ſanguinary conteſts between the houſes of York and Lancaſter, the former city naturally eſpouſed the cauſe of the white roſe; and in 1483, Richard III. was a ſecond time crowned in the cathedral. The year 1509 was diſtinguiſhed by the eſtabliſhment of a printing preſs in the minſter-yard of York, near the place where the royal preſſes were afterwards erected in 1642, while king Charles reſided in the city. Nothing of moment relative to York is afterwards recorded until the 31ſt year of Henry VIII., when commiſſioners were appointed there to conduct the ſuppreſſion of the northern monaſteries. Adhering to the royal cauſe, the city was, in 1644, beſieged by the parliamentary forces under ſir Thomas Fairfax. But on the approach of prince Rupert, the ſiege was raiſed; and on the 2d of July, the important battle of Marſton-moor, about five miles off, was fought, in which the royal party was completely defeated. Returning to the ſiege, Fairfax, at the end of ſix weeks, obtained poſſeſſion of the city, on moſt honourable terms for the garriſon and inhabitants. Notwithſtanding the zeal for the royal cauſe manifeſted by the citizens of York, their charter was ſuppreſſed by Charles II., and never reſtored. A new charter, however, confirming all the former rights of the city, was granted by his ſucceſſor James II. in 1685. Down to the 30th of July, 1688, the inhabitants of York continued to expreſs the moſt determined attachment to James; and on that day, the mayor, aldermen, and commons, congratulated him, in the moſt energetic terms, on the birth of a young prince.

Civil Government.—The government of York is veſted in a mayor, who, like the mayors of London and Dublin, and the provoſt of Edinburgh, is authorized by the act of Richard II. to aſſume the title of lord; a recorder, two city-council, twelve aldermen, two ſheriffs, ſeventy-two common-council-men, and ſix chamberlains. What is ſtyled the privy-council, or the upper houſe, conſiſts of the lord-mayor, aldermen, and ſheriffs, together with thoſe citizens who have paſſed the office of ſheriff. This body, whatever may be its number, is uſually called the twenty-four. The mayor, whoſe office ceaſes on the 3d of February, is choſen annually from thoſe aldermen who have not borne that office twice, nor within the ſix preceding years; and during his mayoralty takes precedence of all perſons within his juriſdiction. York was early diſtinguiſhed among the cities of England: in the Domeſday-book it appears to be exempted from the payment of geld, except when the ſame is paid by London and Wincheſter, and from paying reliefs. In 1396 king Richard appointed two ſheriffs, inſtead of three bailiffs, for the government of the city, which was then conſtituted a county within itſelf. The earlieſt charters of York now preſerved are, one granted in 1199, and another by Henry III., who died in 1272: but both recite preceding charters of Richard I., Henry I., and Henry II. Repreſentatives in parliament for the city of York appear in the ſummons and returns of the 23d of Edward I. For the parliament called to aſſemble at Shrewſbury, on the 30th of September 1283, which was but the 11th year of Edward, two repreſentatives were ſummoned from a number of cities and towns, among which York ſtands the fourth in order; thoſe before it being London, Wincheſter, and Newcaſtle-upon-Tyne. Under the juriſdiction of the lord-mayor, aldermen, and ſheriffs, beſides the city, is a conſiderable diſtrict on the W. of the river Ouſe, called the Ainſtey, in ancient writings, Ancitty; but its origin and import are now unknown. This tract was once a hundred or wapentake of the Weſt Riding of Yorkſhire; but in the 27th year of Henry VI. it was annexed to the juriſdiction of the magiſtrates of York, and has ever ſince been comprehended in the county of the city of York. The whole diſtrict was anciently a foreſt, but laid open in the reigns of Richard I. and John: it contains 22 pariſhes ſubdivided into a number of townſhips; the inhabitants of the whole amounting, in 1811, to 8205 perſons. In all parliamentary aſſeſſments the city is called on for three-fifths of the amount, and the Ainſtey for two-fifths. Doubts having long been entertained whether the inhabitants of this diſtrict could vote for the repreſentatives of Yorkſhire in parliament, a deciſion was obtained in the houſe of commons in 1735, declaring, "that the perſons whoſe freeholds lie within that part of the county of the city of York, which is commonly called the Ainſtey, have a right to vote for knights of the ſhire for the county of York."

Eccleſiaſtical Hiſtory.—The earlieſt notice reſpecting the recogniſed eſtabliſhment of Chriſtianity in Eboracum, or York, exiſts in the liſt of biſhops, or paſtors, who compoſed the ſynod or council of Arelate, now Arles, in the ſouth of France, about A.D. 314. The biſhops who then appeared on the part of the Britiſh church were, Eborius de civitate Eboræcenſi, Reſtitutus de civitate Londinenſi, and Adelfius de civitate Colonia Londinenſium. By the retreat of the Romans in the middle of the 5th century, and the ſubſequent overwhelming invaſions of the Saxons, Chriſtianity was almoſt entirely ſuppreſſed in the northern parts of the kingdom. At laſt, about 628, Edwin, king of Northumbria, having married Ethelburga, the ſiſter of Ebald, the converted king of Kent, was, by her perſuaſion, aided by Paulinus, who attended her to York, induced alſo to embrace the Chriſtian religion. Paulinus was conſequently publicly appointed biſhop, or, as ſome ſay, archbiſhop of the renovated church of York. The appointment was confirmed, and the new prelate formally inveſted with the enſigns of his office, by pope Honorius. In former times, jealouſies and conteſts occaſionally took place between the metropolitans of York and Canterbury; to appeaſe which it was often neceſſary to appeal to the pope. Under the archbiſhop of York are placed the biſhops of Durham, Cheſter, Carliſle, and the Iſle of Mann; and he is ſtyled in general primate and metropolitan of England: but the archbiſhop of Canterbury aſſumes the ſame titles over *all* England. At the coronation the latter crowns the king; but the queen has that ceremony performed on her by the archbiſhop of York. By the removal of the ſeat of government to the ſouthern parts of the kingdom, and particularly after the Norman Conqueſt, the prelates of Canterbury and Wincheſter, ſituated near the throne, ſoon acquired an aſcendancy over their brothers of York in political favour and power. Among the latter, however, were many men of eminence in the hiſtory of the church and of the ſtate. Wilfrid, appointed in 669, founded the celebrated monaſtery of Ripon. Egbert, the brother of Eadbert, king of Northumberland, was the patron of Alcuin, the enlightened ſecretary of Charlemagne. In 930 Wulſtan was deprived for aiding Anloff, the Daniſh king of Northumberland, againſt Edred of England. Aldred, who ſucceeded in 1060, was the laſt prelate of the Saxon race; for dying in 1070, he was ſucceeded by Thomas, a Norman. Gerard, appointed in 1100, as well as his predeceſſor, refuſed obedience to the ſee of Canterbury; but pontifical authority compelled him to ſubmit. Obedience was again denied by Thurſtan, who had been appointed in 1114; but at laſt he retired to a monaſtery. In 1153 ſucceeded William, afterwards canonized. Roger, ſuſpected of being privy to the death of Becket, was acquitted on his oath of purgation. In 1190 the ſee was filled by Geoffrey Plantagenet, ſon of Henry II. and the Fair Roſamond. His ſucceſſor, Walter de Grey, is ſaid to have tranſmitted a prodigious ſum to Rome for his inſtallation: but for this apparent ſimony he atoned by purchaſing the manor of Thorpe for the country-reſidence of the archbiſhops of York, and by contributing materially to the erection of the cathedral. While the ſee was occupied by John Thoreſby, appointed in 1352, in order to remove the contentions between the two archprelates, pope Innocent VI. eſtabliſhed the diſtinction before-mentioned in the metropolitan dignity. Richard Scroope, who ſucceeded to the ſee in 1398, was, in 1405, beheaded for the active part he took in oppoſition to Henry IV. after the murder of Richard II., who, on various occaſions, had ſhewn a particular favour for York. The fifty-ſecond prelate, appointed in 1464, was George Neville, brother of the famous earl of Warwick, and diſtinguiſhed by the misfortunes of his latter years, no leſs than by the unbounded magnificence of his inſtallation. Chriſtopher Bainbridge, appointed in 1508, and ambaſſador to Rome, was created a cardinal; but was ſoon after poiſoned by an Italian prieſt, his ſteward. His ſucceſſor, in 1514, was the celebrated cardinal Wolſey. By the exertions of archbiſhop Heath, appointed in 1555, the ſee recovered a great part of the revenues it now enjoys, which had been alienated by the arbitrary and avaricious meaſures of Henry VIII. As a Roman Catholic, he was deprived of his dignities by Elizabeth, who, however, reſpected his merits, and allowed him to retire to his eſtate at Cobham. In 1641 the ſee was filled by John Williams, who, after warmly eſpouſing the royal cauſe, openly joined the parliament. After him the ſee remained vacant for ten years until 1660, when, on the reſtoration of Charles II., it was conferred on archbiſhop Frewen. Archbiſhop Dolben, who ſucceeded Richard Sterne, was an enſign in the army in his youth, and bled in the royal cauſe at Marſton-moor: he died in 1688. The laſt prelate was Dr. Markham, who had been head-maſter of Weſtminſter-ſchool, and preceptor to the prince of Wales. Dying in 1808, he was ſucceeded by the preſent archbiſhop, the honourable Edward Vernon.

Antiquities.—That Eboracum poſſeſſed temples, palaces, theatres, and the other public edifices with which the politic Romans were in the habit of adorning the principal, and even in ſome caſes the minor cities within their dominions, cannot be doubted; but all ſuch ſtructures have long diſappeared. The moſt remarkable monument of Roman occupation now to be ſeen is what is called the multangular tower, being a polygon forming the N.W. angle of the Roman wall, near the N.E. bank of the Ouſe. The lower part of this tower is faced with rows of regularly ſquared ſtones, ſeparated at broad intervals by layers of flat bricks. The upper part of the tower, pierced with loop-holes, is of much later date. Various Roman inſcriptions have been and continue to be diſcovered in York: ſome are mentioned by Camden, who was the firſt to record them. In digging for a cellar, in the beginning of the laſt century, in what is called the manor, or the ruins of St. Mary's abbey, on the outſide of Bootham-bar, was found a ſmall buſt in bronze. In the environs of the city, particularly on the London road, which follows the courſe of the ancient Roman way, ſepulchral urns of various kinds have been diſcovered. Coins, ſeals, fibulæ, and many other relics of Roman antiquity, are abundantly found within and around the city. The coins bear the names of all the emperors, from Auguſtus to Gratian. In 1807 a ſmall vault of Roman conſtruction was diſcovered, four feet below the ſurface, on the outſide of Micklegate-bar, containing a ſtone coffin, with a human ſkeleton entire, a lacrymatory, &c. In 1813 two large ſtone coffins were found without Bootham-bar; and are now preſerved in the cathedral. In 1814 was laid open a beautiful teſſellated pavement, within Micklegate-bar, but without the Roman town; but unfortunately a part of it only was preſerved: this was the firſt ever found in York. The walls of the city, which probably ſucceeded to the Roman fortifications, and which are now in rapid and diſgraceful decay, ſtill retain ſufficient evidences of their ancient ſtrength and importance. When they were erected is now unknown; but their conſtruction on the Roman foundations is generally aſcribed to Edward I., about 1280: in the time of Henry VIII. they were in complete repair. The oldeſt part of the preſent walls appears to be that adjoining to Walmgate-bar, at the S.E. corner of the city, on the road to Hull, where the remains of the Red tower are ſtill viſible. During the laſt ſiege of York, in the civil wars, by ſir Thomas Fairfax, in 1644, theſe walls were ſo ſhattered as to require three years to repair them: but ſince that period they have been ſhamefully neglected by thoſe whoſe duty it is to preſerve them.

York is diſtinguiſhed among the cities of England for its ancient gates, or bars, as they are termed. Of theſe, Micklegate-bar, on the S.W. ſide of the preſent city, under which is the road from London, is the moſt remarkable. It conſiſts of a lofty ſquare embattled tower, with loop-holes, &c. and guarded by an adorned work, with baſtion-turrets, &c. Bootham-bar, at the N. entrance of the city, not far from the Roman tower, is almoſt wholly conſtructed of materials formerly employed in Roman buildings. Monk-bar, on the N.E., and the Walmgate-bar on the S.E., ſeem to be of equal date, and were probably erected by Edward III. The whole circuit of the ancient walls is nearly two miles and three-quarters.

Caſtle: Clifford's Tower.—Nearly at the junction of the Ouſe and the Foſs, on an eminence, is the ſcite of the ancient caſtle, acceſſible only from the city on the N., and ſtrengthened on the other ſides by the Foſs, carried round it in a deep moat. Prior to the Norman Conqueſt, York poſſeſſed a caſtle, by ſome ſuppoſed to have ſtood on the W. ſide of the Ouſe. It is, however, much more probable, that the principal fortreſs occupied the poſition here deſcribed, on which William of Normandy erected his caſtle, which was reſtored by Richard III. Ceaſing to be regarded as a place of ſtrength, it was converted into the priſon for the county of York: but becoming ruinous, the whole was, in 1701, taken down, and the preſent grand ſtructures, ſtill retaining, although very incongruouſly, the original name, were erected. Within the incloſure of the ancient caſtle on the N.W. is a high mount, ſurrounded by a deep ditch, riſing 90 feet above the river Ouſe, and 30 above the ſcite of the caſtle. On the ſummit ſtands Clifford's tower, conſiſting of four ſegments of circles joined together, and ſo called, it is ſaid, from the firſt governor, after its erection by William the Conqueror, to whoſe caſtle it ſerved as the keep. In the time of Henry VIII. this tower was in a ruinous ſtate: but on the commencement of the diſorders in the reign of Charles I., it was repaired and fortified by the earl of Cumberland, who mounted ſome pieces of artillery on the platform. In the year 1684, the powder-magazine within the tower exploded, and the building was reduced to its external walls, as now exiſting. Correſponding to Clifford's tower, on the W. ſide of the Ouſe, is another mount, called the Old Baile, or *Vetus Ballium;* alſo the ſcite of an ancient fortreſs.

Public Buildings.—At the head of the public edifices of York is neceſſarily placed the venerable minſter, or cathedral, which, conſidered in its totality, is unparalleled in England. The earlieſt erection of a *ſtone* edifice for the ſervice of the Chriſtian religion in York is always aſcribed to Edwin, king of the Northumbrians. This church was founded about A.D. 628; but it was completed by biſhop Wilfrid, after 669, who covered the roof with lead, and filled the windows with glaſs. This laſt invaluable ſubſtance muſt have been imported from the continent; for it was not till 674 that glaſs-makers were firſt introduced into England by Benedict Biſcop, to glaze the windows of his new monaſtery at Biſhop-Wearmouth. That the cathedral of York ſuffered with the other parts of the city by the ravages of the Danes in 867 is moſt probable: but it is not noticed until 1069, when it was deſtroyed, with a great part of the city, in a conflagration occaſioned by the Norman garriſon, when attacked by the united Danes and Northumbrians. To puniſh the refractory people of the city and vicinity, William of Normandy expelled the eccleſiaſtics, and ſeized the revenues of the ſee: but theſe were ſoon reſtored, and his chaplain and treaſurer, Thomas, a Norman, was promoted to the archbiſhopric. By this prelate the cathedral was rebuilt in a magnificent ſtyle; but in 1137 it was again deſtroyed by fire, together with the abbey of St. Mary, and 39 pariſh-churches. Having for a number of years lain in ruins, archbiſhop Roger, the ſtrenuous opponent of Becket of Canterbury, began in 1171 to rebuild the choir with its crypt, which he lived to finiſh. In 1227, his ſucceſſor, Walter de Grey, erected the tranſept, with the exception of the N. part, which was the work of John le Romaine, the treaſurer, who alſo raiſed a central ſteeple in 1260. In 1291, the ſon of the preceding being advanced to the ſee, commenced the nave, which, together with the two noble weſtern towers, was completed by archbiſhop William le Melton. In 1361, the preſent beautiful choir was commenced by archbiſhop Thoreſby, who contributed largely to defray the charges of the work. More money having been collected than was required, the ſurplus was, in 1370, employed to conſtruct the preſent noble central tower, in the place of one erected by John le Romaine. Thus, in the courſe of 150 years, the cathedral of York was brought into a form nearly as it now appears. It is a grand and intereſting edifice; and conſiſts of a nave with ſide aiſles, a large and lofty tranſept with aiſles, a choir with aiſles, and a large ſpace eaſt of the choir, called the lady-chapel, with aiſles. Beneath the altar is a crypt; on the ſouth ſide are three apartments called veſtries and treaſury; and at the end of the north tranſept is a fine chapter-houſe, with a correſponding veſtibule. The weſt end is adorned by two elegantly ornamented towers, whilſt another, of larger dimenſions, riſes at the centre of the tranſept. All theſe parts of the church are on a large and magnificent ſcale; and though not in an uniform ſtyle, yet the nave and choir are of correſponding height and width, and very ſimilar in their windows, columns, and other members. The W. front is more richly adorned than any other part of the edifice. Its two towers diminiſh in dimenſions as they aſcend, and have been ornamented with ſeveral ſtatues, of which now only very few remain. Each tower is ſurmounted by eight pinnacles; and in the ſouth tower is a ſet of celebrated bells. In the front are three entrances; that in the centre is divided into two by a pillar. The entire length of the cathedral is above 524 feet; that of the nave, from the weſt end to the ſcreen at the entrance of the choir, is 250 feet; the length of the choir to the altar-ſcreen 150 feet; and that of the lady-chapel, at the eaſt end, 65 feet. The tranſept is in length 222 feet. The breadth of the nave, with its ſide aiſles, is 103 feet; that of the nave itſelf being 63. In the centre of the nave the height to the roof is 91½ feet; in the tranſept 103 feet; and in the choir 101 feet. The elevation of the central tower or lantern is 213 feet; that of the towers at the W. end 196 feet. The great windows which occupy the principal part of the W. and E. ends of the church are particularly beautiful. The great E. window, eſpecially, is of uncommon dimenſions and richneſs. It was executed about 1405, at the expence of the dean and chapter; and the glaſs painted, &c. by John Thornton, of Coventry, glazier, who engaged to finiſh it in three years, and for which he was paid four ſhillings *per* week. Spacious, lofty, and light, the interior of this cathedral has a moſt impoſing effect. For although the choir be ſeparated from the body of the building by a ſcreen ſurmounted by the organ, ſtill from the W. end the eye ranges over all, quite to the great terminating window in the E. The nave conſiſts of a double range of eight lofty pointed arches, ſupported by ſlender cluſtered columns. A ſimilar arrangement prevails in the choir; but the tranſept is of a different age, ſtyle, and character, to all the other parts of the church.

Great labour has been beſtowed in the carving of the ſtalls of the choir, which are of oak. The ſcreen behind the altar is ſtone, divided into eight pointed arches, the upper parts of which are perforated and glazed. At the entrance of the choir is a very elaborate ſcreen of tabernacle work, perhaps of the time of Henry VI. It is covered with niches, canopies, pediments, pinnacles, &c. and contains ſtatues of fifteen Engliſh monarchs; *i. e.* eight on one ſide of the entrance, and ſeven on the other ſide. The whole has been of late years ſuitably repaired. The central tower, or lantern, as it is uſually called, is ſupported by four lofty arches reſting on ſtrong maſſive cluſtered piers.

Among the monuments of prelates and other eminent perſons preſerved within the cathedral of York, is diſtinguiſhed that of archbiſhop Walter Grey in the ſouth tranſept. It exhibits his effigy in his pontificals, covered by a magnificent canopy, ſupported by ſlender pillars. The whole was encloſed with a handſome railing by the late Dr. Markham. But the moſt elegant of all is the monument of archbiſhop Bowet, appointed in 1423, of great height, and in the moſt florid ſtyle of the pointed architecture. A full-length ſtatue, with emblems and an inſcription, commemorates the late ſir George Saville. Attached to the ſouth ſide of the choir is a range of low buildings, ſtyled the veſtries; in one of which are preſerved ſundry emblems of the ancient metropolitan dignity of York cathedral. Among theſe is a famous antique horn, as it is termed, although formed out of an elephant's tooth, by the poſſeſſion of which the church holds lands of great value, ſaid to have been granted by Ulphus, a Saxon prince of Deira. In the ſame place is preſerved the ſilver paſtoral ſtaff, preſented by Catharine of Portugal, dowager of Charles II., to her confeſſor, who had been appointed popiſh archbiſhop by James II. in 1687. Adjoining to the S.W. angle of the tranſept was a ſmall building, formerly uſed as a library. A library for the uſe of the eccleſiaſtics of the cathedral is believed to have been founded by Egbert the archbiſhop in 740, and his ſucceſſor Albert; but the whole was conſumed by fire in 1069. By this misfortune no ſmall loſs was ſuſtained by the lovers of learning; for according to certain writings of Alcuin, the ſecretary of Charlemagne, many valuable claſſic and other works were contained in it. To ſupply in ſome meaſure its place, another library was collected by archbiſhop Thomas, the Norman; but that alſo was deſtroyed by the flames in 1137. From this period, the cathedral is not known to have been furniſhed with many books until the private collection, conſiſting of upwards of 3000 volumes, of archbiſhop Matthew, was beſtowed on it by his relict in the beginning of the 17th century. By various ſubſequent bequeſts, preſents, and purchaſes, a large collection of valuable books and manuſcripts has been formed, and placed in what was formerly the chapel of the archiepiſcopal palace, on the north ſide of the cathedral. This building has been lately repaired in a ſtyle ſuitable to that of the church, and commodiouſly adapted to its preſent deſtination. Connected by a ſhort paſſage or veſtibule with the N.E. angle of the tranſept of the cathedral is the chapter-houſe, an octagon room, 63 feet in diameter, and nearly 68 in height. This building differs from many others of the ſame kind, in having no central pillar to ſupport the roof: but the preſſure of the arched roof upon the walls is effectually counteracted by buttreſſes at each external angle. From the ſimilarity of the ſtyle of building with that of the nave of the cathedral, founded in 1291, the chapter-houſe is ſuppoſed to have been erected about that time. The buildings belonging to the cathedral were formerly ſeparated from the city by walls; and ſome remains of the gates of communication may ſtill be diſcovered. Of thoſe buildings, the principal was the archiepiſcopal palace, ſituated on the north of the church. It was erected by the firſt Norman prelate appointed in 1070; but after a lapſe of about 500 years, the great hall was taken down by the Proteſtant archbiſhop Young, for the ſake, it is ſaid, of the lead on the roof. Since that time other parts of the palace have been leaſed out. In former times to the ſee of York belonged various places of reſidence; but now that of Biſhopthorpe alone is occupied. This is agreeably ſituated on the ſide of the river Ouſe, about three miles ſouth-weſt from the city. It was purchaſed and appropriated to the ſee by archbiſhop Walter de Grey, in the early part of the 13th century; ſince whoſe time it has undergone many important alterations and improvements. The principal front and the veſtibule are in the pointed ſtyle of architecture, and in the interior are ſeveral ſpacious and elegant apartments, beſides the chapel and library. In the minſter-yard ſtill remains the reſidence of the dean of the cathedral, a ſpacious and convenient edifice of reſpectable appearance.

Of the pariſh-churches in York, that of St. Margaret in the ſouth-eaſt quarter of the city is remarkable for the porch attached to it, but which is of much higher antiquity than any other part of the edifice. It was removed from the church of St. Nicholas, formerly ſituated without Walmgate-bar, but ruined during the ſiege of York in 1644. The arch of the porch is ſemicircular, and exhibits alternately the ſigns of the zodiac and the emblems of the months. The churches of St. Denys and St. Lawrence have alſo an appearance of conſiderable antiquity. Next to the cathedral, the church of St. Michael-le-Belfrey is the largeſt and the moſt regular in the city, ſupported by light pillars and pointed arches. The preſent building was erected on the removal of the former in 1535. The church of All Saints, on the pavement, is diſtinguiſhed by its open octangular turret, erected on a ſquare tower, in which, according to tradition, a large lamp was ſuſpended in the night, to guide travellers over the broad foreſt of Galtres, which extended on the north and eaſt of the city. York contains places of meeting for various claſſes of diſſenters from the eſtabliſhed church; that for the Society of Friends, lately erected, is large and commodious. A handſome chapel for the uſe of the Roman Catholics was built in 1782.

Of the numerous religious eſtabliſhments formerly exiſting in and near York many veſtiges ſtill remain. Of theſe, the principal was St. Mary's abbey, ſituated on the bank of the river Ouſe, on the outſide of the city wall. The foundation of the monaſtery is of uncertain date; but the church, of which ſome conſiderable ruins ſtill remain, was rebuilt in 1270. Having fallen to decay after the general ſuppreſſion of religious houſes, Henry VIII. ordered a palace to be erected out of the ruins, for the reſidence of the lord-preſident of the north of England, to be deſignated the 'king's manor.' This was enlarged by James I. Previouſly to the Revolution it became an object of popular outrage: but ſome years afterwards the king's Mint was eſtabliſhed in it, and much gold and ſilver, diſtinguiſhed by the initial letter Y, was ſtruck there for William III. The ſcite of the abbey and the manor have long been leaſed from the crown by lord Grantham and his predeceſſors. Connected with the religious ſyſtem of former times, it may be noticed, that adjoining to the walls of York, immediately without Micklegate-bar on the London road, is an eſtabliſhment called the Nunnery. The building was originally acquired in 1686, as a place of education and living for young ladies of Roman Catholic families. The eſtabliſhment at preſent conſiſts of the ſuperior and twenty aſſiſtants, who wear the dreſs and conform to the regulations of nuns in Catholic countries, with twelve lay-ſiſters, and a chaplain. From ſixty to ſeventy boarders are uſually accommodated in the inſtitution.

The Guild-hall and the Manſion-houſe are ſituated near the river Ouſe, in the north-weſt quarter of the city. The hall, built in 1446, is a noble room, ninety-ſix feet long, forty-five broad, and twenty-nine feet ſix inches high. In it are held the law-courts and the courts of municipal juſtice. The Manſion-houſe was erected in 1725, and contains every neceſſary accommodation for the lord-mayor. In the ſame quarter of the city are the aſſembly-rooms, the theatre, the ſubſcription library, the principal hotels, &c. As a fortreſs, York caſtle has long ceaſed to be of importance: it is now occupied by ſeveral ſtructures. That on the W. ſide of the area is the county-hall, rebuilt in 1777, in which the aſſizes are held, and other county buſineſs is tranſacted. The centre building is the priſon for debtors and criminals: the third building on the E. contains the record-office, and various apartments neceſſary for the tranſaction of the buſineſs of the county. Of all theſe buildings it is but juſtice to ſay, that in their conſtruction external elegance and taſte have been properly combined with a due attention to their ſeveral deſtinations. The arrangement and management of the priſons have been frequently the ſubject of commendation. The new city-gaol, an extenſive ſtone ſtructure near the Old Baile, on the weſt ſide of the river Ouſe, and the houſe of correction, are alſo deſerving of attention.

The charitable eſtabliſhments for the poor and the ſick in York are very numerous, and well conducted. Among theſe, the county-hoſpital and the city-diſpenſary are highly commendable. Schools for the education of youth of both ſexes are not wanting in York. In 1647 a petition was preſented to the crown from the inhabitants of the city and the county, and from other parts of the north, for the eſtabliſhment of an univerſity in York: but the unſettled ſtate of the affairs of the kingdom then prevented due conſideration of the requeſt; nor has it ſince been renewed; although, for various important reaſons, York ſeems peculiarly adapted for a place of literary and ſcientific retirement and ſtudy. A ſeminary or college for the education of miniſters and lay-gentlemen among Proteſtant diſſenters, which formerly ſubſiſted at Mancheſter under the ſucceſſive care of the Rev. Dr. Barnes and Mr. Walker, and was liberally ſupported by voluntary ſubſcription, was on the death of the latter profeſſor removed to York, where it is conducted with great reputation by the Rev. Meſſrs. Wellbeloved, Kenrick, and Turner.

Bridge.—Communication between the original city of York, and the ſuburb ſtyled Micklegate-bar on the ſouth-weſt ſide of the river Ouſe, is maintained by a handſome ſtone bridge, which has lately been erected from the deſigns and under the direction of Peter Atkinſon, eſq. of York. In 1154 the bridge was wood: but in 1268 it was probably of ſtone; for then was founded on it St. William's chapel, in atonement for the death of ſeveral perſons on the ſpot in a fray with the people of the town. In 1564 a flood following an intenſe froſt ſwept away two arches of the bridge, with the houſes built on them.

On the ſouth-eaſt ſide of York, going out by Walmgate-bar, near the village of Heſlington, is an eſtabliſhment for the reception and relief of perſons diſordered in mind; which has, for ſome time, been the ſubject of general approbation. This was called the Retreat, founded by the reſpectable Society of Friends, and originally intended for members of their claſs alone. The firſt idea of this admirable inſtitution was ſuggeſted in 1791, by the unfortunate death of one of their ſociety, at a common receptacle for the inſane. In 1794 land was purchaſed, and the building commenced, on a commanding eminence. The general arrangement, management, and ſyſtem of treatment of the unfortunate patients, have been imitated, as the moſt perfect of their kind, in various parts of the kingdom and America. See an "Account of the Retreat," 8vo.—Eboracum, or Hiſtory and Antiquities of York, by Francis Drake, F.R.S. folio, 1736. Deſcription and Hiſtory of the City and Cathedral of York, 12mo. 3d ed. 1790. Deſcription of York, 12mo. 1816. A Guide to the Cathedral of York, 12mo. 1815, is a rational and judicious vade mecum.

York, *Cuſtom of.* See Rationabili *parte bonorum.*

York, in *Geography*, a county of the United States, in the diſtrict of Maine, containing 23 towns, and 41,877 inhabitants.

York, a diſtrict of South Carolina, containing 10,032 inhabitants, including 3164 ſlaves.

York, a county of Pennſylvania, ſouth-weſt of Suſquehanna. It contains 22 townſhips, and 31,958 inhabitants.

York *Borough*, a town of Pennſylvania, in York county, containing 2847 inhabitants.

York, a townſhip of Pennſylvania, in York county, containing 1649 inhabitants.

York, a county of Virginia, with 5187 inhabitants, including 2931 ſlaves.

York, a town of United America, in the diſtrict of Maine, and county of York, containing 3046 inhabitants; 50 miles N.N.E. of Boſton. N. lat. 43° 7′. W. long. 70° 40′.

York, a townſhip of Ohio, in the county of Belmont, containing 1349 inhabitants.

York, the capital of Upper Canada, ſituated on the lake Ontario. It is likely to become a city of great importance, as it poſſeſſes great facilities for commerce and navigation. It lies in about 43° 35′ N. lat., within an excellent harbour of the ſame name, made by a long peninſula, which embraces a baſon of water ſufficiently large for containing a conſiderable fleet. Veſſels may ride ſafely at its entrance during the winter. On the extremity of the peninſula, which is called Gibraltar Point, are erected commodious block-houſes and ſtores commanding the entrance into the harbour. On the main land oppoſite to the Point is the garriſon, ſituated on a point made by the harbour and a ſmall rivulet, which being improved by ſluices, affords an eaſy acceſs for boats to go up to the ſtores. The barracks being built upon a knoll are well ſituated for health, and command a delightful proſpect of the lake to the weſt, and the harbour to the eaſt. The government-houſe has a ſtriking appearance from the lake, and is well calculated for the reſidence of a governor. Its ſituation is commanding, about two miles above the garriſon, being the head of the harbour. The town is increaſing; the ſociety of the place is reſpectable. The public buildings are deſigned for the legiſlative council, houſe of aſſembly, and courts of law. The gaol is in a healthy ſituation. The town is furniſhed with every convenience, and the market is well ſupplied with good beef, mutton, veniſon, fiſh, &c. The wheat ſupply is from Montreal: the land around York is in general ſandy; but bears good crops of every deſcription. The plan of the town is one mile and a half in length: the ſtreets are tolerably uniform; and the river Don empties itſelf into the harbour, a little above the town, running through a marſh, which, when drained, will afford excellent meadows. The country round this place is capable of great improvement, and renders it fit for a ſeat of government. See Boulton's Sketch of Upper Canada, ch. viii.

YORK, a river of Virginia, formed by the union of the North Anna and South Anna, which runs into the Cheſapeak, near its mouth.—Alſo, a river of America, in the diſtrict of Maine, which runs into the ſea, a little below York.

YORK *Bay*, a bay on the ſouth-weſt coaſt of the iſland of St. Vincent; 2 miles N.W. of Kingſtown bay.—Alſo, a bay formed by the union of the Eaſt and Hudſon's rivers below New York. It communicates with the ſea by a channel, called the Narrows.

YORK *Fort*, a fortreſs at the mouth of Nelſon's river, in Hudſon's bay. N. lat. 57° 2′. W. long. 92° 46′.

YORK *Iſland*, a ſmall iſland, near the eaſt coaſt of the iſland of Antigua; about half a mile N.N.E. of Frier's Head.—Alſo, one of the Gallapagos iſlands, in the Pacific ocean.

YORK *Iſlands*, three ſmall iſlands, in the South Pacific ocean, near York Cape, on the north coaſt of New Holland.

YORK *Minſter*, a lofty promontory on the coaſt of Terra del Fuego, ſo called by captain Cook in 1774. It forms the north-weſt point of entrance into Chriſtmas ſound. S. lat. 55° 26′. W. long. 70° 25′.

YORK *Point*, a cape in the ſtraits of Magellan. N. lat. 53° 39′. W. long. 73° 32′.

YORK *River*, a river of America, in the province of Maine, which runs into the Atlantic, N. lat. 43° 7′. W. long. 70° 40′.

YORK *Road*, a road for ſhips in the ſtraits of Magellan, near the coaſt of Patagonia. The only danger of ſailing into the bay, that is formed by two points in this road, ariſes from a reef that runs off to about a cable's length from the weſtern point, which once known may be eaſily avoided. To anchor in this bay, it is ſafeſt to bring York Point E.S.E.; Bachelor's river N. by W. half W.; the weſt point of the bay or reef N.W. half W.; and St. Jerom's ſound W.N.W. at the diſtance of half a mile from the ſhore. There is good watering about a mile up Bachelor's river, and good wooding all round the bay, where the landing alſo is, in all parts, very good. There is plenty of celery, cranberries, muſcles, and limpets, many wild-fowl, and ſome fiſh, but not enough to ſupply a ſhip's company with a freſh meal. S. lat. 53° 39′. W. long. 73° 52′.

YORK, *New*, one of the United States of America, ſituated, according to the ſtatement of Meliſh, between 40° 33′ and 45° N. lat., and 3° 43′ E. and 2° 43′ W. long. from Waſhington; extending from N. to S. 198 miles, and from E. to W. 256; and comprehending an area of 46,000 ſquare miles, or 28,440,000 acres. This ſtate is bounded on the N. by lake Ontario and Canada; on the S. by Pennſylvania, New Jerſey, and the Atlantic ocean; on the E. by Vermont, Maſſachuſetts, and Connecticut; and on the W. by Upper Canada, lake Erie, Pennſylvania, and New Jerſey. This territory, according to Spafford's "Gazetteer of New York," compriſes an area of 46,085½ ſquare miles, equal to 29,494,720 acres; but this computation includes all the inland rivers and lakes, one half of lake Champlain, and the St. Lawrence; excluding only all the waters below New York iſland, and that part of the lakes Ontario and Erie which belong to this ſtate. This ſtatement gives 20.8 perſons to a ſquare mile. New York is at preſent divided into 45 counties, and 452 townſhips, including four incorporated cities; *viz.* New York, Albany, Hudſon, and Schenectady, as exhibited in the following

Topographical Table.

Counties.	Townſhips.	Population.	Chief Towns.	
Albany	8	34,661	Albany	9,356
Alleghany	5	1,942	Angelica tp.	439
Broome	6	8,130	Chenango tp.	225
Cattaraugus*	1		Olean tp.	458
Cayuga	10	29,843	Auburn tp.	500
Chatauque*	2		Chatauque tp.	1,039
Chenango	14	21,704	Norwich	225
Clinton	5	8,002	Plattſburg tp.	3,112
Columbia	11	32,390	Hudſon	4,048
Cortlandt	6	8,869	Homer	350
Delaware	14	20,303	Delhi tp.	2,396
Ducheſs	16	51,363	Poughkeepſie	1,800
Eſſex	11	9,477	Elizabethtown tp.	1,362
Franklin	4	2,617	Ezraville	767
Geneſee	10	12,588	Batavia	200
Greene	7	19,536	Catſkill	1,000
Herkimer	10	22,046	Herkimer tp.	475
Jefferſon	12	15,140	Watertown	250
King's	6	8,303	Flatbuſh tp.	1,159
Lewis	7	6,433	Martinſburg	150
Madiſon	11	25,144	Cazenovia	500
Montgomery	15	41,214	Johnſtown	605
New York	1	96,373	New York	96,373
Niagara	4	8,971	Buffalo	500
Putnam.*				
Oneida	26	33,792	Utica	1,500
Onondaga	13	25,987	Onondaga	525
Ontario	24	42,032	Canandaigua	685
Orange	11	34,374	Newburgh	2,000
Otſego	21	38,802	Otſego	550
Queen's	6	19,336	Northempſtead tp.	2,750
Renſſellaer	13	36,309	Troy	2,640
Richmond	4	5,347	Richmond	100
Rockland	4	7,758	Clarkſtown tp.	1,996
Saratoga	14	33,147	Saratoga	
Schenectady	4	10,201	Schenectady	2,000
Schoharie	8	18,945	Schoharie	125
Seneca	7	16,609	Ovid tp.	4,535
Steuben	9	7,246	Bath	250
St. Lawrence	12	7,885	Ogdenſburg	350
Carry up	372	822,792		

Counties.	Townſhips.	Population.	Chief Towns.	
Brought up	372	822,792		
Suffolk	9	21,113	Riverhead tp.	1,711
Sullivan	7	6,108	Thomſon tp.	1,300
Tioga	9	7,899	Spencer tp.	3,128
Ulſter	13	26,576	Kingſton	750
Warren.*				
Waſhington	21	44,289	Salem	280
Weſt Cheſter	21	30,272	Bedford tp.	2,374
	452	959,049		

* Laid out ſince the cenſus was taken.

Putnam county was erected in June 1812, from the S. end of Ducheſs county, and is formed of the towns of Philips or Philipſtown, Carmel, Frederick, Patterſon, and South-Eaſt. Courts are held in the Baptiſt meeting-houſe in the town of Carmel, and this county ſends one member to the houſe of aſſembly. The towns are, Carmel the chief, including, in 1810, 2020 inhabitants, the electors being 153; Frederick, with 1811 inhabitants, and 98 electors; Patterſon, with a population of 1446, and 110 electors; Philips, with 3129 perſons, and 165 electors; and South-Eaſt, in which the population is 1887, and the number of electors 161.

Warren county was erected from the N.W. extremity of Waſhington, March 12, 1813. It compriſes the towns of Bolton, Caldwell, Cheſter, Hague, Johnſburgh, Luzerne, Queenſbury, and Thurman, the laſt of which is divided into two towns, called Athol and Warrenburgh. The chief town is Caldwell, with a population of 560 perſons, and 60 electors; Athol has 443 inhabitants, and its electors are 20; Bolton has 726, and 30 electors; Cheſter 937, and 120 electors; Hague 398, and 21 electors; Johnſburgh 651, and 82 electors; Luzerne 1015, and 85 electors; Queenſbury 1948, and 197 electors; and Warrenburgh 887, with 41 electors.

The face of this ſtate exhibits a great variety. To the S.E. its ſurface is agreeably uneven; in the middle, mountainous; to the N.W. undulating; flat towards the lakes; and hilly towards the ſouthern extremity.

Of the *mountains* in this ſtate, the chain called Katſkill, or Catſkill, is the largeſt and moſt extenſive, and this preſents a bifurcation of the Apallachian ridge, which at the Highlands occupy a tract of about 16 miles in width, lying obliquely acroſs the Hudſon, and penetrated by that river. Theſe ridges preſerving their general direction ſtretch acroſs Ducheſs county, the eaſtern parts of Columbia and Renſſelaer counties, and exhibit ſome lofty ſummits. The Tauconick mountains are lofty and very rugged, and Hooſack and Williamſtown are mountains which deſerve the appellation. But the Catſberg or Catſkill mountains preſent ſome ſummits that are higher than any others of the Apallachian chain, if we except the White-hills in New Hampſhire. At the Highlands, the ſummit of Butter-hill is 1432 feet above the level of the river; that called the Crow's-neſt 1330; Bell-hill 1391. About 60 miles N., the Round-top is elevated 3655 feet above the level of the river; the High-peak 3487. Theſe ſummits are in Windham, Greene county, about 20 miles W. of Hudſon, and in full view from that city. A turnpike-road which croſſes this range of mountains near thoſe ſummits, winds up till it reaches the aſtoniſhing altitude of 2274 feet. Upon this ſpot the view is inexpreſſibly grand. The general altitude of the Catſkill mountains may be eſtimated at about 2000 to 3000 feet acroſs Greene county. From Greene they paſs into Schoharie county with ridges leſs rugged; and towards the ſouthern part, their continuity is leſs diſtinctly defined. Until after forming the falls of the Mohawk, this range traverſes Herkimer county, forming a rugged tract, and diminiſhing in altitude till they croſs the St. Lawrence into Canada, at the Thouſand iſlands. Theſe mountains have obtained from the early Dutch inhabitants the name of Helderberg, or clear mountain, preſenting, inſtead of lofty ſummits of granitic and ſchiſtic mountains, an elevated plain of conſiderable and very uniform altitudes. Around lake George, and to the W. of lake Champlain, we find the Peruvian mountains, which furniſh the northern ſources of the Hudſon, and form the height of land that ſeparates the waters of the Hudſon and St. Lawrence. The higheſt of theſe is probably that called White-face, which commands a view of Montreal, at the diſtance of near 80 miles. The altitude of this ſummit is little ſhort of 3000 feet from the level of lake Champlain. Theſe mountains obtained the name of Peru from the French inhabitants, in alluſion to their ſuppoſed mineral treaſures. With ſome few exceptions, the whole country S. of the Highlands is underlaid by rocks of granite, with ſuperſtrata of other rocks, which appear in the elevated tracts. There are ſome tracts of lime-ſtone and ſome of ſand-ſtone, but theſe are ſo inconſiderable in extent as to furniſh no objection againſt denominating this the granitic region. Some ranges of hills on the W. of the Hudſon, compoſed of ſand-ſtone, are underlaid by granite; and the Catſkill mountains are a maſs of ſand-ſtone, ſimilar to the Alleghany mountains in Pennſylvania, intermixed with lime; the Helderberg, with ſome particles of ſand-ſtone, occaſionally interſperſed. N. and E. of the Highlands the rocks are chiefly ſchiſtic that form the ſubſtratum, while calcareous ridges of great extent occupy the ſurface. The hills on the eaſtern border of Columbia and Renſſellaer counties are formed chiefly of fragile ſchiſtus, intermixed with quartz, and occaſional ſuperſtrata of lime-ſtone. On the eaſtern declivities of theſe hills lime-ſtone predominates, forming the marble quarries of Stockbridge, Laneſborough, &c. in Maſſachuſetts. The northweſtern continuation of the Catſberg or Catſkill preſents a kind of calcareous granite, in which the abſence of the felſpar is ſupplied by primitive lime-ſtone. The Peruvian mountains are principally granitic, though ridges of lime-ſtone, ſlate, flint, and ſand-ſtone, appear in conglomerate maſſes, and theſe are moſt abundant in mineral treaſures. The whole level county of the ſmall weſtern lakes is calcareous. The Tauconick hills that border the ſouth-eaſtern part of Columbia county are granitic.

The *rivers* of this ſtate are numerous and extenſive; and ſo are its *lakes* and *creeks*. The Hudſon and the Mohawk are the moſt conſiderable rivers, to which we may add the Sacandaga, a branch of the Hudſon and Scroon rivers, connected with Scroon and Brant lakes. The creeks of the Hudſon and Mohawk are numerous. The Suſquehanna riſes in this ſtate; and its weſtern branch, the Tioga, is a river of ſome note, and claims diſtinction from ſeveral creeks belonging to the former river. The Delaware, which receives ſeveral rivers and creeks, forms a part of the weſtern boundary of New York; and the Alleghany, a principal branch of the Ohio, has its origin in this ſtate, and its creeks, large and ſmall, are too numerous for our recital. The Chatauqua lake diſcharges itſelf into Connewongo creek. The Cataraugus and Buffalo creeks run into lake Erie; Tonewanda and Ellicott's creeks into Niagara river, forming a part of the weſtern boundary of the ſtate. Lake Ontario, half of which is in this ſtate, receives the Geneſee, the Oſwego, and Black rivers, which convey into this lake the waters of ſeveral other rivers and creeks. The St. Lawrence waſhes more than 100 miles of the north-weſtern boundary, and it receives a number of rivers and creeks. Half of lake Champlain alſo belongs to this ſtate, and it is ſupplied by ſeveral ſtreams. Eaſt river alſo belongs to this ſtate.

The *climate* and *ſeaſons* muſt in ſuch an extent of country be very various, ſo that it is difficult to accommodate any general obſervation to the whole ſtate. In the eaſtern territory, or wholly S. of the Highlands, where the prevailing winds are ſoutherly through the warm ſeaſons, the weather is very variable; and the changes of temperature, governed by the winds, frequent and ſudden. In the northern part of the ſtate, the weather is leſs variable; but the winters are long and ſevere, with a clear and ſettled ſky. This region, extending from the ſouthern extremity of lake George, and weſtward to near lake Ontario and the St. Lawrence, may be diſtinguiſhed as the region of the "northern climate." That of the "weſtern climate" compriſes the great weſtern territory of this ſtate, extending from the Catſberg or Catſkill mountains to the great lake. Here ſouth-weſterly winds prevail in a conſiderable proportion throughout the year. A gentle current of air, that may be traced from the gulf of Mexico, and reaching to a diſtance of more than 1000 miles, prevails almoſt conſtantly from the S.W.; and northerly and eaſterly winds are almoſt wholly unknown. In this diſtrict, the average temperatures are about three degrees higher than in ſimilar latitudes in the eaſtern climate. Such is the general character of the weſtern climate of the United States, and the diſtinction is ſaid to terminate, or nearly ſo, with the region about lake Ontario. The weſtern climate of this ſtate is therefore warmer than the eaſtern by about 3° of Fahrenheit; and this is attributed to the greater prevalence of warmer currents of air from the S.W. In the region about Albany, the rigours of winter commence about the 20th of December, and end with February, or about the 10th of March, when the ice uſually breaks up in the Hudſon. From the middle of March to the end of April, the weather is very variable; the changes of temperature great and ſudden, though it be generally rainy, with long-continued ſtorms of eaſterly winds. May is alſo a variable month; June aſſumes a ſummer character; in July, ſoutherly winds are diminiſhed, and drought prevails; Auguſt is more ſhowery, and more uniformly temperate, than any month of the year, and affording health and plenty. The former part of September reſembles Auguſt, and terminating with mild and pleaſant weather. October is an agreeable month; early froſts occur about the 26th of September, though corn ripens till the middle of October; and from the 15th to the 25th of this month the foliage of the foreſt-trees is deſtroyed, and early falls of ſnow commence about this time. December is uſually cold and ſhowery, and ſtorms from the N. and E. are frequent, and of long continuance. It is obſerved, that a general modification of temperature, favourable to agricultural intereſts, has occurred within the laſt 10 or 15 years.

This ſtate affords facilities for *inland navigation* ſuperior to any other, combining both the objects and the means of intercourſe. The connections of the rivers Hudſon, Mohawk, Oſwego, Delaware, Ohio, Suſquehanna, Alleghany, Miſſiſſippi, and St. Lawrence, by creeks and ſtreams, and canals with the lakes Oneida, Erie, George, Champlain, Ontario, &c. are peculiarly favourable to internal navigation and commerce. The canal at Rome, which connects the waters of the Mohawk and lake Ontario, and which was completed in 1797, deſerves particular mention; and it ſhould be noticed to the honour of this ſtate, that the weſtern inland lock navigation company is formed for the direct purpoſe of improving the navigation of the weſtern waters; and that the project of a great weſtern canal for connecting lake Erie and the Hudſon by a boat navigation is a very important object.

The ſtate of New York has few *bays*, excluſively of thoſe of Long iſland, which are very numerous. It has many iſlands, among which Naſſau, or Long iſland, claims the firſt place, as it affords more than 100 miles of ſea-coaſt, many excellent harbours, and many advantages for commerce. Its bays are both numerous and large, and it has immediately dependent upon it many ſubordinate iſlands. The iſlands in the bay of New York, as well as that upon which New York itſelf is ſituated, and Staten iſland, and thoſe belonging to the Hudſon, Mohawk, Niagara, and St. Lawrence rivers, to lake Ontario, Champlain, George, &c. might be enumerated if our limits would allow. In this connection we might alſo mention a variety of bridges that ſerve to facilitate communication and intercourſe between the various parts of this ſtate.

The *ſoil* and *agriculture* of New York deſerve our particular attention. The ſoil is of various characters in different parts of the ſtate. In ſome diſtricts it is deep and warm, and well adapted to grain or graſs; in other parts it is of a looſer texture, and is found in various proportions by the admixture of vegetable remains; forming a thick vegetable mould, with a ſmall proportion of earth, and called by the farmers in that country "black muck." This is ſoon exhauſted, and as it reſts on a ſubſtratum, called "hard-pan" by the farmers, that is cold and ſtony, it is incapable of being reſtored or reclaimed by any manure or art of huſbandry. The weſt end of Long iſland is rich, fertile, and highly cultivated; but the eaſtern part has a large proportion of ſandy barren plains. Below the Highlands, the ſoil is principally dry and warm, having a gravelly or ſandy ſubſtratum, or granitic rock. North of the Highlands to the Mohawk, the ſoil is dry and warm, being either a gravelly or ſandy loam in general; and both thoſe which we have mentioned are ſtated to be a medium ſoil. But on the eaſtern border of the ſtate, the rocks are principally ſchiſtic, and a ſchiſtic gravel forms moſt of the ſoil, which is warm and productive, though not deep. The alluvial flats of Columbia and ſome part of Renſſelaer counties are very extenſive and rich; and the valleys, preſenting a warm gravelly ſoil, are alſo extenſive, and furniſh much good medium ſoil. Weſt of Albany are extenſive ſandy plains, interſperſed with marſhes, and rather cold and wet till we approach the Helderberg hills. This plain is generally underlaid by clay; but the Helderberg hills are calcareous, and preſent a better ſoil, though broken and much diverſified.

The agricultural products of this diviſion of the whole territory of the ſtate conſiſts of all the various productions of this country. The weſt part of Long iſland, and the counties of Weſt Cheſter and Ducheſs, are well cultivated. The latter is one of the beſt farming counties in the ſtate. The introduction of gypſum as a manure has marked a new era in the agriculture and rural economy of this region. The weſt ſide of the Hudſon is conſiderably behind the eaſtern. The ſouthern part of Waſhington county has a warm gravelly medium ſoil, and abundant crops. Saratoga has much good but more waſte land. Its general character is more ſandy; and, like that of Albany, reſts on clay. Around lake Champlain there is a large extent of clayey ſoil, extending to the hills that ſkirt the Peru mountains. With the exception of the alluvial flats, which are extenſive and rich, the ſoil of the country of the Mohawk may be generally denominated a ſtiff loam, till we go weſt of the Catſkill hills at the Little Falls. Here it aſſumes a new character. The ſoil of the mountainous tract of the weſtern region is much diverſified: the hills are rocky; the valleys deep and narrow, or ſpacious and rich. This tract furniſhes conſiderable black muck, or deep vegetable mould, in the valleys. A very large proportion of the ſoil of this country may be denominated a rich mould, variouſly intermixed with earth of different kinds; and much of the ſoil is well adapted for grain and graſs. No part of the ſtate is more rapidly advancing in agricultural improvements than this weſtern region. The ſoil of the level country eaſt of lake Ontario, and along the St. Lawrence, is a warm ſandy loam, with a large proportion of the firſt rate of medium for agriculture.

The rotation of crops lately introduced into this country marks a new era in its agriculture. We ſhall cloſe this detail with remarking, that the exertions of the agricultural ſociety of this ſtate have been very beneficial, though its publications need more general circulation.

The *botanical productions* of this ſtate are numerous and various. Its foreſt-trees are luxuriant. The region of the weſtern climate is principally wooded with deciduous trees, and of the loftieſt growth. Thoſe of the eaſtern or Atlantic climate are generally deciduous, but leſs lofty. The moſt common foreſt-trees are, oak, maple, beech, walnut, butternut, cheſnut, birch, tilia or baſs-wood, poplar, cherry, ſycamore or button-wood, aſh, elm, ſaſſafras, hornbeam, ſumach, elder, pine, ſpruce, larch, fir, hemlock, cedar, and in ſome parts, locuſt laurel, mulberry, black-walnut, cucumber-tree, crab-apple, and common thorn, of many varieties. The ſtate of New York is eſſentially agricultural. Wheat is the firſt object of the farmers; and they alſo cultivate rye, maize, oats, flax, hemp, peas, beans, &c. and moſt of the domeſtic graſſes are cultivated with ſucceſs. Fruits are abundant and various; ſuch as apples, affording cyder of the beſt quality, peaches, pears, plums, cherries, &c. The garden-fruits are as various as thoſe of any ſtate in the Union.

The *domeſtic zoology* of the ſtate preſents the horſe, the cow kind, the merino and other kinds of ſheep, which furniſh good wool, and ſwine. The wild animals, not to mention the mammoth, the mooſe, and the biſon, now extinct in this ſtate, are, the deer, bear, wolf, and fox; and more rarely, the otter, the wolverene, the wild-cat, racoon, martin, the weaſel, hare and rabbit, ſquirrel and mouſe, &c. The lakes and rivers ſupply abundance of fiſh, ſuch as the ſalmon-trout, trout, ſturgeon, chad, herring, pike, and many others. The oyſters are in high repute. The number of birds ſtationary and migrating is very great. Serpents are found in ſmall numbers, and the rattle-ſnake does not frequently occur; other ſnakes are numerous. It is needleſs to mention the inſects, of which the number and variety are conſiderable.

The *mineralogy* comprehends iron-ore, ſalt, gypſum, limeſtone, marble, ſlate, native brimſtone, coal, ores of lead, copper, zinc, tin, aſbeſtos, mill-ſtones, marle and peat, clays, alum, ſwine-ſtone, &c. Calcareous petrifactions are very common in the calcareous regions. Siliceous ſand for the manufacture of glaſs, plumbago, a variety of ochres, mica, iſinglaſs, magneſian ſtones, amianthus, black flints for muſkets, molybdena, iron and copper pyrites, emery, magnetic ores of iron, ores of zinc, ores containing ſilver and antimony, and rock cryſtals, are ſeverally found in various parts of this ſtate. Its mineral waters are held in high eſtimation.

The *conſtitution* of this ſtate was adopted by a convention of delegates April 20, 1777, and reviſed in 1801; and its character is republican. The conſtitution of the United States was acceded to in this ſtate in 1788. The ſupreme executive power is veſted in a governor and lieutenant-governor, elected every three years by free-holders poſſeſſing a clear eſtate of 250 dollars; as are the ſenators alſo. The ſupreme legiſlative powers are veſted in a ſenate and houſe of aſſembly, which meet at leaſt once in each year. The ſenators are elected for four years; the members, or repreſentatives, as they are called, who compoſe the houſe of aſſembly, are elected annually. The number of ſenators is limited to thirty-two; that of members is not to exceed 150. For the convenience of electing ſenators, the ſtate is divided into four great diſtricts: the ſouthern, which elects five ſenators, and comprehends ſix counties; the middle, eight; the eaſtern, nine; and the weſtern, twenty-two. The general election is held annually. A cenſus of the electors is taken every ſeven years, and the repreſentation apportioned according to the numbers in the reſpective counties, increaſing the number of repreſentatives each year by the addition of two, until they amount to 150. The ſenators are divided into four claſſes, elected at different periods, ſo that ſome new ſenators are choſen annually. The governor is commander-in-chief of the militia, and admiral of the navy, of this ſtate: he has power to convene the legiſlature; to grant pardons and reprieves for crimes, except treaſon and murder; and can ſuſpend the execution of ſentences in thoſe caſes till the ſitting of the legiſlature, which alone has a right to pardon. A council of reviſion conſiſts of the governor, the chancellor, the judges of the ſupreme court, or any two of them, whoſe duty it is to reviſe all bills about to be paſſed into laws; and if they object in writing to a bill, a re-conſideration takes place, and the ſame muſt be amended or approved by two-thirds of both houſes before it can then become a law: and this is the negative of the executive power. If the council neglect to return a bill, in ten days it becomes a law, unleſs the legiſlature has previouſly adjourned. A council of appointment conſiſts of the governor, and a ſenator from each of the four great diſtricts, choſen annually by the legiſlature. In this council, the governor preſides, with only a caſting vote. The right to nominate is veſted concurrently in the governor and the other members of the council. The liſt of officers annually appointed by this council is enormous, and conſiſts of moſt of the ſubordinate officers of the ſtate.

The chancellor holds courts of equity, and appoints the officers of his court. The ſupreme court is a court of law. It conſiſts of a chief-juſtice and four aſſociate judges. County courts conſiſt of a firſt judge and a number of aſſociate juſtices. Circuit courts are held in the reſpective counties by a judge or juſtice of the ſupreme court, and the judge and juſtices of the county. Juſtices of the peace have cognizance of trials for the recovery of debts to the value of twenty-five dollars; and in New York to the value of fifty dollars. The right of habeas corpus is preſerved, and the trial by jury.

The great officers of ſtate are, the governor, lieutenant-governor, a ſecretary of ſtate, comptroller, treaſurer, ſurveyor-general, attorney-general, council of appointment, commiſſioners of the land-office, the regents of the univerſity, &c. for the department of ſtate.

Judiciary officers of ſtate, a chancellor, five judges of the ſupreme court, and a judge of probates.

For the general convenience and the better adminiſtration of juſtice, the whole territory of this ſtate is ſubdivided into counties, and theſe into towns.

From the report of the comptroller to the legiſlature of this ſtate in 1811, the productive funds of this ſtate, inveſted

veſted in ſtock of banks, United States ſtock, &c. ſecurities on lands, &c. &c. amounted to 4,191,803 dollars 25 cents, producing an annual revenue of 278,489 doll. 96 cents. To this amount of funds ſhould be added the ſchool fund, amounting to 483,326 doll. 29 cents, producing an annual income of 36,427 doll. 64 cents. The ſtate alſo owns about 1,000,000 acres of land, which, valued at two dollars *per acre*, amount to 6,675,129 doll. 54 cents. The expences of government for the year 1811 amounted to 268,366 doll. 22 cents. This eſtimate draws an exceſs of revenue amounting to 10,123 doll. 74 cents, and including the balance in the treaſury, Feb. 16, 1811, of ready funds, to the amount of 34,129 doll. 86 cents.

The *militia* of this ſtate conſiſts of every able-bodied male inhabitant between eighteen and forty-five years of age; and the laws have made an honourable exception in favour of thoſe whoſe religious opinions are averſe to war. Agreeably to the annual return of the adjutant-general for 1809, the enrolled infantry amounted to 95,324; the artillery, 3102; the cavalry, 3642; giving a total of 102,068.

The conſtitution provides for the free exerciſe of religion in this ſtate in the following terms: "And whereas we are required by the benevolent principles of rational liberty not only to expel civil tyranny, but alſo to guard againſt that ſpiritual oppreſſion and intolerance, wherewith the bigotry and ambition of weak and wicked prieſts and princes have ſcourged mankind: This convention doth further, in the name and by the authority of the good people of this ſtate, ordain, determine, and declare, that the free exerciſe and enjoyment of religious profeſſion and worſhip, without diſcrimination or preference, ſhall for ever hereafter be allowed within this ſtate to all mankind. Provided, that the liberty of conſcience hereby granted ſhall not be ſo conſtrued as to excuſe acts of licentiouſneſs, or juſtify practices inconſiſtent with the peace or ſafety of this ſtate. That no miniſter of the goſpel, or prieſt of any denomination, ſhall ever hold any civil or military office or place within this ſtate." In April, 1804, a law was paſſed authorizing all religious denominations to appoint truſtees, for the purpoſe of ſuperintending the temporal concerns of their reſpective congregations. And theſe truſtees become a body corporate by that general act, capable of all legal tranſactions in behalf of the congregation.

All denominations, therefore, are left at liberty to ſupport their own miniſtry, and maintain the order of their worſhip, in ſuch way as is moſt agreeable; and every congregation may deſignate from three to nine of its members as truſtees, who are, with little trouble, inveſted with corporate powers in behalf of the whole, and authorized to hold eſtates producing an annual revenue of 3000 dollars. This free toleration has not produced more ſects in this than in other ſtates leſs tolerant of religious opinions. There are many ſects however; and in the enumeration of thoſe, no regard is paid to comparative numbers. There are, Engliſh Preſbyterians, Dutch Reformed, Congregationaliſts, Epiſcopalians, Quakers, Baptiſts, Methodiſts, German Lutherans, Moravians, Roman Catholics, Shakers, Jews, and a few of the Univerſal Friends, or the followers of Jemima Wilkinſon, Scotch Cameronians, Anabaptiſts; and Chriſtian charity would include ſome Indians, beſide thoſe who profeſs Chriſtianity. But it is worthy of remark, that many of the above ſectarian diſtinctions exiſt merely in name, while their tenets differ leſs, perhaps, than thoſe of the ſame religious ſociety, in the individual opinions.

The *manners* and *cuſtoms* of this ſtate have undergone a conſiderable variation during the period that has elapſed from its firſt ſettlement to the preſent day. Among thoſe who planted the colony of New York, and who for many years afterwards ſettled in it, a large proportion conſiſted of Dutch families, who migrated hither from the Dutch Netherlands, and transferred to the ſocieties which they eſtabliſhed here, the rural economy of the population of the Netherlands, of Holland, and of the banks of the Rhine. Soon after their arrival, various parts of this ſtate preſented buildings reſembling thoſe of their native country, and habits of neatneſs, order, induſtry, and frugality, which they had practiſed from their youth. After the conqueſt of the Engliſh in 1664, multitudes flocked hither from various nations of Europe, and produced a conſiderable change in the original and diſcriminating character and cuſtoms of this colony. In 1685 it had a numerous acceſſion of French Proteſtants. In 1710 it was augmented by about one hundred families of poor Palatines from Germany; ſixty or ſeventy of which ſettled Germantown on the eaſt bank of the Hudſon, and ſome at Eſopus, now Kingſton. Other early German emigrants ſettled on the Mohawk, in Orange county, on Long iſland, and in many other parts where their deſcendants are now found. The early Engliſh ſettled principally at New York and in Long iſland. The French, at New Rochelle, in Weſt Cheſter county, and on Staten iſland. The Scotch fixed themſelves, during the more early periods, about Albany, and in Waſhington county. Maſſachuſetts ſupplied alſo the eaſt part of Long iſland with inhabitants, whoſe poſterity form a large ſhare of the preſent population. But the Dutch were the original proprietors and firſt coloniſts, and therefore their poſſeſſions were the greateſt and the moſt valuable: nor did they, or the Germans, next to them in number and importance, altogether abandon their diſcriminating manners and habits. The Revolution, however, produced a material change in this ſtate, and the change, though effected by ſanguinary conflicts, was not unfavourable to its general character. The proſperity that ſucceeded the peace widely diffuſed a ſpirit of enterpriſe and of emigration; and was followed by a ſurpriſing increaſe of population and wealth. Hence aroſe thoſe various traits of national character, and thoſe diverſified habits, manners, and cuſtoms, which have diſtinguiſhed this ſtate. It is obſerved, that the new character imparted by the influx of emigrants is beneficial to the ſtate; more eſpecially as the New England people have introduced their improved agriculture, their ſpirit of enterpriſe, their ingenuity in the arts, and their ſocial habits. In this ſtate, it is ſaid, there are about 100,000 freeholders; and freehold eſtates are known to produce for their proprietors from 30,000 down to 50 dollars *per annum;* and this fact is alleged as forming a peculiar feature of the civil habits, manners, and cuſtoms of the population of this ſtate.

The Engliſh *language* is chiefly prevalent in this ſtate; though the Dutch and German are in uſe among people of Dutch and German deſcent: but theſe and other dialects are declining, in conſequence of the intercourſe and influence of a large majority of thoſe who ſpeak Engliſh. Some few inſtances, however, occur, in which public worſhip is performed in the Dutch, German, and Welſh dialects.

The taſte for *literature* and *ſcience* is gradually increaſing, and is promoted by a variety of publications; and by the progreſſive improvement of ſchool education, for which a liberal fund is provided, which has been already mentioned. We are informed by the writer of communications, of which we avail ourſelves in the compilation of this article, that there are about a hundred printing eſtabliſhments in this ſtate, and ſixty-nine gazettes, beſides a very conſiderable number of other public journals, which contribute to diffuſe various kinds of knowledge. The advancement of literature is promoted by an inſtitution eſtabliſhed in 1787, intitled "Regents of the Univerſity of the State of New York;" being a ſociety of twenty-one gentlemen, poſſeſſing adequate powers derived from the legiſlature for ſuperintending colleges, academies, and ſchools. The univerſity of New York is acquiring diſtinction, and the Columbia college claims high reputation. See COLLEGE.

In this ſtate there are fifteen banking companies, with a very conſiderable ſum of capital ſtock, which is ſaid to have amounted in 1811 to 12,380,000 dollars; and 11 incorporated aſſurance companies. The manufactures of this ſtate, conſiſting of woollen, linen, and cotton cloths, leather, paper, hats, iron, &c. are in an improving condition, and are ſaid to have amounted, in 1811, to 30,000,000 dollars, of which 12,000,000 were produced by houſehold induſtry and enterpriſe. If we judge of the *commerce* of this ſtate by the returns of 1810, it muſt appear to be very conſiderable. The domeſtic exports of that year amounted to 10,928,573 dollars, and the foreign to 6,313,757, making a total of 17,242,330 dollars; and it is ſaid that the port of New York yields about one-fourth of the revenue of the United States, ariſing from commerce. The exports, excluſive of articles from foreign countries, conſiſt principally of beef, tallow, pork, hams, lard, wheat, maize, rye, butter, cheeſe, pot and pearl aſhes, flax-ſeed, peas, beans, horſes, cattle, lumber, flour and meal, bread and biſcuit. The foreign exports are compoſed of important articles. Wheat, which is the national ſtaple, is exported annually to a very great amount; and about 6,000,000 of buſhels on an average, after deducting the ſupplies for the country, are ſent to market from the ſurplus product of this ſtate. The average annual payments into the treaſury of the United States, for duties on imports, tonnage, &c. exceed 4,000,000 of dollars from the diſtrict of New York.

The Societies for promoting Agriculture and the Arts in this ſtate are numerous. It has alſo ſeveral *Medical Societies;* an *Hiſtorical Society;* and alſo an *Academy of Arts* lately eſtabliſhed at New York. *Bible* and *Miſſionary Societies* are inſtituted in New York, Albany, and ſome other counties; and the *Charitable* and *Humane Societies* abound. In the city of New York alone there are about forty benevolent inſtitutions; and there are ſocieties of the ſame kind, as well as thoſe of a literary nature, in Albany, Hudſon, Schenectady, Troy, Poughkeepſie, Kingſton, Newburgh, Utica, and moſt of the large towns.

The *State-Priſon,* or *Penitentiary,* is about two miles from the city-hall, in the city of New York, on the E. bank of the Hudſon: it was built in 1796-7, and together with its buildings and courts compriſes four acres of ground. The immediate government of the priſon is committed to ſeven inſpectors. The convicts are all dreſſed in uniform, the ſexes kept ſeparate, and all are comfortably clothed and fed. Great care is taken of their morals, in the benevolent hope of a reformation.

The *Natural Curioſities* of this ſtate comprehend the cataracts or falls of Niagara, of the Mohawk, of the Hudſon, of Weſt Canada creek, of Black river, Seneca river, Geneſee river, and ſome others of leſs note. It is probable, that the ſouthern and weſtern parts of this ſtate were occupied by a conſiderable proportion of Indians at a remote period. So long ago as the year 1535, the country about the lake Onondaga was conſidered as a favourite ſituation by the wandering tribes: but their condition was not much known till about the year 1635. At that time, the Iroquoiſe, or Five Nations, occupied the countries from lake Erie to Ontario, the St. Lawrence, around lake Champlain, and the whole of that watered by the Hudſon down to the Highlands, were very numerous and warlike. Such was their aſcendancy, that the Indians of the lower country of the Hudſon, on the Connecticut, the Delaware, and Suſquehanna rivers, were in a kind of ſubjection to them. Onondaga was the principal ſettlement, and the ſeat of Indian power. Their combination conſiſted of Onondagas, Oneidas, Mohawks, Cayugas, and Senecas; and it was then ſo powerful as to be able to ſend ſeveral thouſand warriors on diſtant expeditions. The firſt Chriſtian coloniſts, availing themſelves of Indian wars, which they promoted, taught the Indians to deſpiſe and abhor thoſe for their hypocriſy and perfidy whom they had firſt conſidered as beings of a ſuperior order; and thus originated the implacable enmities which not only continued but increaſed when the French and Britiſh became rival nations. About the year 1690, the Engliſh erected a ſtrong fort at Onondaga; and in 1696, the French ſent a conſiderable force againſt the Indian ſettlement, and ſucceeded in deſtroying it. From this time, colonies of each of theſe nations were planted there at different periods. But we forbear, to purſue their hiſtory, and to trace the ſanguinary conflicts that ſerved mutually to irritate and incenſe Indians and profeſſed Chriſtians. At this time, the principal ſettlements of the Indians are at Oneida and Onondaga, on the Geneſee and Alleghany rivers, Buffalo creek, and Tuſcarora, beſides other places which we have not room to enumerate in detail. But we muſt haſten to finiſh this ſketch of the New York ſtate by a brief abſtract of its *hiſtory.*

Soon after the diſcovery of America, towards the commencement of the 16th century, the preſent ſtate of New York was poſſeſſed by the Iroquoiſe, and Canada by the Algonquins, two rival nations of Indians. About the year 1608, the French planted colonies in Canada, which they had laid claim to from having firſt ſailed up the St. Lawrence as far as the preſent Montreal. In 1609 Champlain, the founder, diſcovered lakes Champlain and George, when he defeated a ſmall party of the Iroquoiſe. In 1608 Hudſon, an Engliſhman, diſcovered the Eaſt and North rivers, aſcending up the latter as far as the preſent Albany; and ſoon after he ſold his right to the Dutch. In 1614 the States General of Holland erected a fort at Albany, and granted an excluſive trade on Hudſon river to the Dutch Weſt India company; and in 1629, Wouter van Twiller, the firſt governor, arrived, and took the command of New Netherland, as it was then called. The Engliſh, who ſtill laid claim to this country, objected to the ſale of Hudſon; and in 1663-4, the Engliſh king granted the whole to his brother James, duke of York and Albany, afterwards James II. A ſmall armament ſubdued the colony for England, which then took the name of New York, as did the city alſo. In 1673 New York was conquered by the Dutch, but reſtored in 1673-4. The duke's grant was confirmed, and the colony aſſigned to the Engliſh by treaty; and this right they held till the Revolution. From the ſurrender of the province in 1664 to 1683, the duke of York poſſeſſed full ſovereignty. He appointed the governor and the council, who made rules and orders that were acknowledged as laws. Theſe were called the duke's laws; they were collected and arranged about 1674, and a copy of them is depoſited among the records of the ſtate. Thoſe, it is ſaid, which were made in 1683, and after the duke's acceſſion to the throne of England, when the people were admitted to a participation of the legiſlative power, are defaced or loſt. No regard is now paid to any laws made here antecedently to 1691, when the firſt legiſlative aſſembly was organized. New York was then divided into nine counties, and the houſe conſiſted of ſeventeen delegates. The ſecond legiſlative aſſembly was convened in 1708. We ſhall not minutely trace the ſeries of events that occurred in this ſtate before the year 1776, when, on July 4, the thirteen united colonies were declared independent. This was followed in 1777 by the formation and adoption of the ſtate conſtitution, by a convention of delegates, which was reviſed in 1801. In 1783, New York was evacuated by the Britiſh, and general Waſhington made his public entry Nov. 25. In 1787 the preſent conſtitution of the United States was propoſed by the convention, and acceded to by this ſtate in 1788, by a majority of 30 to 25 votes. General Waſhington was elected preſident of the United States, and Congreſs met at New York for the firſt time under the new federal conſtitution, March 4, 1789. In 1797 Albany was made the capital of the ſtate. In 1801 the legiſlature divided the ſtate into thirty counties, and theſe into towns. An academy of the fine arts was founded in New York. In 1807 a ſteamboat was eſtabliſhed on the Hudſon for paſſengers, between New York and Albany; and in 1811 their number was 5. In 1809-10, the capitol was built at Albany, at an expence of 115,000 dollars, and was firſt uſed by the legiſlature in the ſeſſion of 1809-10.

YORK, *New*, a county in the American ſtate of the ſame name, compriſes the iſland of Manhattan, or York iſland, on the E. ſide, and near the mouth of Hudſon river. It is about 14½ miles long from N. to S., and in breadth varying from half a mile to two miles: its area is about 21¾ ſquare miles, or 13,920 acres. It is ſituated between 40° 42′, and 40° 52′ N. lat., and 0′ and 8′ E. long. from the city of New York. It is bounded on the N. and E. by Haarlem and Eaſt rivers, S. and W. by the Hudſon, or by York bay, and the ſtate of New Jerſey. The limits of the county, town, and city of New York are the ſame; and the only legal ſubdiviſions are the wards, ten in number. The juriſdiction of the city and county of New York extends to low-water mark on the oppoſite ſhores of the waters that ſurround this county. The agriculture of New York county is highly reſpectable, and its horticulture is in the firſt ſtyle of the country. The whole population of the county probably exceeds 100,000; by the cenſus of 1810, it amounted to 96,373. This county ſends 11 members to the houſe of aſſembly.

YORK, *New*, a city of America, the capital of a county of the ſame name, is ſituated on the E. bank, at the confluence of Hudſon and Eaſt rivers, at the ſouth end of New York iſland. N. lat. 40° 42′ 40″. W. long. from Greenwich 74° 0′ 45″. The compact part of this city extends along the Hudſon about two miles, and along Eaſt river, from the S.W. angle of the battery, near four miles: its circuit is about 7½ miles. The ſtreets of the ancient part are irregular; but the northern part has been recently laid out to greater advantage. Many of the ſtreets are ſpacious, running in right lines, and interſected by others at right angles. The ſurface has at preſent a gentle aſcent from the Hudſon and Eaſt rivers, and commands a fine view on the right and left of the town, the above-named rivers, and their crowds of ſhipping. The principal ſtreets are, Broadway, opening to the N.E., and extending through the whole length of the city, Greenwich-ſtreet, Pearl-ſtreet, &c. &c. The uſual tides at New York are about ſix feet, and the depth of water is ſufficient for the largeſt ſhips; and the harbour, which is ſafe and good, is capacious enough for the largeſt fleets, and very rarely obſtructed by ice. The houſes of this city are well built of brick, and its public buildings are numerous and elegant. The firſt of theſe that deſerves mention is the city-hall, in which are held the courts for the city and county of New York. This building ſtands on elevated ground, and its ſtructure is ornamental to the city. The whole number of the churches, or houſes for Chriſtian worſhip, is 37, beſides a Jewiſh ſynagogue. Of theſe, eight are Preſbyterian, eight Epiſcopal, four Dutch Reformed, three Scots Preſbyterian, three Methodiſt, two for Friends or Quakers, two Baptiſt, two German Lutheran, one French Proteſtant, one Moravian, one Roman Catholic, two African. The New York hoſpital is an extenſive eſtabliſhment; the cuſtom-houſe adjoins the battery at the S.W. angle of the city; the gaol and bridewell are oppoſite to the Park, and the alms-houſe is on the ſame ſquare with the gaol, bridewell, and city-hall. The college is about midway between the Park and the river Hudſon; and St. John's church, reckoned the moſt elegant in the city, is in Hudſon-ſquare, farther north. The ſtate-priſon is two miles N. of the battery, on the bank of the Hudſon. Here are alſo a library and theatre, ſix market-houſes, and many other buildings that might, if ſpace were allowable, be enumerated. There are eight banking-companies in this city; and their houſes and offices, together with thoſe of the inſurance, manufacturing, and other companies, and thoſe of various ſocieties, add to the number of edifices that adorn the metropolis. The population, which by the cenſus of 1810 was eſtimated at 96,373, is ſuppoſed to amount to more than 100,000. The city and harbour of New York have been lately fortified againſt naval aſſaults at a very great expence: but we ſhould be tedious in minutely deſcribing the works which have been conſtructed for this purpoſe. The number of charitable eſtabliſhments, and of ſchools for education in this city, is very great, and does honour to the diſpoſition and liberality of its inhabitants. The markets, which are kept every day, are well ſupplied with the productions both of land and water. The public walks and amuſements in the vicinity of this city afford attraction to its ſtated inhabitants, and to thoſe who occaſionally reſort hither. The theatre, reading-rooms, public-gardens, park, and walks on the battery, afford amuſement, and contribute to activity and health.

The city of New York is governed by a mayor, recorder, aldermen, and aſſiſtants, who conſtitute the common council. Each ward chooſes an alderman and aſſiſtant. The mayor, deputy-mayor, recorder, and aldermen, are ex-officio juſtices of the peace, and juſtices of oyer and terminer; and the mayor, aldermen, and commonalty, are authorized to hold a court of record or of common pleas; and this is called the mayor's court, and deemed of great importance. For the manufactures, commerce, literary inſtitutions, &c. &c. of the city of New York, we refer to the account already given of the ſtate of *New* YORK. Meliſh. Morſe. Spafford's Gazetteer of New York, 1813.

YORK, *New*, a poſt-town of Virginia; 167 miles S.W. of Waſhington.

YORK *Town*, or YORK, a townſhip of Weſt Cheſter county, in the ſtate of New York, 45 miles N. of New York, bounded N. by Ducheſs county, E. by Somers and Newcaſtle, S. by Newcaſtle, W. by Cortlandt; in length N. and S. 10 miles, and nearly 4 miles wide. The general ſurface is hilly, but productive, and well diſtributed into arable, paſture, and meadow lands. In 1810, here were 269 taxable inhabitants, 142 electors, and in all 1924 inhabitants.

YORK *Town*, a town of the ſtate of Virginia, capital of the county of York, on the right bank of York river, about 10 miles from its mouth, containing about 800 inhabitants. In the year 1781, the Britiſh army under lord Cornwallis ſurrendered themſelves priſoners of war to the united forces of America and France near this town, and was the occaſion of a peace which followed ſoon after. A marble column, with a ſuitable inſcription and trophies, was ordered by Congreſs to be erected on the ſpot in commemoration of the event; 8 miles E. of Williamſburgh.

YORKSHIRE, a county in the northern part of England, which, for extent, for its number of inhabitants, and for its natural and artificial productions, is by far the moſt conſiderable in the kingdom. In its general form the county is an irregular quadrangle; the longeſt diagonal extends from N.W. to S.E. about 130 miles, and the ſhorteſt from S.W. to N.E. about 90 miles. The area of the county comprehends about 5,960 ſquare miles, or above 3,814,000 ſtatute acres. Yorkſhire, taken at its extreme points, is ſituated between the parallels of 53° 18′, and 54° 40′ N. latitude, and between 2° 40′ of W. and 0° 10′ of E. longitude from Greenwich. On the N., the E., and part of the S. ſides, it is diſtinctly defined by rivers and by the ſea. On the N. it is ſeparated in its whole extent, from the county of Durham, by the river Tees. From the mouth of this river to the entrance of the Humber, the whole E. ſide is waſhed by the German ocean. By the eſtuary of the Humber and the river Trent, it is divided from Lincolnſhire on the S. The limits between Yorkſhire, and the counties of Nottingham, Derby, and Cheſter on the S., and thoſe ſeparating it from Lancaſhire and Weſtmoreland on the W., are merely conventional, being indicated by no natural feature of the country; the latter, however, in general, coincide with the mountainous range which diſtinguiſhes the northern from the ſouthern provinces of England. At a very early period of the Saxon dominion, the great county of York was ſubdivided into three diſtricts, ſtill recogniſed, and ſtill under the corrupted name of ridings. Theſe are termed north, eaſt, and weſt, in reference to their relative poſitions with reſpect to each other, and to the capital city of the county. The North Riding is ſubdivided into 12 wapentakes, the Eaſt into 7, and the Weſt into 11 wapentakes; the whole county thus containing 30 wapentakes and 563 pariſhes. The wapentake, a diviſion adopted in certain northern counties of England, correſponds generally to the cantred or hundred of the ſouthern provinces. The whole county comprehends one archiepiſcopal city, York, and 59 market-towns, of which 13 are parliamentary boroughs. Of thoſe laſt in the North Riding are 5, *viz.* Malton, Northallerton, Richmond, Scarborough, and Thirſk; the Eaſt Riding contains three boroughs, Beverley, Heydon, and Hull; in the Weſt Riding the five boroughs are, Aldborough, Boroughbridge, Knareſborough, Pontefract, and Ripon. Yorkſhire ſends thirty members to parliament; *viz.* two for the county, two for the city, and two for each of the boroughs juſt named. According to the official reports made in 1811, the number of houſes and inhabitants in the county was the following:—In the North Riding 33,567 houſes, and 152,445 inhabitants; in the Eaſt Riding (York city included), 31,420 houſes, and 167,353 inhabitants; and in the Weſt Riding, 129,575 houſes, and 653,315 inhabitants. From this ſtatement, Yorkſhire, at that period, contained altogether 194,562 houſes, and 973,113 inhabitants, or on an average 163 perſons for each ſquare ſtatute mile.

General Appearance, Soil, and Climate.—Yorkſhire is an extenſive and intereſting county: in its geographical features, and geological characteriſtics, it preſents important themes for inquiry and diſquiſition. Its ancient hiſtory, and the numerous antiquities with which it abounds, afford other and not leſs intereſting topics for inveſtigation and comment. The manufactures, commerce, and trade of the county; its mineral productions, and agricultural practices, are alſo entitled to the moſt careful and critical developement of the topographer. It is, however, to be regretted, that neither of theſe ſubjects has hitherto been ſatisfactorily elucidated by a local hiſtorian: whence we ſhall be neceſſitated to reſort to and cautiouſly analyſe ſeveral detached and imperfect works, to render a ſhort topographical account of this widely-extended county in any degree uſeful to the general reader. In the ſequel theſe works will be referred to.

Yorkſhire preſents a great variety of ſurface: mountains, hills, vales, moors, fens, rocks, coaſt, and rivers, are its component parts; but theſe are greatly diverſified. The North Riding conſiſts principally of two hilly regions, ſeparated by a comparatively low tract, which opens on the S. into the ſpacious plain or vale of York. The hilly parts are commonly termed, from their poſition and their nature, the E. and the W. moorlands. Thoſe on the E. bounded by the valley of the river Tees on the N., and by the ſea on the N.E., occupy a ſpace of 30 miles from W. to E. by about half as much from N. to S. They conſiſt in general of bleak heath, interſperſed with looſe blocks of ſtone, or with peat-moſs and bog. The whole is deſtitute of wood, excepting in a few interſecting dales or valleys, where cultivation is practicable. Of theſe dales a few are of moderate extent, particularly Eſkdale and Bilſdale, in the eaſtern parts toward the ſea. The weſtern extremity of theſe moorlands, in the diſtrict of Hamilton, produces heath intermingled with large quantities of coarſe graſs. Between the N. edge of the moorlands and the river Tees is the fertile diſtrict of Cleveland. Several productive valleys interſect the W. moorlands, of which Wenſleydale is the moſt conſiderable. Watered by the river Ure, the bottom of the valley furniſhes rich grazing grounds, bordered on each ſide by ſloping incloſed fields, which reach up the hills for more than a mile from the river. In the Eaſt Riding the face of the country, although varied, is leſs boldly characterized than that in the N. It is divided in the middle into two extenſive plains, by the Wolds, a range of hills ſtretching N. and S. Towards the ſea the coaſt of this Riding is in general low when compared with that of the North Riding; but in ſeveral places it riſes to cliffs of conſiderable height, as at and in the vicinity of Flamborough-head. The S.E. part of this Riding conſiſts chiefly of a tract of fen and marſh, about 20 miles in length, and four in breadth, which ſpreads from the ſea to the Humber. This part of the Riding, forming the wapentake of Holderneſs, runs out to the S.E. and S., and terminates its courſe at the Spurn, a well-known point on the N. ſhore of the Humber. A ſucceſſion of eaſy riſings forms the eaſtern aſcent of the range of the Wolds; but on other ſides they are ſteep; and the whole have an agreeable and peculiar appearance. Conſidered with reſpect to extent and population, to manufactures and trade, the Weſt Riding is by far the moſt important diviſion of Yorkſhire. Its ſurface is very irregular, varying from the low marſhy tracts in the E. to the rocky mountainous country in the W. The level marſhes are the continuation of thoſe already mentioned in the Eaſt Riding, and extend weſtward nearly to the great N. road through Doncaſter. Still farther weſtward lies the middle diviſion of the Weſt Riding, gradually and beautifully ſwelling into hills, and extending to Sheffield, Bradford, and Ottley. Beyond theſe towns, the country becomes rugged and mountainous, and is compoſed chiefly of black moors, which terminate in the lofty range of hills bordering on Lancaſhire. Theſe hilly and mountainous tracts are not, however, without many beautiful and romantic valleys, among which are thoſe watered by the rivers Aire, Nid, and Wharf. Several of the ſmaller dales are well-wooded and incloſed, and have numerous villages interſperſed.

The ſoil of Yorkſhire is not leſs variegated than the ſurface. In the E. moorlands of the North Riding, wherever the ground is covered with ling or heath, the upper ſoil is invariably black moor or peat: but the ſubſoil is various, and conſiſts of clay, free-ſtone, and hardened ſand. In that part of the moors called Hamilton, the ſoil conſiſts generally of fine loam on lime-ſtone rock. In the interſecting dales, black moory earth, ſand, and grit-rock, more or leſs, prevail; but the vale of Cleveland, along the river Tees, is compoſed chiefly of ſtrong tenacious clay. Lime-ſtone, or a calcareous rock, is the general baſis of the W. moorlands; and the beneficial effects of this ſubſoil are evident in the graſs and other uſeful productions with which the ſurface is generally covered. In the extenſive tract of plain ſtyled the Vale of York, which occupies the interior parts of the county, and comprehends portions of all the three Ridings, conſiderable changes of ſoil are found. In the N. part towards the river Tees, a rich gravelly loam prevails. The ſlopes of the high grounds on the E. and W. are in ſome places cold, and abound in ſprings; but in the greateſt part the ſoil is ſtrong and fertile. Of the Eaſt Riding, the moſt ſtriking feature is the range of hills called the Wolds, compoſed of chalk; but the ſurface is in general a light free loam, interſperſed with chalky gravel, often very ſhallow. The great plain between the Wolds, the ſea, and the lower part of the Humber, contains many extenſive tracts of fertile cultivable land, eſpecially in the N. and E. quarters; but the ſouthern diſtricts, towards the river, are covered with marſhes and fens, ſuſceptible, where draining can be practiſed, of material improvement. In the continuation of thoſe fens, ſituated on the W. of the Wolds, called the Levels, the ſoil is either clay or ſand, with mooriſh tracts interſperſed; but on the banks of the Darwent and the Ouſe ſtrong clay and loam prevail. In the extenſive Weſt Riding ſoils of every kind are to be found, from deep ſtrong clay and rich loam to the pooreſt peat-earth. Clay and loam, but mingled with ſome ſand and moor, prevail in the E. diſtrict of this Riding, while the middle diviſion conſiſts chiefly of loam on a lime-ſtone baſe. Similar ſoils extend through the W. parts, but are frequently interrupted by tracts of moor of different kinds.

In a country of ſuch extent, and of ſuch variety of ſoil, elevation, and expoſure, as Yorkſhire, an accordant variety of climate, with regard to temperature, humidity, and ſalubrity, muſt naturally be experienced. The E. moorlands, advancing high and bold into the German ocean, are neceſſarily expoſed to the cold, moiſt, and impetuous winds from the N. and E. The climate there, however, is rather diſagreeable than unhealthy; for the high grounds are frequently involved in fogs and vapours from the ſea. Among the W. moorlands the climate is ſtill more ſevere; but its effects on the productions of the ſurface are powerfully counteracted by the calcareous rock of which thoſe mountainous tracts conſiſt. By their diſtance from the ſea, combined with their much greater elevation, the ſnow remains on them conſiderably longer than on the E. moorlands. But the greateſt obſtacle to agricultural labours in the W. parts of the county is the almoſt inceſſant rain which falls among the mountains. On them are accumulated and condenſed the vapours collected by the oppoſite winds, which prevail on the contrary ſides of the iſland. By the humidity thus produced, no attempt to raiſe corn-crops among thoſe high lands can ſucceed. In the intermediate plains and gently-ſwelling tracts of the centre of the county, the climate is, on the contrary, in general mild and temperate, in proportion to the remoteneſs from the mountainous quarters. The low grounds on the banks of the Darwent, are, however, ſo moiſt, although warm, as to be much better adapted to paſturage than to corn-land. What is ſaid of the climate of the W. parts of the North Riding is equally applicable to the correſponding portion of the W.; for there the climate is alſo rainy, cold, and ſtormy. At Sheffield, although on the S. border of the county, the quantity of rain which falls in a year is about 33 inches. It is, indeed, found by experience, that the lofty tracts which ſeparate Yorkſhire from Lancaſhire and Cheſhire are fully as ſubject to fog, rain, and ſtorms, as any other portion of England. But notwithſtanding theſe circumſtances, the air is pure and healthy. The middle and leſs-elevated tracts of the Weſt Riding are equally healthy, milder, and leſs humid; holding a deſirable medium between the tempeſtuous blaſts of the mountains in the W., and the dull fogs and damps which uſually beſet the low marſhy country in the E. On the oppoſite ſides of the Wolds, in the Eaſt Riding, a different temperature is experienced; for by thoſe hills the W. diviſion is in general ſheltered from the cold damp winds from the ſea and the entrance of the Humber, which prevail over the E. diviſion. On the Wolds themſelves the air is ſharp, and the ſnow remains for a conſiderable time on the ground. But the mildneſs of the climate in the W. Levels is abundantly compenſated, in regard to ſalubrity, by the vapours of the marſhes.

Mountains.—The E. moorlands of the North Riding form a peculiar feature in the county; for they are wholly detached by their poſition, and by their ſubſtance, from the mountains in the W. Some points of the E. moorlands riſe nearly 900 feet above the level of the ſea; but the moſt remarkable ſummit of the whole is Roſebury Topping. This ſingular hill, ſituated midway between Stokeſley and Guiſborough, towards the N.W. edge of the moors, ſhoots up in a conical form, to the height of 1488 feet above the ſea. By its detached poſition and ſuperior elevation, it commands, in all directions, a proſpect at once extenſive and intereſting. The hill ſeems to reſt on a baſis of alum-rock, interſperſed with iron-ſtone; and its pinnacled ſummit indicates to the ſurrounding country the approaching changes in the weather; for when the ſummit is involved in clouds, rains ſeldom fail to deſcend on the neighbouring low grounds. It is, however, on the W. borders of the county, that the moſt elevated mountains are found. Theſe are a portion of the chain, which, commencing in the S. in Staffordſhire, extend northward, with increaſing elevation, through Derbyſhire, Lancaſhire, Weſtmoreland, Cumberland, and Northumberland, into Scotland. In that portion of this range which belongs to Yorkſhire are ſeveral ſummits of very conſiderable elevation above the ſea. Of theſe, the moſt remarkable are, Pennigant, which riſes, according to barometrical meaſurement, to the height of 3930 feet; Ingleborough, 3987 feet; and Whernſide, 4052 feet. The laſt mountain is the higheſt in England; for Croſsfell on the borders of Cumberland is in height only 3839 feet; Skiddaw, 3530; and Snowden, the higheſt in Wales, 3568. Bennevis, a detached mountain in the N. of Scotland, and the moſt elevated in Britain, riſes to the height of 4387 feet. Pennigant, ſituated about 7 miles N. from Settle, is ſteep and towering. Ingleborough conſiſts of a baſis of lime-ſtone, but towards the ſummit the grit-rock appears. The E. and S. ſides of this mountain are very ſteep, and of difficult acceſs, on account of a deep moraſs at the bottom; but the W. and N. ſides, particularly the former, may be aſcended with eaſe. Continually receiving vapours from the Iriſh ſea on the W., Ingleborough is ſeldom free from clouds, and the whole mountain abounds with ſprings: whence it is covered with verdure, and ſheep graze on the moſt elevated parts. In the vicinity appear Pennigant, diſtant 6 miles to the E., and Whernſide 5 miles to the N. On the N.W. are the mountains of Weſtmoreland, and on the W. ſpreads out the low land of Lancaſhire, bounded at the diſtance of 24 miles by the Iriſh ſea, of which a great portion may, in clear weather, be deſcried. In the midſt of a circle of hills riſes Whernſide, on which account, although more elevated, the views from it are not equally intereſting with thoſe from Ingleborough. Near the ſummit are ſeveral ſmall lakes or pools, there called tarns, one of which is about 180 yards in length by nearly an equal breadth. In the Eaſt Riding, the only hills of note are the Wolds, which exhibit themſelves to advantage, in riſing out of the low country around them; but at no point are they ſuppoſed to exceed 600 feet in height.

Rivers.—Along the whole length of the North Riding, from W. to E., the county is bounded by the river Tees. Riſing in the mountains of Weſtmoreland and Cumberland, it purſues a very indirect courſe into the German ocean below Stockton, where it ſpreads out into an eſtuary three miles in breadth. The river Tees is navigable for ſhips of conſiderable burthen up to Stockton; but the channel is ſerpentine and intricate, and the current is rapid. Commodious anchorage is, however, found at the entrance, in winds from the W. and S. A few inconſiderable ſtreams from the W. moorlands fall into the river Tees; but the great body of the waters of Yorkſhire take their courſe in the oppoſite direction, and unite with the Humber. Of theſe rivers, the moſt northern is the Swale, which, riſing in the W. moorlands, enlivens the romantic Swale dale, and, after viſiting Richmond, bends S.E. until it reaches Boroughbridge, where it unites with the Ure. The latter river, proceeding from the ſame moors, paſſes near to Ripon, and in ſome part of its courſe ſeparates the North and Weſt Ridings. Having received the Swale, about ſix miles below Boroughbridge, the Ure takes the name of Ouſe, from an inſignificant rivulet which joins it on the W. ſide. Under this laſt appellation the combined ſtream, ſtill farther augmented by the waters of the Nid, traverſes the city of York, where it becomes the limit between the Weſt and the Eaſt Ridings; and being navigable for large barges up to that city, it receives on its W. ſide the rivers Wharf and Aire: at laſt, after a very wandering courſe to the ſouthward, in conjunction with the Trent, it diſappears in the eſtuary of the Humber. The Aire, already mentioned, a very conſiderable ſtream, iſſuing from the mountains of Craven, facilitates by its waters the important manufactorial commerce of Leeds. Receiving on the W. ſide the current of the Calder, which performs the ſame ſervice to Wakefield, the joint ſtream conveys an important acceſſion to the Ouſe. Still farther to the S. the Don purſues its courſe from the W. mountains to Sheffield, where it bends to the N.E. by Rotheram and Doncaſter, to its influx into the Aire. Before it be loſt in the Humber, the Ouſe receives on the E. the Darwent, which, having its ſources in the E. moorlands, flows in general S.W. by Malton, acroſs the weſtern parts of the E. diſtrict. Two ſmall ſtreams ſtill deſerve notice in Yorkſhire, not ſo much for their length of courſe, or volume of water, as for their great utility in forming the principal ports of the county. In the E. moorlands of the North Riding riſes the Eſke, which after watering Eſkdale opens into the German ocean through the harbour of Whitby. The river Hull traverſes the Eaſt Riding from N. to S. paſſing near to Beverley, and, at its influx into the Humber, forms the ſecure though not capacious harbour of Kingſton, which, from the river, is generally alſo called Hull.

Canals of Yorkſhire. See CANAL.

Coaſts and Harbours.—The ſea-coaſt of Yorkſhire, though very extenſive, affords but very few harbours of any importance. The mouth of the river Tees, as already ſtated, is frequented as a place of anchorage in winds from the ſouth and the weſt. Veſſels alſo often reſort to other ſpots on the coaſt when the wind blows off the land, ſuch as to Robinhood's bay to the ſouthward of Whitby, to Filey bay on the north-weſt, and Bridlington bay on the ſouth-weſt of Flamborough-head.

The principal harbour on this coaſt is that of Whitby. (See WHITBY.) Scarborough bay is ſerviceable in weſterly winds; and the pier, a noble ſtone ſtructure, furniſhes eaſy acceſs and ſafe protection for ſhips of conſiderable burthen; for at ſpring-tides, the depth of water at the entrance is from twenty to twenty-four feet: for want of a back-ſtream, however, the harbour is in danger of being filled with ſand. The entrance of the Humber affords to ſhipping leſs protection than from its locality might be expected; for the ſhores on both ſides of Yorkſhire on the N.E. and of Lincolnſhire on the S.W. are low, and the channel is much incumbered with ſand-banks and ſhallows. Notwithſtanding theſe diſadvantages on its north bank, juſt at the point where the eſtuary turns its direction from E. to S.E., is ſituated the much-frequented and important harbour of Kingſton-upon-Hull. The natural accommodation of the river has proved very inſufficient for the increaſed ſhipping belonging and trading to the port, which ranks as the fifth in the kingdom. Docks of great capacity have therefore been excavated, in which veſſels lie afloat or dry, as may be required. From this port, the produce of the great manufacturing diſtricts in the interior of the country are exported to foreign parts; and there foreign commodities are transferred to ſmaller veſſels, to be in their turn diſtributed over the interior of the kingdom. The moſt remarkable projection of the coaſt of Yorkſhire is the bold and lofty promontory, called Flamborough-head. The cliffs riſe perpendicularly over the ſea to the hight of 100 and 150 yards. They are compoſed of a mouldering lime-ſtone rock, of uncommon whiteneſs; and at the bottom are pierced by a number of caverns, ſome of them entering a great way into the rock. A new light-houſe is placed about 400 yards weſt from the extremity of the promontory. About ſouth by eaſt eleven leagues from Flamborough-head is another point of great conſequence to mariners. This is the Spurn-point, which, running out ſouthwards, low and narrow, forms the north limit of the mouth of the Humber. The light-houſe is ſituated in N. lat. 53° 41′, and E. long. 0° 17′.

Agriculture.—From what has been already noticed reſpecting the mountainous and the marſhy tracts comprehended within the capacious limits of Yorkſhire, agricultural improvements in them muſt be comparatively very limited. In other diſtricts, however, particularly in the ſpacious plains forming the central parts of the county, every ſpecies of amelioration of the ſoil which the induſtry of the inhabitants, availing themſelves of the natural means within their command, could apply, has been generally brought into action. The farms are of very unequal extent and rental, conformably to the nature of the ſoil and to the ſituation of the farmer with reſpect to a market. It is remarkable, that in the North Riding leaſes are unuſual; but although the huſbandman labours on ſo precarious a poſſeſſion, changes of occupants of farms are by no means common. In the vale of York one-third of the land is computed to be in tillage, and two-thirds in graſs; but in Cleveland, along the ſouth bank of the river Tees, the country is equally divided between corn and paſture. In the environs of Thirſk, where the dairy is the chief object of purſuit, fully three-quarters of the land are devoted to it. In the valleys or dales which interſect the eaſt moorlands, about one-fifth of the ſurface is in tillage; but in thoſe of the weſt, a much ſmaller quantity is uſually ploughed: thoſe parts although incloſed are therefore generally in paſture. In few diſtricts of England have improvements in agriculture been more generally or ſkilfully introduced than of late years in the Eaſt Riding. The farms are commonly large, and vary in annual rent from two or three hundred pounds to a thouſand; but in the marſhy tracts, called the levels, they are moſtly ſmall. By drainage there, and in the flat country, in the vicinity of Hull, large tracts, formerly flooded, now produce plentiful crops of corn; the value of the land being thus increaſed to ten times its former worth. In the hilly range of the Wolds, barley and oats have in many places been ſuperſeded by wheat. In the Weſt Riding the farms are generally ſmall, but in the environs of the manufacturing towns a great portion of the ground is occupied by the inhabitants for the uſe of their families. To the eaſtward of Leeds, Wakefield, and Rotheram, the greateſt part of the Riding is corn-land; but this tract contains no ſmall proportion of common fields. The ſoil, however, is good, and improvement may be eaſily introduced. In addition to grain of all ſorts, flax is cultivated in the marſhlands to conſiderable extent; and in the environs of York muſtard is now a valuable article of cultivation; though it is ſtill conſidered as the produce of Durham. The horſes of Yorkſhire, and in particular thoſe of the North Riding, have long and univerſally been famed. Cleveland furniſhes an excellent breed for the coach and the plough; the northern parts of the vale of York others for the coach and ſaddle; and many of both kinds are bred in the ſouthern parts and the marſhes. The Eaſt Riding alſo rears horſes of peculiar value. A ſmaller but hardy and uſeful kind is bred in the dales of the eaſt moorlands: many of an equally ſerviceable deſcription are alſo produced in the moorlands on the weſt. The horned cattle of Yorkſhire are of various kinds, adapted to the nature of their paſtures, and to the uſes for which they are employed. The north parts of the vale of York and the diſtrict of Cleveland produce the Tees-water breed, which is ranked among the largeſt in the kingdom. In the plains where cattle are chiefly kept for the purpoſes of the dairy, the milk, and not the form or ſtrength of the race, is the main object of attention with the farmer. The ſheep in the various parts of the county are alſo extremely different in their nature and properties. In the North Riding, the ſtock has of late years been conſiderably improved by the intermixture of the Northumberland and other breeds. The ſheep of the weſt moorlands are ſmall; but the wool is tolerably fine: thoſe of the eaſt moorlands are ſtill ſmaller, but with a very coarſe wool. Many of the old ſheep-walks on the Wolds, in the Eaſt Riding, are now broken up, and converted into corn-land. In the Weſt Riding, by the introduction of the Leiceſterſhire breed, the ſheep have in many places been highly improved. Thoſe bred on the weſt moors and hills of this Riding, when brought down early to paſture in the low grounds, become very valuable for food.

In many parts of Yorkſhire, great amelioration of the ſoil has been produced by hollow-draining; irrigation, paring, and burning the ſurface, have alſo been advantageouſly adopted. In certain tracts, bones bruiſed in a mill are uſefully employed in compoſts for manure. Conſidering its great extent, the North Riding of Yorkſhire contains but a ſmall proportion of woodlands; the whole having been eſtimated at about 25,000 acres, of which the vale of York, with its boundary hills to the north, contains about 11,000. Large full-grown timber is accordingly very ſcarce, excepting on the eſtates of the earl of Carliſle, C. S. Duncombe, eſq. and ſome other land proprietors. But the oak-timber of this Riding, produced on hard rocky ground, if not of great ſize, is ſolid and durable; and hence the valuable qualities of the ſhipping built at Whitby and Scarborough. The planting of the Wolds in the Eaſt Riding has been ſucceſsfully begun by ſeveral proprietors. In the Weſt Riding, the quantity of oak and aſh is very conſiderable; and both are much uſed for ſhip-building, and for the various demands of the manufacturers: much is alſo conſumed in the coal and other mines. In the vicinity of Sheffield, the duke of Norfolk poſſeſſes above 1500 acres of woodland. According to a calculation made in 1799, the waſte lands in this Riding amounted to upwards of 400,000 acres, of which one-third ſeemed to be proper only for planting. No great progreſs in that operation has, however, yet been made.

Manufactures.—The manufactured productions of Yorkſhire, eſpecially of the Weſt Riding, are of the very firſt importance to the county and to the kingdom, as well as to the multitudes to whom they furniſh employment and wealth. The principal inducement for the eſtabliſhment of thoſe great works in the interior of the country was the plentiful ſupply of water and fuel for giving motion to machinery, and for the various other operations of the ſeveral branches of induſtry. Leeds, ſituated on the north bank of the river Aire, has long been celebrated as the centre of the manufacture of woollen cloth; and it is ſtill the great mart for that ſtaple article of the commerce of Yorkſhire. (See LEEDS, and WOOLLEN *Manufacture.*) The white cloth is chiefly made at and about Dewſbury, among the hills which ſeparate the valleys of the Aire and Calder, and in the vicinity of Wakefield. The mixed cloth is principally made in the villages comprehended in the pariſh of Leeds to the weſtward of the town; in the vale of Calder weſt from Wakefield; and alſo in the environs of Dewſbury. In the year 1806, the number of yards of broad cloth manufactured in the Weſt Riding of Yorkſhire is ſtated at 10,079,256, and of narrow cloth at 6,193,317. But in 1810 the broad cloth was only 9,826,048 yards, and the narrow cloth had increaſed to 6,951,762 yards. In 1811, however, the quantity of both ſorts of cloth had ſenſibly diminiſhed; for the yards of broad cloth were only 8,671,042, and thoſe of narrow cloth 6,180,181; one of the many effects produced on the induſtry, and conſequently on the well-being of the county and of the kingdom at large, by the hoſtilities in which Britain was then deeply involved on both ſides of the Atlantic. The cutlery and plated goods of Sheffield are in all their branches carried to a perfection and an extent of which it is not eaſy to furniſh a ſatisfactory account. The cutlery, conſiſting of edge-tools of every deſcription, files, anvils, ſaws, &c. is not confined to that town, but manufactured in all the neighbouring villages. The plated goods, conſiſting of tea-urns, coffee-pots, tankards, candle-ſticks, and many other articles of houſehold uſe, are all prepared within the town. In it are alſo ſeveral founderies for iron, braſs, and white metal.

Minerals, &c.—Excepting the alum on the borders of the eaſt moorlands, and the lead of the vicinity of Richmond towards

wards the oppoſite quarter, the North Riding of Yorkſhire furniſhes but few mineral ſubſtances of peculiar value. Copper of good quality, it is true, was wrought about the middle of the laſt century near Middleton-Tyas; but the works have for ſome time been diſcontinued. Copper was alſo diſcovered about twenty years ago at Richmond. In the vale of the river Swale, twelve miles above that town, are ſeveral very profitable lead-mines. The iron-ſtone of the eaſt moorlands has not hitherto been applied to any uſeful purpoſe. It appears, however, from ancient records, that as early as the beginning of the thirteenth century, iron was wrought and forged in Roſedale. Ayton, a few miles S.W. from Scarborough, is the only place where forges are now eſtabliſhed, and thoſe are but inconſiderable. The great alum works are principally ſituated on the ſea-coaſt on both ſides of Whitby, and in the vicinity of Guiſborough. See Whitby and Alum.

Various parts of the North Riding produce coal, particularly in the plain between Eaſingwold and Thirſk; and in the weſt moors, the coal hitherto diſcovered ſeems adapted only to the burning of lime: the north part of the Riding is conſequently furniſhed with that mineral from the adjoining county of Durham. Good free-ſtone for building appears in many parts of the Riding: a few miles weſt from Whitby is a quarry from which have been drawn the blocks employed in conſtructing the new piers of that town. Limeſtone, and a ſpecies of marble not inferior to the Derbyſhire, are found in different places; and looſe blocks of red granite are ſeen on the ſurface in certain parts of the weſt moorlands.

In the Eaſt Riding, the chalk of the Wolds is the only mineral ſubſtance of importance hitherto diſcovered or brought into uſe; but the mineral productions of the Weſt Riding are of peculiar value; for it contains lime, coal, iron, and lead, in great abundance. None of them, however, are found in the low level tracts in the eaſt diviſion of the Riding. The lime-ſtone extends all to the weſtward of a line running northward from Doncaſter to Tadcaſter. The tracts ſituated between the rivers Aire at Leeds and Calder at Wakefield are the principal ſeats of the coal-mines, which abound likewiſe in the neighbourhood of Bradford, Barnſley, and Sheffield. Near Bradford alſo there are very conſiderable iron-mines. Lead is principally extracted from the mines of Graſſington, the property of the duke of Devonſhire.

Yorkſhire contains ſeveral mineral waters of great virtue and celebrity. The chalybeate and ſulphureous ſprings of Harrowgate have long been in high repute. See Harrowgate.

Scarborough, on the ſea-coaſt of the Eaſt Riding, has long been celebrated for its mineral ſprings, which iſſue from the foot of a lofty cliff on the ſhore, a little way to the ſouthward of the town. See Scarborough.

Ancient Hiſtory, Remains, &c.—The great county of York was but a part of the territory of the Britiſh tribe, called in Roman hiſtory the Brigantes: they are not however mentioned by Cæſar. It appears that they were firſt overpowered by Cerealis, in the reign of Veſpaſian, in the year 71 of the Chriſtian era. In 78, the Roman arms were carried beyond the river Tay in Scotland, where Agricola encountered the Caledonians, under Galgacus: but, contrary to the uſual practice of the Romans, after a ſignal victory over the natives, as it is repreſented by Tacitus, his ſon-in-law and profeſſed panegyriſt, the Roman commander, retreated into the ſouthern part of the country previouſly ſubdued. Having eſtabliſhed a chain of poſts acroſs the narrow iſthmus, between the firths of Forth and Clyde, Agricola was in the year 85 recalled by Domitian. From that period, until the arrival of the emperor Adrian himſelf in Britain in 120, little is known of the tranſactions in the northern parts of the iſland. That Adrian ſhould deem it neceſſary to repair in perſon to ſo remote a portion of the empire, which then comprehended the richeſt provinces of the world, is however a proof that the Britons, although overpowered, were by no means reduced to patient ſubjection. Renouncing, therefore, a great part of the country included within the chain of forts of Agricola, Adrian conſtructed an earthen rampart acroſs the iſland, between the mouths of the rivers Tyne and Edon. While theſe operations were in progreſs, the emperor fixed his reſidence in Eboracum, or York; but ſcarcely had he returned to the continent when the northern Britons, breaking through the ſecond rampart thrown up againſt them, joined with the Brigantes in an endeavour to regain their independence. To repreſs thoſe attempts, Lollius Urbicus was ſent into Britain, who, repelling the natives beyond the Roman bounds, conſtructed a wall and towers on the line between the Forth and the Clyde, firſt fortified by Agricola. From this event, which happened about 140 until 183, Britain ſeemed to be tranquil: but then, while the empire was ſubject to the monſter Commodus by the exertions of the natives, and the diſcontented ſpirit of the legions themſelves, the power of the Romans in Britain was reduced to a very precarious ſituation. Pertinax, who had ſerved in the iſland, and who, by his military talents, was fully qualified to reſtore the diſcipline and ſpirit of former times, was ſoon cut off by the licentious and diſorderly Prætorian guards of Rome; and in 196, Septimius Severus became ſole maſter of the empire. The Caledonians ſtill continuing their efforts to rid themſelves of the Roman yoke, Severus, although thus far advanced in life, and very unfit for the ſervice of the field, found it neceſſary to repair to Britain. (See York.) In 207 he arrived at Eboracum, in the full determination to quell the reſtleſs ſpirit of the natives. After an expedition into the northern parts of the iſland, in which the loſs of the Romans is admitted by their own hiſtorians to have been prodigious, he fixed his head-quarters in Eboracum; and commanded the rampart thrown up by Adrian between the Edon and the Tyne, to be powerfully ſtrengthened, as Urbicus had done on the northern rampart with a continued wall and forts of ſtone. Taking advantage of his abſence from the frontiers, the Caledonians again had recourſe to arms: but in 211, while Severus was preparing in Eboracum to repel their aſſaults, he died, and his ſons and ſucceſſors Caracalla and Geta ſoon afterwards returned to Rome. Whatever might have been the inclinations of the Brigantes, however gladly they would have combined with their countrymen of the north, yet by the preſence of the imperial court, officers, and troops, every effort on their part muſt have been inſtantly diſcovered and repreſſed. Under Carauſius, Britain enjoyed ſome ſemblance of independence; but his aſſaſſination in the midſt of his ſpirited projects enabled Conſtantius to ſubject Britain again to the Roman arms. Dying in Eboracum in 307, Conſtantius was ſucceeded in the weſtern portion of the empire by his ſon Conſtantine, who was preſent at his death, and was immediately proclaimed emperor by the legions. For many years, the Brigantes with the other ſouthern provinces of Britain ſeem to have been ſubmiſſive to their maſters; but in 364, the northern nations renewed their incurſions, while the oppoſite part of the iſland was haraſſed by the predatory deſcents

ſcents of the Saxons. Tranquillity was at laſt reſtored by Theodoſius, whoſe ſon of the ſame name obtained the purple, and after a ſhort reign died in 393. Diſſenſion within and aſſault from without were now faſt haſtening on the overthrow of the mighty empire of Rome; and in the middle of the fifth century of our era, the Romans finally relinquiſhed all poſſeſſion, power, and authority in Britain. Of their long protracted reſidence in Yorkſhire, many unqueſtionable evidences are found in the capital, and in other parts of the county. The roads eſtabliſhed by that extraordinary people may yet be traced, traverſing the county in various directions. The whole ſyſtem of the Roman policy and diſcipline was certainly directed to the perfection of their military power.

One great line of probably Roman road, which traverſes the county of York from S. to N., is now called the Watling-ſtreet, (a name apparently Saxon,) which was opened from the Rutupian port, in the neighbourhood of Sandwich, in Kent, in various directions, all the way to the wall of Severus. Entering Yorkſhire near Bawtry, it has been traced by Doncaſter, (Danum, or the ſtation on the river Don,) over Scawſby and Pigburn Leas, to Barnſdale, through Pontefract to Caſtleford, ſuppoſed to be the poſition of the ancient Legiolium, a little below the junction of the rivers Aire and Calder. From this point, the road was conducted by Calcaria, now Tadcaſter, to Eboracum, or York. From this city it probably followed the N.E. ſide of the river Ouſe, croſſing it near to Iſurium, now Aldborough, below Boroughbridge, and thence by Leeming-lane to Catterick-bridge, adjoining to which veſtiges of Cataractorium are to be ſeen; there turning more to the northward, it paſſed over the Tees at Pierſe-bridge into the county of Durham. Another military road is ſuppoſed to have been laid out from Mancunium, now Mancheſter, in a N.E. direction, by Wakefield, to join the former line between Doncaſter and York. North-eaſtwardly from York a road ſeems to have been formed by or near Malton, terminating on the ſea-coaſt at Dunſley bay, the Dunus bay of Ptolemy. This road is ſtill called Wade's cauſeway, from the Saxon chief Wada, as Camden thinks, who reſided on the coaſt in a caſtle, perhaps originally erected by the Romans. A branch of this road is ſuppoſed to have led to Scarborough, when the ſheltered beach furniſhed a convenient place for Roman ſhipping. The ſtraight courſe of an ancient road may be traced, although over the high grounds of the Wolds pointing from York towards Bridlington bay, correſponding probably to the Sinus Gabrantovicorum of the Romans; a branch has alſo been obſerved tending towards Hunmonby and Filey bay. Another line may alſo be followed in a direction to Patrington (Practorium) and the Spurn-point, which ſeems to correſpond with the Ocellum Promontorium of Ptolemy. From Lincoln (Lindum colonia) a Roman road may be traced running N. to the S. bank of the Humber near Wintringham, where are ſtill ſeen veſtiges of the ſtation, ad Abum. On the N. bank, Brugh indicates the poſition of another ancient ſtation, from which a branch of road probably communicated with York. This, however, is not the courſe indicated in the itineraries, which point out a much more convenient courſe from Lincoln to York, acroſs the river Trent at Littleborough, the ancient Segelocum.

The veſtiges of Roman works and occupation diſtributed over various parts of Yorkſhire are by far too numerous to be mentioned in this place: it muſt therefore be ſufficient to point out two, Cataractorium and Iſurium. About five miles below Richmond in Swaledale is the preſent village of Catterick, ſo named from the Cataractorium of the Romans, of which the veſtiges are viſible on the S. bank of the river, a little lower down the valley. Iſurium exhibits the moſt remarkable proofs of Roman habitation. Sixteen miles above York, and nearly one mile below Boroughbridge, on the S. bank of the river Ure, is Aldborough, ſo called in alluſion to the old town, to which it has ſucceeded, named by the Romans Iſurium.

Caſtles.—Of theſe many ſtill remain in Yorkſhire, although in ſeveral caſes they are either nearly demoliſhed, or by later alterations, bear but little reſemblance to their original form and ſtructure: in ſome, indeed, the name alone is preſerved. Of York caſtle, the keep, or Clifford's tower, is almoſt all that is to be ſeen above the ſurface of the ground. Scarborough caſtle is ſituated on a projecting precipitous cliff, 300 feet above the ſea, and cut off by a deep natural hollow from the high ground behind it. Richmond has long been diſtinguiſhed by its extenſive caſtle, which was erected ſoon after the Norman Conqueſt by Alan, a kinſman of William the Conqueror, on receiving the vaſt poſſeſſions of the Saxon, Edwin, earl of Cheſter. Crake or Creyke caſtle, although belonging to the county of Durham, is ſituated only twelve miles N. from York, is of great antiquity; for ſo early as in 685, it was beſtowed on St. Cuthbert by Egfrid, king of Northumberland. Six miles W. from Doncaſter, are the caſtle and village of Coniſburgh, or more properly Coningſburgh. The caſtle, one of the moſt intereſting edifices of the kind in the N. of England, a building of great extent and ſtrength, is commanded by the high ground on which the village is placed. The area of the caſtle is in circuit about 700 feet, encompaſſed by a very deep ditch, now filled with trees. Of Knareſburgh caſtle, once a fortreſs of importance, but few remains are now to be ſeen. It is believed to have been erected by Serlo de Burgh, who received the manor as a reward for his ſervices at the Conqueſt. Pontefract caſtle, the ſcene of many tranſactions of note in Engliſh hiſtory, in particular of the murder of Richard II., is built on a lofty rock. Sheffield caſtle, formerly of great ſtrength from its ſituation, between and at the meeting of the rivers Don and Sheaf, was levelled to the ground by the parliament in the civil wars. The ancient caſtle of Skipton, in the W. part of the county, is ſtill in a habitable ſtate. It now belongs to the earl of Thanet; but was formerly the reſidence of the powerful family of Clifford, of which Henry, the fourteenth lord, was, in 1525, created earl of Cumberland. Near the E. bank of the Darwent, S.E. from York, are the remains of the magnificent caſtle of Wreſsle, ſuppoſed to have been erected by Percy, earl of Worceſter, in the reign of Richard II., towards the end of the 14th century. Originally the caſtle formed a quadrangle, having a tower at each corner, and a fifth over the entrance. Wreſsle was one of the places of reſidence of the great earls of Northumberland, where they lived in a ſtyle of ſplendour and magnificence, formed on the model and with the ſtate of the royal houſehold. Notwithſtanding the zeal evinced by the earl of Northumberland in the cauſe of the parliament, the caſtle was, in 1650, diſmantled. Three ſides of the quadrangle were demoliſhed, and an accidental fire in 1796 completed its deſtruction. The ſcite belongs to the earl of Egremont.

Seats.—To deſcribe the number of admirable ſtructures of modern times, with which the county of York is adorned, would require a volume. In this place merely to notice ſome of the moſt eminent ſeats is all that can be attempted. About 13 miles N.N.E. from York is ſituated Caſtle-Howard, the princely manſion of the earl of Carliſle, of the illuſtrious houſe of Howard. On the ſcite of the ancient caſtle of Hinderſkelf the preſent building was erected, about a century ago, by ſir John Vanbrugh, the celebrated architect of Blenheim. Caſtle-Howard, in its general arrangement and appearance, bears an evident reſemblance to that ſuperb ſtructure, and indicates the genius of that diſtinguiſhed artiſt. In extent of front it exceeds Blenheim, and in exterior diſplay of magnificence it is, perhaps, ſuperior. The interior, ſpacious and lofty, is enriched with a very valuable aſſemblage of paintings by maſters of the greateſt celebrity ; and the collection of antique ſtatues, buſts, &c. is peculiarly intereſting. The ſurrounding park and grounds are diſtributed and ornamented in a way ſuitable to the grandeur of the ſtructure they incloſe. Duncombe-park, the ſeat of Charles Slingſby Duncombe, eſq., 22 miles N. from York, alſo erected by Vanbrugh, is ſplendid in itſelf, and ſplendidly adorned with paintings of the moſt eminent artiſts. Harewood-houſe, the reſidence of the earl of Harewood, ſix miles N. from Leeds, is a magnificent ſtructure, commenced in 1760, in which are combined grandeur of deſign and ornament, with convenience and accommodation of arrangement. One of the greateſt ornaments, not of Yorkſhire only, but of the kingdom, is Wentworth-houſe, once the habitation of the diſtinguiſhed patriot Charles marquis of Rockingham, from whom it deſcended to his nephew and heir the preſent earl Fitzwilliam. It is ſituated in a ſpacious park, four miles N.W. from Rotheram, and ſeven N.N.E. from Sheffield. The manſion extends in front about 600 feet, forming altogether a ſtructure of uncommon magnificence. Nor is the interior deficient in appropriate arrangement and ſplendour. In approaching the houſe, the attention of the viſitor is arreſted by a noble mauſoleum, raiſed in 1788, by the preſent earl, to the memory of his uncle, the marquis. This monument is placed on an eminence, and is in itſelf 90 feet in height, divided into three parts. The ſquare Doric baſement ſupports a ſimilar ſtructure of the Ionic order, with open arches on the ſides exhibiting a ſarcophagus ; the whole ſurmounted by a cupola. Within the baſement ſtory is a chamber containing a ſtatue of the marquis, by Nollekens. Around the walls are buſts of eight of his principal political friends, C. J. Fox, ſir G. Saville, &c. Wentworth-houſe, erected by the earl of Strafford in 1730, but now the ſeat of Henry Vernon, eſq., is a noble fabric. Towards the ſouthern border of the county, midway between Doncaſter and Workſop, is Sandbeck, the ſuperb manſion of the earl of Scarborough, erected nearly fifty years ago.

Eccleſiaſtical State.—A very important change in the condition of the eccleſiaſtical eſtabliſhments in Yorkſhire, and over England in general, was introduced by William I. Prior to the Conqueſt the Saxon prelates, with their archdeacons and other delegates, ſat in the courts with the earls and ſheriffs for the adminiſtration of juſtice ; receiving with the lay-judges a ſhare of the fines impoſed on offenders. According to the original charter, however, ſtill preſerved among the records of the cathedral of Lincoln, the Conqueror declared, that no biſhop or archdeacon ſhould, in future, hold eccleſiaſtical pleas in the hundred-court, nor ſuffer any cauſe of a ſpiritual nature to come under the cognizance of ſecular perſons. Whoever, therefore, offended againſt the canons of the church was to be tried by a tribunal, to be appointed by the biſhop of each dioceſe. It was alſo ſtrictly enjoined on all ſheriffs, royal officers, or other lay perſons, not to encroach on the epiſcopal juriſdiction. Theſe regulations were afterwards confirmed, in a general council of the nation, by the biſhops, abbots, and all the principal nobility ; but thoſe nobles and prelates were then almoſt all Normans or other foreigners. To this artful ſeparation of the eccleſiaſtical from the civil juriſprudence, the jealouſies, contrarieties, conteſts, and open ruptures, by which the kingdom was, on various occaſions, brought almoſt to its ruin, muſt be aſcribed. In addition to the diſſenſions occaſioned in this way, the diſpute reſpecting the ſuperiority of the ſee of Canterbury over that of York was conducted with peculiar animoſity, between the Norman prelates of both. In 1070, Thomas, a canon of Bayeux in Normandy, appointed to York, repaired to Canterbury for conſecration from the hands of archbiſhop Lanfranc, who had been previouſly inſtalled ; but refuſing to ſwear obedience to the ſee of Canterbury, the conſecration did not take place. The famous Gregory VII. making it now a rule to confer the pall on no prelate who did not appear in perſon before him, the two contending Engliſh archbiſhops were required to preſent themſelves in the court of Rome, where the diſpute was referred for deciſion to a ſynod of the clergy of England. By this council, aſſembled at Windſor in 1072, a ſentence amounting to a compromiſe was pronounced. The rights claimed by Canterbury were confirmed ; but Lanfranc diſpenſed with the oath of obedience from Thomas of York. In his profeſſion of obedience, however, Thomas acknowledged that the archbiſhops of York and their ſuffragans were bound to obey the mandate of the primate of Canterbury, when required to attend him in council, wherever it ſhould be held. On the appointment to York of Thurſtan, chaplain and ſecretary of Henry I. in 1115, the diſpute was again revived ; but in 1121, Thurſtan, who had obtained favour at Rome, was permitted by Henry, whom his pertinacity had irritated, to return to York. It does not, however, appear that he ever made any ſatisfaction for his reſiſtance to the claims of Canterbury ; or that a profeſſion of obedience to that ſee was ever made by any of his ſucceſſors. From this time, therefore, York maintained its independency, and, a few years afterwards, had certain ſuffragan biſhops placed under its authority. Roger of York, in 1162, procured a bull from Rome, granting him the privilege of crowning the kings of England, poſſeſſed by ſome of his predeceſſors, and of having his croſs carried erect before him throughout the whole kingdom. But in 1165, in the reign of Henry II., the latter privilege was by pope Alexander III. reſtricted to Roger's peculiar province. Oppoſing claims were nevertheleſs advanced on both ſides, until Edward III. by influence and management procured from Rome a confirmation of the arrangement he had accompliſhed between the contending prelates. Then was introduced the caſuiſtical and ſilly diſtinction, ſtill preſerved, in the titles of the two metropolitans, by which the archbiſhop of York is ſtyled primate of England, and his brother of Canterbury primate of all England.

The county of York is wholly and immediately under the ſuperintendence of the archbiſhop, whoſe ſuffragans are the biſhops of Carliſle, Cheſter, Durham, and the Iſle of Man. The latter, ſtyled biſhop of Sodor (the ſouthern iſles of Scotland) and Man, preſiding over a dioceſe not formerly pertaining to England, has no ſeat in the houſe of peers. Under the archbiſhop, eccleſiaſtical affairs are conducted by archdeacons ; an office firſt introduced into the dioceſe, as it is ſaid, by Thomas the Norman, appointed in 1070.

Fertile and extenſive as is the county of York, the number of religious houſes erected within its bounds, in former times, was prodigious. "Theſe were in all," according to Burton, (Monaſticon Eboracenſe,) "106 ; *viz.* abbeys 14, priories 44, alien priories 7, cells 13, and houſes of friars of various orders 28." Of thoſe eſtabliſhments the ruins of many houſes ſtill exiſt ; ſome of them exhibiting very pictureſque and attractive monuments of ancient devotion and liberality. St. Mary's abbey adjoining to York gives ſufficient indications of its original grandeur. The abbots of St. Mary's and of Selby, both of the Benedictine order, were alone entitled to wear the mitre on the N. ſide of Trent. But for an account of theſe abbeys, and that of Whitby, the reader is referred to the deſcription of the ſeveral towns in which they are ſituated. Of ſome others, erected in detached ſituations, a few may be here noticed. About three miles S.W. from Ripon are the magnificent and pictureſque ruins of Fountain's abbey, of the Ciſtercian order, founded in 1132; and ſo named, not from any abundance of ſprings of water at the place, but from the village of Fontaines in Burgundy, where St. Bernard, the great patron of the order, was born. But the ſtructure, of which the remains are ſo great an ornament to the country, was commenced in 1204. Built in the moſt elegant ſtyle of the ancient pointed architecture, the tower and the walls of the church ſtill remain; the roof only being ruined. The length of the church was 351 feet, and that of the tranſept 186. The great tower, ſingularly ſituated at the N. end of the tranſept, is in height 166 feet. The whole edifice may be conſidered as one of the fineſt ſpecimens of the ſimple but majeſtic ſtyle of the time of Henry III. and his ſucceſſor Edward I. The abbey now forms a peculiar ornament to the celebrated grounds of Studley-Royal. On the N. bank of the river Aire, three miles to the weſtward of Leeds, are the remains of Kirkſtal abbey, founded in 1147, by a colony of Ciſtercian monks from Fountain's abbey. The venerable remains of the Ciſtercian abbey of Rieval, or Rievaulx, are ſituated in a valley, about three miles northwards from Duncombe-park, from which they appear with peculiar advantage. Of the very ancient monaſtery of Ripon no part now exiſts. The collegiate church, or minſter, ſtill an intereſting edifice, was partly rebuilt in the middle of the 14th century. Roche abbey, ſituated near lord Scarborough's ſeat of Sandbeck, in a deep narrow vale, is now reduced to a few arches, and a portion of the nave.

Authorities. — Monaſticon Eboracenſe, or the Eccleſiaſtical Hiſtory of Yorkſhire, by John Burton, M.D. F.S.A. folio, 1758. Topographical Dictionary of Yorkſhire, by Thomas Langdale, 8vo. 1809. Eboracum, or the Hiſtory and Antiquities of the City of York, by Francis Drake, F.R.S. and F.S.A. folio, 1736. Hiſtory of Cleveland, by the Rev. John Graves, 4to. 1808. Hiſtory and Antiquities of the Deanery of Craven, by T. D. Whitaker, LL.D. F.S.A. 4to. 1812. General View of the Agriculture of the North Riding of Yorkſhire, by Mr. Tuke, 4to. 1794. Ditto of Eaſt Riding, by Iſaac Latham, Eſq. 8vo. 1794. Ditto of Weſt Riding, by Meſſrs. Rennie, Brown, and Sheriff, 8vo. 1794.

YORKSHIRE *Cows*, in *Rural Economy*, a term ſometimes applied to a large ſhort-horned breed of theſe cattle, which afford much milk, but which is not of the moſt rich kind, and which are much produced on the fine paſtures in that diſtrict. See COW and LIVE-*Stock*.

YORKSHIRE *White*, in *Agriculture*, a perennial graſs that thrives well in moſt ſituations, and which grows very generally on all ſoils, except thoſe that are of the moſt barren and dry qualities. It flowers in the middle of the ſummer, and is well calculated for ſheep, as it anſwers uncommonly well when cloſely fed down. It is ſaid not to be much reliſhed by neat cattle, and conſidered injurious to horſes, which, in ſome caſes, are ſuppoſed to become affected with a profuſe diſcharge of urine and general weakneſs in conſequence of the uſe of it. But ſhould any hay, made from this graſs, be accidentally given to theſe animals, and produce theſe effects, an immediate change of the fodder will prevent any further bad conſequences. Its foliage is rather ſoft and woolly.

The proportional value which the graſs at the time the ſeed is ripe bears to that at the time of flowering, is as 11 to 12.

It is an uſeful ſort of graſs in many caſes of laying land down to paſture and other ſuch purpoſes. See HOLCUS *Lanatus*.

YO-SANPOO, in *Geography*. See SANPOO.

YO-TCHEOU, a city of China, of the firſt rank, in the province of Hou-quang, ſituated on the Yang-tſe river, and on the Tong-ting lake. This lake, which reſembles a ſea, is remarkable for the greatneſs of its circuit, which is more than 210 miles; for the quantity of its water, eſpecially in certain ſeaſons, in which the two great rivers of the provinces ſwelled with rains, diſcharge themſelves into it, paſſing out on the other ſide ſenſibly diminiſhed; and for its aſtoniſhing quantity of fine fiſh which are caught therein. The great number of barks and merchandizes which are brought thither render it one of the richeſt cities in the empire; its diſtricts contain one town of the ſecond order, and ſeven of the third; ſome on the eaſt ſide of the lake, and others on the weſt. The country round is every where extremely fruitful, and full of different kinds of orange and lemon trees; 675 miles S. of Peking. N. lat. 29° 23′. E. long. 112° 35′.

YOUB, EL, a town of Algiers; 50 miles S.W. of Tremecen.

YOUGH GLADES, a poſt-town of Maryland; 173 miles N.W. of Waſhington.

YOUGHAL, a ſea-port, borough, and poſt-town of the county of Cork, Ireland, ſituated at the mouth of the river Blackwater, in the eaſtern part of the county. Youghal is an ancient corporation, and ſends a member to the united parliament. It is one of the towns belonging to the duke of Devonſhire, as heir of the eldeſt branch of the Boyle family. It has a conſiderable corn trade, and is much frequented for bathing. There is a collegiate church, the wardenſhip of which is united to the ſee of Cloyne. Youghal is 115 miles S.W. from Dublin, and 25 E. from Cork.

YOUHIOGENY, a river of America, which riſes in the north part of Virginia, and runs into the Alleghany, at Pittſburgh.

YOVIS, a town of Africa, in the county of Whidah; 9 miles E.N.E. of Sabi.

YOULE, a river of Madagaſcar, which runs into the ſea on the weſt coaſt, S. lat. 20° 20′. E. long. 44° 40′.

YOUNG, EDWARD, in *Biography*, a celebrated poet and clergyman of the eſtabliſhed church, was born at his father's living of Upham, in Hampſhire, in 1684, and removed from Wincheſter ſchool to New college, in the univerſity of Oxford in 1703, and afterwards to Corpus Chriſti college. In 1708 he obtained a law-fellowſhip at All Souls by the patronage of archbiſhop Teniſon, and at this time poetry was the chief object of his purſuit. His firſt performance in this department was "An Epiſtle to Lord Lanſdown," one of the twelve peers created at the ſame time in 1712; and this was followed in the next year by his "Laſt Day," to which he prefixed a dedication to queen Anne, extolling the peace of Utrecht. From this circumſtance he was regarded as a court-writer with a fixed ſtipend, under which character Swift alludes to him in his "Rhapſody on Poetry;"

> "Where Y—— muſt torture his invention
> To flatter knaves, or loſe his penſion."

His next production was "The Force of Religion, or Vanquiſhed Love," founded on the ſtory of lady Jane Gray; and in 1714 he inſcribed a poem on the death of the queen and the acceſſion of George I. to Addiſon, who was then ſecretary to the lords juſtices. In 1719 he became tutor to the eldeſt ſon of the earl of Exeter; but ſoon abandoning that connection by the ſolicitations of the duke of Wharton, he graduated doctor of civil laws in this year, and wrote his tragedy of "Buſiris, King of Egypt," which was dedicated to the duke of Newcaſtle, and favourably received; and in the ſame year he dedicated in a very complimentary ſtrain to lord chancellor Parker, his poetical "Paraphraſe on Part of the Book of Job." In the year 1721 his tragedy, "The Revenge," was exhibited with great applauſe, and dedicated to the duke of Wharton, whom he avows as his peculiar patron, and from whom he received ſome pecuniary favours. His ſatires, entitled "The Love of Fame, or the Univerſal Paſſion," were ſeparately publiſhed, from 1725 to 1728, and as they became popular, he derived from them conſiderable profit. In 1726 he addreſſed his poem, entitled "The Inſtalment," to ſir Robert Walpole, on his receiving the honour of the Garter; and he availed himſelf, on the acceſſion of king George II., of his recommending an attention to the navy, to compoſe two odes, one inſcribed "To the King, Pater Patriæ," introducing another under the title of "Ocean." Having attained his 44th year, he took orders, and in 1728 was nominated one of the royal chaplains; and this change of his views and purſuits induced him to withdraw from the ſtage his tragedy of "The Brothers," which was under rehearſal. His next publications were adapted to his new profeſſion; and among theſe were his "True Eſtimate of Human Life," exhibiting the dark ſide of the picture; and a ſermon preached before the houſe of commons on the 30th of January, entitled "An Apology for Princes, or the Reverence due to Government;" a ſubject not unappropriate to his ſituation as royal chaplain. In 1730, Dr. Young was preſented by his college to the rectory of Welwyn, in Hertfordſhire; and in the following year he married lady Elizabeth Lee, widow of colonel Lee, and daughter of the earl of Lichfield. Before this time he had reſumed his poetical pen, and written "Imperium Pelagi, a Naval Lyric;" "Two Epiſtles to Mr. Pope, concerning the Authors of the Age;" and "The Sea-Piece," in two odes, dedicated to Voltaire. By his wife, who died in 1741, he had one ſon; and this circumſtance, together with ſome other domeſtic loſſes that occurred about the ſame period, increaſed that melancholy and depreſſion of mind to which he was conſtitutionally inclined. When he married lady Lee, ſhe had a ſon, and alſo two daughters, the eldeſt of whom, denominated by him Narciſſa, falling into a decline, went to the ſouth of France, and died at Lyons in 1736. Her huſband, Mr. Temple, ſuppoſed to be the poet's Philander, died in 1740; and his own lady died in 1741. If he referred to theſe events in the annexed lines, he muſt have taken a chronological licence hardly allowable even to a poet:

> "Inſatiate archer! could not one ſuffice?
> Thy ſhaft flew *thrice*, and *thrice* my peace was ſlain;
> And *thrice*, ere *thrice* yon moon had filled her horn."

It is certain that he began to write his "Night Thoughts" in the year 1741; and the occaſion, as he declares, was real, and not fictitious. The ſeventh of theſe poems is dated in 1744, and the interval muſt have been occupied in the compoſition of them. Notwithſtanding the ſublime ſtrains in which the author expreſſes his pious feeling, he is not regardleſs of the patronage of diſtinguiſhed perſons, for to ſuch he inſcribes them. On this work Dr. Young beſtowed much attention and labour, and he valued it as the chief of his productions. Among his other works, we may mention a poem written as an expreſſion of his loyalty in 1745, and entitled "Some Thoughts occaſioned by the preſent Juncture, inſcribed to the Duke of Newcaſtle;" "The Centaur not fabulous, in Six Letters to a Friend, on the Life in Vogue," an overcharged picture of the exiſting manners; and "A Sermon preached before their Majeſties," with a dedication to the king, 1758. Dr. Young, notwithſtanding his genius and piety, and his ſolicitude to obtain preferment, ſeems to have been diſregarded; and though archbiſhop Secker expreſſes his ſurpriſe that he had been overlooked by perſons in power, he declines any interference in his favour. It ſhould be recollected, however, that the attention which he paid to Frederick, prince of Wales, during his variance with his father, was not forgotten; nor indeed would his junction of the poetical and clerical character be any recommendation to George II. But the reaſon of his name's being ſtruck out of the liſt of court-chaplains on the acceſſion of his preſent majeſty is not known; it is the more unaccountable, as he was ſoon after appointed clerk of the cloſet to the princeſs dowager of Wales.

In his retreat at Welwyn he maintained a reſpectable and dignified character; and though the caſt of his mind ſeems to have been gloomy, he was an agreeable and lively companion. The cloſe of his life, however, was rather diſconſolate than cheerful. The conduct of his only ſon, ſuppoſed to be the Lorenzo of the Night Thoughts, who is ſaid to have been a rake and free-thinker, afforded him renewed opportunities for reproof and ſarcaſm, and muſt have been the occaſion of poignant grief; though Mr. H. Croft vindicates his character, alleging that he was only eight years old when his father began that poem. But others have aſſerted that he was alarmed and grieved on his account; and that, notwithſtanding the favourable change which took place in his ſentiments and character, his father would not admit him to any interview in his latter years: and even on his death-bed he refuſed to ſee him, though he aſſured him of his forgiveneſs, and made him his heir. Towards the cloſe of his life, he ſurrendered himſelf to the influence of a houſekeeper, and from ſome miſmanagement in his concerns, and a growing diſpoſition to avarice, he became irritable in temper and depreſſed in ſpirits. His laſt production was a poem, entitled "Reſignation," printed in 1762, which indicated the decline of his mental powers. His life was prolonged to the year 1765, and he then died in his 84th year. He was interred in the church of Welwyn, and his ſon erected a monument near the remains of both his parents.

Dr. Young is known principally, if not wholly, as a poet; and his compoſitions in this department are diſtributed into ſatires, tragedies, and night thoughts. His ſatires are founded on the queſtionable principle, that the love of fame is the univerſal paſſion of mankind; and as he did not excel in judgment, they are exerciſes of wit and invention rather than grave expoſures of vice and folly. As a dramatic writer, he is charged with not underſtanding or not adhering to nature, and with indulging his imagination and feeling, and running into exaggeration of character and bombaſt of expreſſion. The only tragedy that has kept poſſeſſion of the ſtage is his "Revenge," the Zanga of which is ſaid to have no competitor for theatric effect among the perſonages of modern tragedies. His "Night Thoughts" are deemed original in deſign and execution. Whatever were the cauſes that produced them, they are adapted to excite devout feeling, and to produce moral effect, though they are juſtly complained of as in ſome places unintelligible, and as affording too much ſcope for criticiſm. To many readers, the theology on which they are founded and which they expreſs is too awful and ſevere, and not ſo well calculated to ſooth and pacify the human mind under trouble as the gentler and more conſolatory dictates of Chriſtianity. They are ſometimes tedious and prolix. They will never be neglected as long as taſte and ſuſceptibility of virtuous and religious impreſſions remain. The lyric attempts of Dr. Young are ſaid to have been ſingularly unfortunate. From the edition of his works publiſhed in his life-time in 4 vols. 8vo., he himſelf excluded ſeveral compoſitions which he thought of inferior merit. Biog. Brit. Croft's Life of Young in Johnſon's Engliſh Poets. Gen. Biog.

Young, Patrick, (*Patricius Junius*, Lat.), an eminent ſcholar, was born in 1584, at the ſeat of his father, ſir Peter Young, who had been co-tutor with Buchanan to James VI. of Scotland, at Seaton in Lothian. Educated in the univerſity of St. Andrew's, and accompanying his father in the ſuite of king James, he was employed for ſome time as librarian and ſecretary, by Dr. Lloyd, biſhop of Cheſter. In 1605 he aſſumed the degree of M.A. which he had before taken at St. Andrew's, and entering into orders, became chaplain at All Souls' college. During his reſidence at Oxford he occupied himſelf in the ſtudy of eccleſiaſtical hiſtory and antiquities, and alſo the Greek language; and upon his removal to London, he obtained a penſion of 50*l.* a year, and was occaſionally employed by the king and perſons in power in writing Latin letters. His patron was Montagu, biſhop of Bath and Wells, who procured for him the appointment of librarian to the king. In 1617 he was introduced at Paris, by the recommendation of Camden, to the learned men of that city; and upon his return, he aſſiſted Thomas Rhead in making a Latin verſion of the works of king James. In 1620 he married, and afterwards was advanced to ſeveral preferments in the church; and ſucceeded Rhead in 1624 as Latin ſecretary. Unknown by any publication, he was neverthleſs honoured as a perſon of diſtinguiſhed literature, who rendered acceptable and uſeful ſervices to learned men. In this way, he was the coadjutor of Selden in the examination of the Arundelian marbles; and when they were publiſhed by this celebrated antiquary, he dedicated the work to Young. He was alſo employed in collating the Alexandrian MS. of the Bible with other copies; and as the reſult of his labours, he communicated many various readings to Grotius, Uſher, and other perſons. It was his intention to have edited a fac-ſimile of this MS., but his deſign was never executed. He publiſhed, however, in 1633, from this MS. the "Epiſtles of Clemens Romanus," and he propoſed editing the curious MSS. from the king's library; but the civil wars, and the ſeizure of the royal library, prevented the accompliſhment of his purpoſe. During the troubles of this period, he ſought an aſylum with a ſon-in-law, at Bromfield in Eſſex, where he died in 1652.

Young is ſaid to have indulged to exceſs a diſpoſition to oblige, which led him to lend valuable MSS. belonging to the royal library to foreigners and others; and he has been charged with betraying his truſt, by not returning MSS. which he removed to his own houſe in contemplation of the pillage of the library, and theſe were ſold among his other effects. To obviate this imputation, it has been alleged that he purchaſed for himſelf many MSS. from Greeks who viſited this country. Smith's Vit. Erudit. Viror. Gen. Biog.

Young is a name borne by many perſons connected with and remarkable in ſome way or other for uſeful talents in the arts. Charles Young, organiſt of Catharine-cree church, near the Tower, father of three daughters, who were all public ſingers: Cœcilia, the eldeſt, was an èlève of Geminiani, ſpoke Italian well, ſung in many of Handel's later operas, and was afterwards married to Dr. Arne; the ſecond Miſs Young, Iſabella, was married to the ingenious and excellent compoſer Mr. Lampe, who ſet the Dragon of Wantley; and the third Miſs Young, Eſter, afterwards Mrs. Johes, ſung on the ſtage at Covent-Garden theatre to the time of their deaths. Charles, the father of theſe ladies, was, we believe, the ſon of Anthony Young, a muſician and muſic-ſeller in St. Paul's church-yard, commonly called Tony Young, who has been ſaid by ſome of the family to have ſet "God ſave great George our King." But at the time of the rebellion of 1745, when this air was revived, which Dr. Arne's mother aſſured us was written and ſet for king James II., when the prince of Orange was hovering over the coaſt previous to the Revolution; no claim was then made by the deſcendants of Anthony Young, or of any other compoſer of this air, which no one durſt ſing or own after the abdication of king James, without incurring the penalty of treaſon to king William; ſo that the ſong or hymn lay dormant, and the author concealed for near ſixty years, before it was applied to king George II.

There is a quibbling glee in the firſt volume of Purcell's catches on two perſons of the name of Young, father and ſon, who lived in St. Paul's church-yard; the one was an inſtrument-maker, and the other an excellent performer on the violin:

"You ſcrapers that want a good fiddle well ſtrung,
You muſt go to the man that is old while he's Young,
But if this ſame fiddle you fain would play bold,
You muſt go to his ſon, who'll be Young when he's old.
There's old Young and young Young, both men of renown,
Old ſells, and young plays, the beſt fiddle in town;
Young and old live together, and may they live long,
Young to play an old fiddle, old to ſell a new ſong."

Another Young, of the ſame family, the proprietor of a muſic-ſhop in St. Paul's church-yard till the middle of the laſt century, had a relation, an excellent performer on the violin, known by the name of *Chin*-Young, from the length of that feature, who led at almoſt all the concerts within Temple-bar, particularly at the Blue-coat ſchool chapel, Chriſt's hoſpital, on a Sunday evening, where there uſed to be a performance of ſacred muſic.

Miſs Young, afterwards the hon. Mrs. Scot, and her ſiſter Mrs. Bartleman, both public ſingers, ſeem to have been the laſt remains of the muſical family of Young.

Young. See Generation, Conception, Gestation, Embryo, Fœtus, Delivery, Child, &c.

In the army, that regiment, or officer, is ſaid to be the *younger*, *junior*, which was laſt raiſed, or whoſe commiſſion is of lateſt date, whatever be the age of the man, or however long he may have ſerved in other capacities.

Young *Plantations*, *Securing and Sheltering of*, in *Rural Economy*. See Plantation and Sheltering.

Young *Frederick's Iſland*, in *Geography*, a ſmall iſland among Queen Charlotte's iſlands, in Port Ingraham.

Young *Nick's Head*, a cape on the eaſt coaſt of New Zealand, ſo called from Nicholas Young, a boy on board the Endeavour, who diſcovered it in 1769. It forms the ſouth-weſt point of Poverty bay.

Young *Point*, a cape on the eaſt coaſt of St. Vincent. N. lat. 13° 12′. W. long. 61° 9′.

Young's *Iſland*, a ſmall iſland near the ſouth coaſt of the iſland of St. Vincent; 2 miles S.E. of Kingſton bay.

YOUNGE, Nicholas, in *Muſical Hiſtory*, an Italian merchant, the editor of "Muſica Tranſalpina," 1588; Madrigales of four, five, and ſixe parts, choſen out of divers excellent Authours; with the firſt and ſecond part of La Virginella, made by Maiſter Bird upon two Stanzas of Arioſto, and brought to ſpeak Engliſh with the reſt. The editor having opportunities of obtaining from his correſpondents the neweſt and beſt compoſitions from the continent, had them frequently performed at his houſe, for the entertainment of his muſical friends.

The ſecond collection of the ſame kind was publiſhed by the ſame editor in 1597; in which, among others, there are three madrigals by Crou, three by Luca Marenzio, and ſix by the elder Ferraboſco. Theſe two collections being ſelected from the works of Paleſtrina, Luca Marenzio, and other celebrated maſters on the continent, ſeem to have given birth to that paſſion for madrigals which became ſo prevalent among us afterwards, and which the compoſers of our own country endeavoured with ſuch zeal to gratify.

If allowance be made for the wretched ſtate of lyric poetry in England at the time the madrigals publiſhed in Younge's two collections were tranſlated, which was long before the publication of the ſonnets of Spenſer or Shakſpeare, the undertaking ſeems to have been tolerably executed. Indeed, ſometimes with ſuch care and felicity as to transfuſe the expreſſion of the original words into that of the verſion. The Italians themſelves, at this time, had but little melody or rhyme in their muſic; but their poetry having been long cultivated, and brought to a much greater degree of perfection than ours could then boaſt, it indicated to the muſical compoſer traits of melody, more airy and marked, perhaps, than we could derive from the proſody or phraſeology of our own language. The tranſlator of theſe madrigals, whoever he was, for the editor does not tell us, ſeems in general to have imitated the original Italian meaſure and ſtructure of verſe, as well as ideas; and though they abound with *concetti*, to which not only Italian poets, but thoſe of all the reſt of Europe were then ſo much addicted, the general taſte of the times was indulged in poetry as well as muſic, and metre and melody were at once furniſhed with new models.

However, the perpetual double rhymes in Italian madrigals and ſonnets have ſo much diſtreſſed our tranſlator to ſupply them in Engliſh, that, as the preſervation of the original muſic obliged him to render his verſion *totidem ſyllabis*, his embarraſſments on this account are ſometimes truly ridiculous. It ſeems as if the conſtant double rhymes in Italian poetry, which throw the accent on the penultima, inſtead of the final ſyllable, of a verſe, gave a peculiar caſt to the melody in which it is clothed, and rendered it ſpecifically different from that of Engliſh ſongs, in which but few double rhymes occur. The conſtant and regular mixture of maſculine and feminine rhymes in French poetry may likewiſe have had a latent effect on the vocal melody of France, different from that of the other two neighbouring nations. But, after mentioning theſe ſuſpicions, we ſhall leave the further inveſtigation of ſo ſubtle a ſubject to philoſophers, not only poſſeſſed of the neceſſary knowledge, but an equal zeal for the cultivation of philology, poetry, and muſic. No. 7, in Younge's ſecond publication of Italian madrigals Engliſhed, in which the old Saxon termination of the preſent tenſe of the indicative mood of our verbs is conveniently preſerved, was doubtleſs not thought the worſt, as it is applied to ſeveral compoſitions in the collection.

"In vayne he ſeeks for beauty that excelleth,
That hath not ſene hir eyes where love ſejorneth,
How ſweetly here and there the ſame ſhe turneth.

He knows not how love heateth, and he quelleth,
That knows not how ſhe ſighes, and ſweet beguileth,
And how ſhe ſweetly ſpeakes, and ſweetly ſmileth."

Theſe madrigals were celebrated, nearly forty years after their publication, by Peacham, who has pointed out the peculiar excellence of ſeveral, particularly thoſe of Luca Marenzio, which, he ſays, "are ſongs the muſes themſelves might not have been aſhamed to have compoſed;" and of thoſe by Alfonſo Ferraboſco, the father, he ſays, "they cannot be bettered for ſweetneſs of ayre and depth of judgment." Upon the ditty (words) of one of theſe, "I ſaw my Ladie weeping," (he ſays) Maſter Byrd and Alfonſo, in a friendly emulation, exerciſed their invention." The words of the Nightingale, and Fayre Suſanna, were ſo much admired, that they ſeem to have been ſet by all the beſt compoſers of the times. A few lines of each will perhaps convey to the reader an adequate idea of the poetical beauty of theſe favourite ſongs.

The Nightingale.

"But my poore hart with ſorrowes over-ſwelling,
Through bondage vyle, binding my freedom ſhort,
No pleaſure takes in theſe his ſports excelling,
Nor of his ſong receiveth no comfort."

Fayre Suſanna.

"To them ſhe ſayd, if I, by craft procur'd,
Do yeld to you my body to abuſe it,
I loſe my ſoule; and if I ſhall refuſe it,
You will me judge to death reproachfully.
But better it is in innocence to chuſe it,
Then by my fault t'offend my God on hye."

Indeed, in more than twenty ſets, publiſhed between the years 1588 and 1624, during a period of near forty years, including almoſt four hundred and fifty madrigals and ſongs in parts, it would be difficult to find any one of which the words can be peruſed with pleaſure. The ſonnets of Spenſer and Shakſpeare, many of which are worthy of their authors, were indeed not publiſhed till about the end of the ſixteenth century; but afterwards, it is wonderful, that, except one by Shakſpeare, none of them were ſet by our beſt muſical compoſers of their time.

YOUNGOULE, in *Geography*, a ſea-port town, on the weſt coaſt of the iſland of Madagaſcar. S. lat. 23° 30′. E. long. 47° 4′.

YOUNGSTOWN, a townſhip of the ſtate of Ohio, in the county of Trumbull, with 773 inhabitants; 66 miles N. of Pittſburgh.

Youngstown, an inconſiderable ſettlement called a village in Cambria, Niagara county, and ſtate of New York, 1 mile from Fort Niagara, and 6 from Lewiſton, containing about ſix or eight houſes.

YOUNKERS, among *Sailors*, are the *younger* ſailors, otherwiſe called *foremaſt-men;* whoſe buſineſs is to take in the top-ſails, furl the ſails, ſling the yards, &c.

YOURE, in *Geography*. See Ure.

YOURI, a town of Africa, in the kingdom of Caſhna. N. lat. 16° 15′. E. long. 11° 2′.

YOUTH, *Adoleſcence*. See Age and Adolescence.

The renovation of youth has been much ſought after by chemical adepts; and many of them pretended to various ſecrets for this purpoſe: but unluckily the death of the pretenders proved a ſufficient refutation of their doctrine. Paracelſus talks of the mighty things he could do with his *ens primum*; and even Mr. Boyle tells us ſome ſtrange things about the *ens primum* of balm. (Boyle's Works abr. vol. i. p. 75.) But Mr. Boyle gives theſe wonderful ſtories on the credit of a French chemiſt, and not on his own.

Youth, *Juventus*, or *Juventas*, in the *Pagan Theology*, a goddeſs worſhipped among the Romans, who, together with the gods Mars and Terminus, kept her place in the Capitol along with Jupiter, when the other deities were turned out: whence the Romans drew a lucky omen for the durableneſs of their empire. Mem. Acad. Inſcrip. vol. i. p. 71. ſeq.

This ſtate of life was, by the ancients, compared to autumn. In which ſenſe, Horace ſpeaking of one approaching to puberty, ſays,

> " ——— Jam tibi lividos
> Diſtinguet autumnus racemos,
> Purpureo varius colore."

The moderns, on the contrary, when they ſpeak of one in the autumn of his age, mean one that is upon the decline; and chooſe rather to uſe the compariſon of the ſpring, to denote youth.

YOWRY, in *Geography*, a ſmall iſland in the Eaſt Indian ſea, near the north coaſt of New Guinea, on which a nutmeg-tree was found growing by captain Forreſt. S. lat. 15′. E. long. 130° 45′.

YPAWA, a river of Bohemia, which runs into the Elbe, near its ſource.

YPERLEE, a river of France, which riſes near Ypres, and runs into the canal of Nieuport.

YPOLOTE, a town on the E. coaſt of the iſland of Paraguay. N. lat. 8° 46′. E. long. 118° 21′.

YPRES, or Ipres, a city of France, in the department of the Lys, ſituated on the river Yperlee, from whence it takes its name. Before the year 800, it was only a château, which was ſacked and ruined by the Normans. Baldwin III. comte of Flanders, repaired the château, and built a town about the year 960, which was afterwards enlarged by Thierry, comte of Flanders, and Ferrand, the ſon of Sanchez, king of Portugal. In the year 1325, the inhabitants revolted with moſt part of the neighbouring towns againſt Louis de Nevers, comte of Flanders, and pulled down the old wall to build a new one, in which they incloſed the fauxbourgs, which had become ſo extremely populous, from weavers and other tradeſpeople, that in the year 1242, the number of perſons amounted to 200,000. In the 14th century, the inhabitants of Ypres, for the moſt part weavers, were exceedingly troubleſome to their neighbours, being unwilling that any people ſhould carry on trade beſides themſelves. In the year 1383, the rebels of Ghent, aſſiſted by the Engliſh, under the command of the biſhop of Norwich, beſieged this town with great vigour for ſix weeks, but were compelled to retire; and the Engliſh being obliged to quit Flanders, Philip the Hardy, duke of Burgundy, having become maſter by a marriage with the heireſs of the late comte Louis, enlarged it, and ſurrounded it with walls. It was erected into a biſhopric under the archbiſhop of Malines, by pope Paul IV. in the year 1559. The town-houſe is a very large building, forming a ſquare, and is ſaid to have been built by the Engliſh, 600 feet in front; it has a very handſome tower, in which were kept their public archives from the year 1342. Beſides the cathedral, it has ſeveral other churches, and ſome religious houſes. The inhabitants carried on formerly a great trade in woollen cloth, but by the ſeverity of the duke of Alva, the principal manufacturers were driven to England, from which time that branch of trade declined. At this time they carry on a conſiderable manufacture of linen of excellent fabric; 4 miles N.W. of Liſle. N. lat. 50° 48′. E. long. 2° 53′.

YPSILOIDES, ὑψιλοειδης, in *Anatomy*, the third genuine ſuture of the cranium; thus called from its reſembling a Greek *y*, or upſilon.

Some alſo call it λαμϐδοειδης, *lambdoides*.

There is alſo a bone at the root of the tongue, called *ypſiloides*, and *hyoides*. See Hyoides.

YQUETAYA, in *Natural Hiſtory*, a plant growing in Braſil, long uſed as a medicine in that country; and lately diſcovered to the Europeans by a French ſurgeon.

It has been ſince found in France; where, being cultivated and examined by Marchant, it appears to be no other than the common water-betony, or ſcrophularia aquatica.

It has this remarkable property, that it takes away from ſena all its ill taſte and ſmell; which property of correcting the infuſion of ſena was before wholly unknown.

To uſe this plant, it muſt be dried ten or twelve days in the ſhade, and afterwards expoſed to the ſun, till quite dry.

YRAME, in *Geography*, a town of Arabia, in the province of Yemen; 100 miles N.N.E of Aden.

YRIARTE, *Don* John de, in *Biography*, was born in the Iſle of Teneriffe in 1702, and having completed his education at Paris and Rouen, ſettled at Madrid; where he occupied ſeveral literary offices, and particularly that of librarian to the king. His life terminated, to the regret of thoſe who knew his worth, in 1771. Among his learned works, the principal are, " Palæographia Græca," 4to.; " Miſcellaneous Pieces in Spaniſh, with Latin Poems," 2 vols. 4to.; " A Catalogue of Greek MSS. in the Royal Library;" and " A Catalogue of Arabic MSS. in the Eſcurial," 2 vols. fol. Nouv. Dict. Hiſt.

YROUER, in *Geography*, a town of France, in the department of the Yonne; 5 miles S. of Tonnerre.

YRSEE Abbey, a princely abbey of Germany, in the circle of Swabia, founded in the year 1182. The territory includes the village of Yrſee, and ſeven others. In 1802, this abbey was given among the indemnities to the elector of Bavaria; 3 miles N.W. of Kaufbeuren.

YRVILLAC, a town of France, in the department of the Finiſterre; 3 miles S. of Landerneau.

YRUN, a town of Spain, in Guipuſcoa; 2 miles S of Fontarabia.

YRVON, a river of Wales, in the county of Brecknock, which runs into the Wye, at Builth.

YS, in *Ichthyology*, a name given by Athenæus, and ſome other of the Greek writers, to the fiſh called *mus* and *ſus* by others. It is the capriſcus of later writers. See Goat-*Fiſh*.

YSAMBRA, a word uſed by ſome as a name for hellebore, and by others to expreſs a ſpecies of poiſon prepared in Spain, of which hellebore is an ingredient.

YSARD, in *Zoology*, a name given to the chamois.

YSCHE, in *Geography*, a river of France, which runs into the Dyle, 6 miles S. of Louvain.

YSENDYCK, or Isendyck, a town and fortreſs of Flanders, ſituated on the ſide or arm of the Scheldt, called the Blie: it was built near a town called Gaſterneſſe, ſwallowed up by an inundation of the ſea ſome centuries ago, whoſe inhabitants came to eſtabliſh themſelves at this place. The Dutch made themſelves maſters of it in the year 1604, and ſince that time it has been ſtrongly fortified, which is much aſſiſted by its ſituation, being ſurrounded by moraſſes, which they can lay under water at pleaſure; 8 miles E. of Sluys. N. lat. 51° 21′. E. long. 3° 28′.

YSIPORTAM, in *Ancient Geography*, a place of Aſia, in Armenia, which had a Roman garriſon.

YSNI, in *Geography*. See Isny.

YSOPUS, a term uſed by ſome to expreſs the chemical art of ſeparation.

YSPAR, a name by which ſome of the chemical writers call iron.

YSSANDON, Jean, in *Muſical Biography*, born at Leſſart, in the Compté de Foix, wrote "A Treatiſe on Practical Muſic, divided in Two Parts." This book is become very ſcarce, and deſerves to be reprinted. It was firſt printed by Ballard in 1582. Laborde.

YSSEL, in *Geography*. See Issel.

YSSENGEAUX. See Issengeaux.

YSTAD, or Ydstad, a ſea-port town of Sweden, on the ſouth coaſt of the province of Schonen, from whence a packet ſails to Stralſund. It was formerly well fortified, and contained two churches. The harbour is neither large nor ſafe; 26 miles S.E. of Lund. N. lat. 55° 22′. E. long. 13° 44′.

YSTLA, a town of North America, in the province of Mexico.

YSTWITH. See Istwith.

Y-TCHANG, a town of Corea; 35 miles W.N.W. of Kang-tcheou.

Y-TCHUUN, a town of Corea; 15 miles S.S.W. of Ou-tcheou.—Alſo, a town of Corea; 55 miles N. of King-ki-tao.

YTHAN, a river of Scotland, a few miles N. of the Don, that joins the ſea, about two miles from Aberdeen, which falls into the German ocean. The Ythan is a ſtream formerly celebrated for its pearl fiſheries, of which ſome relics are now found.

YTHER, a river of Wales, which runs into the Wye, 3 miles N. of Builth.

YTTERON, a ſmall iſland in the gulf of Bothnia. N. lat. 63° 4′.

YTTRA Bergon, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 61° 48′. E. long. 17° 13′.

YTTRIA, or Ittria, in *Chemiſtry*, is a peculiar elementary ſubſtance uſually conſidered as an earth.

Yttria has been hitherto met with in a peculiar mineral named Gadolinite, ſo named from profeſſor Gadolin, who firſt analyſed it, and in Yttro-tantalite, both minerals found only in Sweden. See thoſe articles.

Yttria has the appearance of a fine white powder, without taſte or ſmell. It does not affect vegetable blues. Its ſpecific gravity is conſiderably higher than that of the other earths, being no leſs, according to Ekeberg, than 4.842.

Yttria is inſoluble in water, yet, like alumina, it is capable, according to Klaproth, of combining with nearly one-third of its weight of that fluid when precipitated from a ſtate of ſolution by the muriatic acid.

In ſolutions of the pure alkalies it is likewiſe inſoluble; but in the carbonate of ammonia, and indeed in all the alkaline carbonates, it diſſolves readily. It combines with acids, and forms with them ſalts, which, as far as they are known, are deſcribed below.

Yttria is not affected by light, and probably does not combine with oxygen. According to the experiments of Klaproth, it does not combine readily with ſulphur.

Sir Humphrey Davy found, that when potaſſium was paſſed through red hot yttria, it was converted into potaſh, while grey metallic particles were perceived mixed with the alkali, which were conſidered to be the metallic baſis of the earth or *yttrium*. Nothing further, however, is known reſpecting this metallic baſis.

The *Salts of Yttria* are but little known. The following only have been examined.

Nitrate of Yttria.—This ſalt was firſt formed by Ekeberg, and has been more lately examined by Vauquelin. It may be prepared by diſſolving yttria in nitric acid. The ſolution has a ſweet aſtringent taſte, and can ſcarcely be made to cryſtallize. Expoſed to the air, it deliqueſces. When ſulphuric acid is poured into the ſolution, cryſtals of ſulphate of yttria are inſtantly precipitated.

Carbonate of Yttria.—This ſalt may be formed by precipitating yttria from its ſolution in acids by means of an alkaline carbonate. It is white taſteleſs inſoluble powder, compoſed, according to Klaproth, of

Carbonic acid -	18
Yttria - -	55
Water - -	27
	100

According to Vauquelin, however, it loſes only 32 *per cent.* when calcined.

Phoſphate of Yttria.—Vauquelin formed this ſalt by mixing a ſolution of the phoſphate of ſoda with the ſulphate, nitrate, or muriate of yttria. The phoſphate of yttria precipitated in the form of gelatinous flakes.

Sulphate of Yttria.—Sulphuric acid diſſolves yttria readily. As the ſolution proceeds, the ſulphate cryſtallizes in ſmall brilliant grains. Ekeberg ſtates theſe cryſtals to be flat ſix-ſided priſms, terminated by four-ſided ſummits. Dr. Thomſon obtained theſe in the form of long ſlender rhomboidal priſms. Their colour is amethyſt-red: their ſpecific gravity 2.791. They are ſoluble in about 30 parts of water at 60°. A red heat partly decompoſes them. Oxalic acid, pruſſiate of potaſh, and infuſion of nutgalls, occaſion a precipitate in the aqueous ſolution of this ſalt. It is decompoſed by the phoſphate of ſoda. The ſulphate of Glucina is readily diſtinguiſhed from this ſalt by its being colourleſs, lighter, and more ſoluble in water. According to Berzelius, the ſulphate of yttria is compoſed of

Sulphuric acid -	50.0
Yttria - -	50.0
	100.0

Arſeniate of Yttria.—When yttria is diſſolved in arſenic acid, and the ſolution boiled, arſeniate of yttria precipitates in the form of a white powder. Arſeniate of potaſh alſo precipitates yttria from acids.

Chromate of Yttria.—Chromic acid diſſolves yttria cold in conſiderable quantity, and with efferveſcence. The ſolution has an aſtringent and pungent taſte, and, like moſt of the chromates, has an orange-red colour, paſſing into yellow. The ſolution is quite neutral. When evaporated, it forms minute priſmatic and cubic cryſtals. It is very ſoluble in water.

Acetate of Yttria.—Yttria diſſolves readily in acetic acid, and the ſolution on evaporation yields cryſtals of the acetate of yttria, the form of which is uſually that of thick ſix-ſided plates, obliquely truncated. Their colour is amethyſt-red, and they are not altered by expoſure to the air.

Succinate of Yttria.—Yttria is not precipitated from its ſolution in acids by the ſuccinates, unleſs the two ſalts be concentrated, in which caſe ſmall cubic cryſtals fall, which are the ſuccinate of yttria.

Oxalate of Yttria.—When oxalic acid, or the oxalate of ammonia, is dropped into a ſolution of yttria in an acid, a white inſoluble powder falls, which is the oxalate of yttria. According to Vauquelin, this ſalt is compoſed of

Oxalic acid -	57.5
Yttria - -	42.5
	100

Tartrate of Yttria.—Yttria is precipitated from its ſolution in acids by the tartrate of potaſh, but the precipitate is diſſolved by the addition of water.

Dr. Thomſon infers, from the analyſes above-mentioned, and more eſpecially from the analyſis of the ſulphate and carbonate by Berzelius and Vauquelin, that the combining weight or weight of the atom of yttria is 50, oxygen by 10, and conſequently that it is compoſed of

Yttrium - -	80
Oxygen - -	20
	100

and the weight of the atom of yttrium will be 40.

With reſpect to the ſalts of yttria in general, it may be ſaid, that many of them are little ſoluble; that they are capable of being precipitated from acids by the phoſphate of ſoda, the carbonate of ſoda, the oxalate of ammonia, the tartrate of potaſh, and the pruſſiate of potaſh; and laſtly, that the ſulphate of yttria may be diſtinguiſhed from the ſulphate of lime by its greater ſolubility, and by its ſweet taſte.

YTTRIUM, the metallic baſis of yttria. See YTTRIA *ſupra*.

YTTRO-TANTALITE, in *Mineralogy*, *Tantale yttrifire*, Brongniart, an ore of tantalum, combined with the newly-diſcovered earth called yttria, and found at Ytterby, near Roſlagen, in Sweden. The colour of yttro-tantalite is a dark iron-black; when pulverized it is greyiſh: it occurs in nodules, about the ſize of a hazel-nut, and alſo cryſtallized in oblique ſix-ſided and four-ſided priſms. It occurs alſo in granular diſtinct concretions. Its fracture is compact or finely granular, and it has a ſhining metallic luſtre. Yttro-tantalite ſcratches glaſs, but yields with difficulty to the knife. The ſpecific gravity of this mineral is 5.13. It decrepitates with the blow-pipe, but at length melts into a greeniſh-yellow ſlag. According to Vauquelin, the conſtituent parts are,

Oxyd of tantalum - -	45
Oxyd of iron and yttria -	55
	100

Yttro-tantalite is nearly allied to gadolinite, the other mineral in which yttria is found, and occurs with it at Ytterby, in a bed of fleſh-red felſpar in gneiſs.

YTZAIMPATLI, in the *Materia Medica*, a name given by ſome to the cevadilla, or *hordeum cauſticum*, the *cauſtic Indian barley*.

YU, in *Geography*, a city of China, of the ſecond rank, in Pe-tche-li; 87 miles W. of Peking. N. lat. 39° 52′. E. long. 114° 14′.—Alſo, a city of China, of the ſecond rank, in Ho-nan; 442 miles S.S.W. of Peking. N. lat. 33° 22′. E. long. 112° 38′.—Alſo, a city of China, of the ſecond rank, in Ho-nan; 377 miles S.S.W. of Peking. N. lat. 34° 16′. E. long. 113° 14′.—Alſo, a river of China, which riſes in Ho-nan, 12 miles N. of Pi-yang, and joins the Hoai, 20 miles E.S.E. of Sin-tſai.—Alſo, a river of China, which riſes about 26 miles W. from Ngan-fou, in Kiang-ſi, and runs into the Kan-kiang, 7 miles N.N.E. of Lin-kiang.

YUCATAN, a province of Mexico: it is a peninſula, ſurrounded on the W. and N. by the gulf of Mexico, between the bay of Campeachy on the S.W., and that of Honduras on the S.E., having the little province of Tabaſco on the S.W., and that of Vera Paz, in the audience of Guatimala on the S., where it is joined on the continent by an iſthmus not 120 miles broad. The climate is pretty warm in ſummer, which begins about April, and ends in September. It rarely rains here during the winter ſeaſon, though the weather is tolerably cool, except in January and February, which are almoſt as hot as in the middle of ſummer. It is, however, very healthy, eſpecially a large mountainous tract, extending from Salamanca on the W., to the eaſtern boundary, and where the natives live to a great age. The ſouth ſide of this ridge is ill-peopled, and worſe cultivated, for want of water; but the north part is very populous, being rendered pleaſant by gentle breezes, though the ſun is very hot. The days and nights are nearly equal all the year. The ſoil when properly cultivated produces great quantities of corn, cotton, and indigo. All ſorts of cattle, wild-beaſts, honey, wax, and fowls, are here in great plenty; and on the coaſts are found large pieces of amber; but as no mines were ever diſcovered in this country, the Spaniards are not fond of making ſettlements here, ſo that it abounds moſtly with Indians, ſubject to the Spaniards, who employ them in making ſalt, in the bay of Campeachy. This peninſula has very few rivers, but wells without number, and conſiderable lakes; and whereſoever they dig up the land, abundance of ſhells are found, which with the lowneſs of the country, and ſhallowneſs of the ſea about it, has induced many to think that the greateſt part of it was once under water. The capital of Yucatan is Campeachy, in the bay of which, and of Honduras, the former lying on the weſt, and the latter on the eaſt ſide of this province, the Engliſh cut their logwood.

YUCCA, in *Botany*, is the *Yucca*, *Yuca*, or *Jucca*, of the original inhabitants of America. Gerarde appears firſt to have publiſhed this name in England. Caſpar Bauhin follows him. Linnæus, *Phil. Bot.* 164, lays to the charge of Tournefort the introduction of *Yucca*, as a ſcientific generic appellation, but we do not find it in his work. Dillenius however adopts it in his *Nova Genera*, and *Hortus Elthamenſis*, and Linnæus rather overlooks than approves of the barbariſm.—Linn. Gen. 170. Schreb. 226. Willd. Sp. Pl. v. 2. 183. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 2. 291. Purſh 227. Juſſ. 49. Poiret in Lamarck Dict. v. 8. 824. Lamarck Illuſtr. t. 243. Gærtn. t. 85. (Yuca; Dill. Nov. Gen. 111. t. 5. Ponted. Anthol. 294. t. 6. f. N, O. Cordyline; Van Royen Lugd.-Bat. 22.)—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Lilia*, or perhaps *Bromeliæ*, Juſſ.

Gen. Ch. *Cal.* none. *Cor.* bell-ſhaped, in ſix deep, ovate, very large, equal, moderately ſpreading ſegments, connected by their claws. Nectaries none. *Stam.* Filaments ſix, inſerted into the baſe of the corolla, very ſhort, ſwelling upwards, reflexed; anthers minute, roundiſh. *Piſt.*

Germen ſuperior, oblong, bluntly triangular, with ſix furrows, rather longer than the ſtamens; ſtyle none; ſtigma obtuſe, with three furrows, its lobes cloven, the centre pervious. *Peric.* Berry oblong, bluntly hexagonal, fleſhy, perforated at the ſummit, of ſix cells; three of the partitions thicker than the three intermediate ones. *Seeds* very numerous, in a ſingle row, ſeparated from each other by tranſverſe membranes, roundiſh-obovate, flat, depreſſed, attached, by their pointed baſe, to the inner angle of the cell.

Eſſ. Ch. Corolla inferior, bell-ſhaped, its ſegments without nectaries. Stamens club-ſhaped. Style none. Berry hexagonal, of ſix cells. Seeds numerous, flat.

Obſ. We have, like Schreber, adopted Gærtner's idea of the fruit, which Linnæus does not appear to have ſeen in perfection, and which Dillenius confeſſes himſelf to have judged of from the unenlarged *germen* only. Analogy might well lead theſe authors to preſume it a *capſule*, which, from the ſtructure of the *germen*, might be judged to conſiſt of three cells. This idea was moreover ſupported by an account which Ray had ſomehow obtained from the Eaſt Indies; where indeed no *Yucca* grows wild, and therefore this account cannot implicitly be truſted. Gærtner received, from profeſſor Hermann of Straſburg, the ripe fruit of *Yucca draconis;* and this being the only authentic inſtance of the ſeed-veſſel of any one of the genus paſſing under the inveſtigation of a critical botaniſt, we muſt rely on it as affording the only certain type of the genus in this particular. Juſſieu appears to have followed Linnæus; but the diſcovery of the true nature of the fruit, rather favours his opinion above-mentioned, of the affinity of *Yucca* to his *Bromeliæ*. This is a handſome perennial genus, more or leſs cauleſcent, with numerous, long, ſimple, rigid or coriaceous, pungent *leaves;* and copious, panicled, white, liliaceous, very elegant though generally inodorous *flowers*. Some of the ſpecies are tolerably hardy in our gardens, but they do not very readily or conſtantly bloſſom.

1. Y. *glorioſa*. Common Adam's-needle. Linn. Sp. Pl. 456. Willd. n. 1. Ait. n. 1. Purſh n. 4. Curt. Mag. t. 1260. Andr. Repoſ. t. 473. (Y. ſive Jucca, peruana; Ger. Em. 1543. Yuca indica, foliis aloes, flore albo; Barrel. Ic. t. 1194.)—Cauleſcent. Leaves lanceolate, ſtraight, furrowed; their edges ſmooth and entire.—Native of Peru and North America. On the ſea ſhore of Carolina, flowering in July and Auguſt; the whole plant about ten feet high. *Flowers* white. *Purſh.* The *ſtem* in our gardens is ſeldom two feet in height, ſomewhat branched, thick, tough, crowned at the ſummit of each branch, if divided, with a profuſion of crowded *leaves*, ſpreading in every direction, each a foot and a half or two feet long, tapering to a hard ſpinous point; contracted in the lower part, but dilated at the very baſe, where they half claſp the ſtem: their upper ſurface is of a fine green, ſmooth, furrowed longitudinally, eſpecially towards the end; the under paler, and more even; the edges quite even and ſmooth. *Panicle* terminal, compound, erect, compoſed of perhaps an hundred drooping *flowers*, not much inferior in ſize and beauty to thoſe of the White Water-Lily, but more cream-coloured, tinged at the baſe and points with crimſon, deſtitute of ſcent. Partial *ſtalks* about an inch long, round, ſmooth, with a pair of membranous *bracteas* at the baſe. *Stigma* in three diſtinct, ſpreading, cloven lobes. We cannot but think, notwithſtanding Mr. Ker's opinion, that Andrews's figure belongs to this ſpecies, and not to *aloifolia*. This is evinced by the furrows and margin of the *leaves*, as well as by the ſtructure of the *ſtigma;* though we muſt allow the whole repreſentation to be leſs happy and characteriſtic than that in the Magazine.

2. Y. *recurvifolia*. Drooping-leaved Adam's-needle. Saliſb. Parad. t. 31. Purſh n. 3.—Cauleſcent. Leaves linear-lanceolate, furrowed, recurved and drooping; their edges at length ſomewhat filamentous.—Native of the ſandy ſhores of Georgia, where it was found by M. Leconte, flowering in July and Auguſt. The *flowers* are of a greeniſh-yellow, with a tinge of purple. *Stem* about three feet high. *Purſh.* This ſpecies is recorded in the *Paradiſus Londinenſis*, as having flowered, in the late Mr. Swainſon's garden at Twickenham, in 1805; yet it is not admitted by Mr. Dryander, or Mr. Aiton, into the *Hortus Kewenſis*, or its *Epitome*. The *flowers* are ſaid by Mr. Saliſbury ro have a ſtrong ſmell, mixed with ſomething like a citron flavour. The three inner ſegments of the *corolla* are a little the broadeſt. *Stigma* moſt like the laſt. The edges of the *leaves* ſplit off in a few disjointed filaments, in the manner of *Y. filamentoſa*, though far leſs remarkably. We have ſeen no ſpecimen. Mr. Purſh having obſerved this, as well as the *glorioſa*, in a living ſtate, in North America, chiefly induces us to admit it into our liſt of ſpecies; garden plants being always leſs to be truſted in any doubtful queſtion.

3. Y. *aloifolia*. Aloe-leaved Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 2. Ait. n. 2. Purſh n. 5. Curt. Mag. t. 1700. (Y. arboreſcens, foliis rigidioribus rectis ſerratis; Dill. Elth. 435. t. 323.)—Cauleſcent. Leaves linear-lanceolate, even, ſtraight; their edges bordered with fine callous notches.—Native of South America, according to moſt authors; of the coaſt of Carolina and Florida, flowering in Auguſt. *Purſh.* It was introduced, more than a hundred years ago, into the Engliſh and Dutch gardens, and is generally treated as a green-houſe ſhrub, though ſaid to ſucceed and flower better, in mild ſeaſons, in the open ground. The *ſtem* is generally ſimple, and riſes to the height of fifteen to eighteen feet, even in our conſervatories, being for the moſt part naked, round, three or four inches in diameter, marked with ſcars where leaves have been. The upper part, for the ſpace of a foot or more, is thickly beſet with *leaves*, ſpreading in every direction, the lower ones pointing downwards, the upper ones nearly upwards, a few in the middle only being horizontal. The *leaves* are all ſtraight, narrower and ſtiffer than in *Y. glorioſa*, and diſtinguiſhed by their crenate edges, as well as even ſurface. The *panicle* alſo is more denſe and cylindrical, from two to three feet high. *Flowers* white, externally tinged with purple. *Stigma* abrupt, of three ſhorter, leſs dilated and ſpreading, lobes. Mr. Ker truly remarks, in the Botanical Magazine, that this ſpecies will thrive for many years with very little earth, in pots not more than a foot deep. Its flowering is a rare occurrence, and after that event, the head decays at the top, throwing out lateral ſhoots, and the plant becomes branched; but its elegant ſimplicity is deſtroyed, and we believe no more flowers, at leaſt in our gardens, are ever produced.

4. Y. *draconis*. Drooping-leaved Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 3. Ait. n. 3. (Y. draconis folio, ſerrato reflexo; Dill. Elth. 437. t. 324. Tacori; Cluſ. Exot. 48.)—Cauleſcent. Leaves linear-lanceolate, even, reflexed, crenate. Segments of the corolla ſpreading, ſomewhat recurved.—Native of South Carolina, according to Mr. Aiton, who marks this ſpecies as a hardy ſhrub, flowering in October and November. We have never ſeen an authentic ſpecimen of the *flowers*, but in the very admirable plate, communicated to Dillenius by his friend Sprekelſon of Hamburgh, and publiſhed in the Hort. Elth. as above, the *corolla* is repreſented with more lanceolate, flat, ſpreading,

ing, and in ſome meaſure reflexed, ſegments, than in any of the foregoing. The *leaves* are deſcribed longer, narrower, and thinner than in the laſt ſpecies, reflexed, being bent downwards, and pendulous, from about the middle, or rather nearer the baſe; they are moreover ſhining, of a deeper green, leſs concave, and with longer more ſlender terminal ſpines. They are an inch broad, and above two feet long. Dillenius ſays the marginal notches are rather finer than in the laſt. The Linnæan ſpecific definition implies the reverſe. Commelin's plate in his *Præludia Botanica*, t. 16, exhibits very large and diſtant ſpinous teeth, at the edges of the *leaves*, ſuch as we have never ſeen, even in young plants. We have therefore refrained from citing this author under the preſent ſpecies, as well as his t. 14. of the ſame work, and Plukenet's t. 256. f. 4. under the laſt; becauſe, though they may be right, ſuch figures afford no information or inſtruction. Cluſius ſays the Indians uſe the fibres of the leaves of the ſpecies of which we are treating, obtained by maceration and beating, as a fine kind of thread, like flax or ſilk; and they alſo make ſtrong cordage of the ſame, for tying the rafters of their huts together. Such qualities merit further inquiry.

5. Y. *filamentoſa*. Thready Adam's-needle. Linn. Sp. Pl. 457. Willd. n. 4. Ait. n. 4. Purſh n. 1. Curt. Mag. t. 900. (Y. foliis lanceolatis, acuminatis, integerrimis, margine filamentoſis; Trew's Ehret 9. t. 37. Yuca, ſive Jucca, vera, foliis filamentoſis; Moriſ. ſect. 4. t. 23. f. 2.)—Stem none. Leaves lanceolate, entire, coarſely filamentous at the edges.—On the ſhores of Virginia and Carolina, and in the weſtern parts of the ſame countries, flowering in July and Auguſt. *Purſh.* A hardy perennial in our gardens, flowering, though not very conſtantly, in autumn. The *leaves* are numerous, a foot long, ſpreading in the form of a roſe from the crown of the root; their points ſpinous, but ſhort; their ſurfaces both ſtriated, a little glaucous, rough to the touch with minute harſh prickles; their edges beſet with long recurved threads. *Flower-ſtalk* ſolitary, erect, from four to five feet high, round, ſmooth, leafleſs, bearing ſeveral ſcattered, oblong, membranous, reddiſh-brown *bracteas*, ſuch as alſo accompany the partial ſtalks. *Panicle* compound, lax and ſpreading, of numerous large and handſome, pendulous, cream-coloured, bell-ſhaped *flowers*, repreſented of much too yellow a hue in the Botanical Magazine. Their ſegments are taper-pointed. *Filaments* rough, or glandular, with very ſmall *anthers*. *Stigma* with ſpreading, ſomewhat recurved and cloven, lobes, like *Y. glorioſa*.

6. Y. *anguſtifolia*. Narrow-leaved Dwarf Adam's-needle. Purſh n. 2.—Stem none. Leaves linear, elongated, rigid, ſparingly filamentous at the edges. Fruit obovato-cylindrical.—Gathered by Mr. Nuttall, on the banks of the Miſſouri, flowering in July and Auguſt. Perennial. *Leaves* very narrow. *Stalk* from two to three feet high. *Fruit* large. *Purſh.* This appears not yet to have been brought to England.

The name of *Yucca* may be found applied, by the older botaniſts, to ſeveral plants which have no botanical affinity to the preſent genus; ſuch as Moriſon's ſect. 4. t. 23. f. 3, where the *leaves* are digitate; and *Jatropha Manihot* of Linnæus. (See JATROPHA.) Such plants agree in the eſculent quality of their fleſhy *roots*, which when grated and waſhed, yield a farinaceous ſubſtance, of which the natives of America and the Weſt Indies appear to have made a kind of bread, long before our European corn was introduced among them.

YUCCA, in *Gardening*, contains plants of the ſucculent, evergreen, ſhrubby, hardy, and tender kinds, in which the ſpecies cultivated are, the common Adam's-needle (Y. glorioſa), the thready Virginian yucca (Y. filamentoſa), the aloe-leaved yucca (Y. aloifolia), and the dragon-tree-leaved yucca (Y. draconis).

Theſe are all ſucculent evergreen ſhrubby plants, ſome of them having a fleſhy nature and great regularity of growth.

Method of Culture.—Theſe plants are all capable of being raiſed by offsets or ſuckers, from the roots and heads of the old plants, as well as by ſeed.

The offsets and ſuckers may be taken off any time in the ſpring or ſummer ſeaſons, being laid in ſome dry place for a few days, till the wounded part cauſed by the ſeparation from the plant is dried and healed over; when they may be planted out ſeparately in pots of light ſandy compoſt, and be placed in a ſhady ſituation till they have taken root in a perfect manner. When aſſiſted by a hot-bed, they often ſucceed better.

The ſeed obtained from abroad ſhould be ſown in the ſpring in pots of light earth, plunging them in a hot-bed, in which the plants ſoon come up; and when they are two or three inches high, they ſhould be pricked out ſeparately in ſmall pots of light ſandy mould, replunging them in the hot-bed to forward their growth, aſſiſting them with moderate waterings and freſh air daily, and hardening them by degrees to the full air, ſo as to be ſet out in June to remain till October, when they ſhould be removed into the green-houſe for the winter.

Some plants of all the ſorts ſhould conſtantly be preſerved in pots.

They are all very ornamental; the two firſt after they have been hardened, in the dry borders, where the ſoil is light, and where the ſituation is warm and ſheltered; and the others in green-houſe collections, among other potted plants.

YUE, in *Geography*, a city of China, of the ſecond rank, in Yun-nan; 1105 miles S.S.W. of Peking. N. lat. 25° 22′. E. long. 103° 22′.

YUEN, a river of China, which runs into the lake Tong-ting, 17 miles E. of Tchang-te.—Alſo, a city of China, of the ſecond rank, in Hou-quang; 850 miles S.S.W. of Peking. N. lat. 27° 23′. E. long. 109°.

YUEN-KIANG, a city of China, of the firſt rank, in Yun-nan, on the Ho-ti river; 1250 miles S.W. of Peking. N. lat. 23° 37′. E. long. 101° 44′.

YUEN-TCHEOU, a city of China, of the firſt rank, in Kiang-ſi; 750 miles S. of Peking. N. lat. 27° 50′. E. long. 114°.

YUEN-YANG, a city of China, of the firſt rank, in Hou-quang, on the river Han; 517 miles S.S.W. of Peking. N. lat. 32° 50′. E. long. 110° 29′.

YVERDUN, or IFFERTEN, a town of Switzerland, in the Vaudois, and capital of a bailiwick, in the canton of Berne, ſituated on the lake of Neufchâtel, otherwiſe called the lake of Yverdun, at the mouth of the river Orb, which divides into two branches, forming a good port, and an iſland, on which the town is ſituated. The two fauxbourgs communicate with the town by bridges. It is ancient, and in the Theodoſian table called "Caſtrum Ebredunenſe," and "Ebrodunenſe," by which it is underſtood to have been a place of ſtrength. The Romans maintained here a *præfectus barcariorum*, and there yet exiſts a ſociety of boatmen, of ancient ſtanding, and numerous, who have a particular police, privileges, and laws of navigation. From the Romans it paſſed to the kings of Burgundy, and afterwards to the dukes of Zahringen. In the year 1259, it was taken by Peter of Savoy, who reduced it by famine, and it continued in that family till the year 1536. In this year, the troops of Berne, when they had reduced the reſt of the Vaudois, laid ſiege to this town, and after a few days, became maſters, ſince which Yverdun has been ſubject to Berne. The police is adminiſtered by a great and little council, compoſed of thirty-ſix members, the preſident of whom has the title of *banneret*. It has a large and ſtrong caſtle, flanked with four towers, built in the 12th century, by Conrad, duke of Zahringen: other public buildings are, a college for the inſtruction of youth, an hoſpital, divers magazines, &c. and in the town-houſe is a library, formed not long ſince by contribution. The environs were formerly a moraſs, which has been drained, and is now become good and fertile land. Near the town is a ſulphureous medicinal ſpring, and in the year 1730, a building, for the purpoſe of bathing, was erected by the magiſtrates. In the middle of the laſt century, a company was formed, for the purpoſe of making a navigable canal from the lake of Yverdun to the lake of Geneva, but it was never finiſhed. The bailiwick is one of the moſt conſiderable in the canton of Berne, containing about 25 pariſhes and 20 lordſhips, and is about 15 miles in length. The fertility is moderate: the wine is not of the beſt quality; 34 miles S.W. of Berne. N. lat. 46° 48′. E. long. 6° 14′.

YVES, or Ivo, in *Biography*, biſhop of Chartres, was born in the 11th century, of a noble family, in the territory of Beauvais, and ſtudied theology under Lanfranc, prior of Bec. Being made abbot of St. Quentin, he opened a theological ſchool, which became famous; and having ſuperintended this inſtitution for fourteen or fifteen years, and maintained a regularity among thoſe who attended it conformable to the ancient canons, he was juſtly regarded as one of the chief founders of the order of canons-regular. Upon the death of Geoffrey, biſhop of Chartres, he was choſen as his ſucceſſor, and the election was confirmed by Urban II. in 1091. The diſcipline he maintained in his ſee was exemplary, and in the duties of it he was employed for 25 years, his epiſcopate and his life terminating in 1116. Beſides ſermons, a brief chronicle of the kings of France, and two collections of eccleſiaſtical decrees, he has left 287 epiſtles, from which may be learned the manners of the times in which he lived. Of theſe we have a ſummary by Dupin. A collection of his works was printed at Paris in 1647. His name is highly reſpected in the church of Rome, and pope Pius V. iſſued a bull in 1570, empowering the canons-regular of Latran to celebrate an anniverſary for "the bleſſed Yves." Dupin. Moreri.

YVETOT, in *Geography*, a town of France, in the department of the Lower Seine. This was once a place of conſequence, and the capital of a kingdom; 18 miles N.W. of Rouen.

YUFTS, or *Ruſſia Leather*, as it is called in England, are the chief products of the tanneries in Ruſſia; and the principal places in which they are prepared, next to Moſcow and Peterſburg, are, Arſamas, Koſtroma, Yaroſlaf, Pſcove, Kazan, Vologda, Niſhney-Novgorod, Vladimir, Ekatarinenburg, &c. Mr. Tooke has deſcribed the proceſs by which they are prepared:—The raw ox-hides are firſt laid in running water, or in large tan-pits full of water dug in the earth for that purpoſe, to ſoak for a whole week; but in ſummer not ſo long. During this time they are daily taken out of the water, and ſcraped at a ſcraping-bench, or wooden horſe. Having now been duly ſteeped, they are put into a ley, thus prepared: In other vats, likewiſe dug in the ground, and under cover, they mix two parts of good aſhes with one part of unſlacked lime, in boiling water, and ſink the wet hides in this ley on a grating, which being ſuſpended by cords, can be raiſed or let down at pleaſure. In this vat the hides are laid again for about a week, though in warm weather leſs, in cold perhaps even longer. The ſign that they have lain long enough in the ley is, that the hair can without difficulty be rubbed off with the hand, ſo that none remains. If the hides, after the expiration of a week, are not in that condition, freſh aſhes are put into the ley, and the ſkin ſunk in it. But if at length the hair be ſufficiently looſe, the hides are entirely taken out of the ley, and all the hair ſcraped off on a ſtretching-block, by means of blunt iron ſcrapers with two handles. The hair is waſhed clean, and ſold for domeſtic uſes. The hides, thoroughly cleanſed from hair, are ſuſpended in vats of clean water on a running ſtream, where they remain three days, diligently turning them to and fro, in order to purge them from the aſhes and ley; afterwards they are hung up, and left to drain. The hides muſt now be ſcraped on the fleſh ſide. To this end they employ either the aforeſaid ſcraping-iron, or others ſharper in various degrees. After this treatment, the hides are trampled. But calves-hides have another ſort of preparation, which the yuft-tanners, in the interior towns of the empire, who moſtly practiſe it, call rakſcha. This preparation is performed with the white excrement of dogs dried, which is diſſolved in boiling water, and to a hundred hides about four vedros full of excrement is the rule. If here the right proportion with the water be not found, the hides corrupt in this ſlime, the object whereof ſeems to be the complete freeing of the ſkin from the ſalts that adhere to it from the ley. The hides are left to lie twice twenty-four hours. With this is ſtirred a ſour gruel of oatmeal with warm water, and to three oſmiçs, or eighths of a chetverik, three or four vedros of dregs of the common quas, which the people make of meal and a ſmall portion of malt, put in the thin gruel, that it may quickly ſour with the hides. To ten hides, the tanners uſually reckon forty pounds of meal.

After the hides have ſoured, which is done in large vats, they are laid in other vats, and well ſteeped for two or three days in a ſtrong tan-juice, ſok, thoroughly boiled from good bark. When this is done they are brought ſtraight to the tan. In the tan-pits, in which often ſome hundreds of hides are lying, is poured half water and half tan, or water boiled with tan, and a grating is hung in with cords, having one hide after the other ſpread upon it, thick ſtrewed with good fine-pounded tan, and the grating conſtantly let deeper into the pit, till it be nearly full; yet ſo that the tan-liquor is always above the hides, which are then again ſprinkled over with tan. In this tan the hides continue to lie a week; thoſe of full-grown animals longer. On being taken out, they are waſhed and trampled on, which two workmen in a ſummer's day can perform with three hundred hides. The next day they are laid, in the manner above-deſcribed, in freſh tan. Thus they generally get four times ſucceſſively freſh tan, and are every time rinſed clean. In the laſt tan they lie three weeks, or longer, are then finally waſhed, hung up, and, when they have tolerably drained, delivered to thoſe workmen whoſe buſineſs it is, in particular workſhops, to dye, dreſs, and wax the yufts, and to deliver the goods finiſhed. It is to be obſerved, that the Ruſſian yuft-tanners ſeldom uſe oak-tan, and never willingly. The choiceſt and beſt tan is that of the tſchernotal, as they call it, or the black willow; and alſo the young bark peeled off from other ſhrubby willows, which are collected by the boors, dried in bundles, and brought in cart-loads to market. To ten hides, the tanners compute one and a half fathom of theſe bundles of willow-bark, as they are laid one upon another for ſale, through all the tans. It muſt not, however, be imagined that the excellence of the Ruſſian yufts depends on this; for in Siberia, where are no oaks, and but few willows of any ſize, they tan yufts with only birch-bark, which are not much worſe than the Ruſſian. The bark is made ſmall by either ordinary tan-mills, turned by horſes or by water; or the tanner himſelf, in many towns where there are no mills, cauſes it, at unneceſſary expence and labour, to be pounded in wooden mortars, or excavated blocks, with peſtles, almoſt like thoſe in the tan-mills, by day-labourers.

The dyeing of the yufts is performed in two ways, and of two colours. The commoneſt and moſt natural cuſtom of giving the colour to the hides is, by ſewing them together in pairs, the hair ſide inwards, while they are yet moiſt, round the edges, with ruſhes or ſtripes of bark, thus forming them into a bag or ſack; into this ſack the colour is put, the ſack well ſhook, and the ſuperfluous dye let to run out, whereupon the ſkins are dried. From this method of dyeing them, it ſeems to proceed that the yufts are called and taken by pairs. The other proceſs, whereby much trouble, time, and colour are ſaved, and the edges of the ſkin entirely preſerved, is the following: Each ſkin is hung upon a horſe over a long trough, ſo that the hair ſide, which muſt be ſtained, appears outwards, pouring the dye upon it out of the dye-kettle, till the whole ſkin is dyed. The two colours given to the yufts are red and black. The red dye is thus prepared: Pound braſil-wood (ſandal) in the pounding-mill, or with hand-peſtles, as fine as the tan, and boil it in kettles. Previous to the dyeing, ſteep the ſkins in alum-water. It is calculated, that to each ſmall yuft-ſkin a half, and to a large one a whole pound of logwood is put. But the latter are moſtly coloured black. To a hundred yufts to be dyed red, four pounds of alum is ſufficient. For dyeing black the braſil-wood is likewiſe uſed; but in the red dye, to a hundred ſkins three pounds of good iron vitriol is diſſolved. After the firſt tincture the ſkins are dried, and afterwards on tables done over again with the ſame dye and rolled up, that they may thoroughly imbibe the dye. For heightening the colour this tincture is ſometimes thrice repeated. When the ſkins are now tolerably dried, by hanging, that the colour may not fade, with the fleſh ſide outwards, the yufts, ſtill ſomewhat moiſt, are ſmeared over on tables that have ledges. There was a time when it was commanded by authority to uſe nothing but dolphin and ſeal-blubber for ſmearing them; but by that the yufts are harſher, and have not that yuft ſmell, which foreigners prize ſo much, unleſs the birch-tar, deggot, prepared in Ruſſia, at leaſt be mixed with it. At preſent this birch-tar alone is uſed for ſmearing. This done, the ſkins are cleanſed from any impurities that may remain, and are ſent to the dreſſing-houſe, where ſkilful workmen ſcrape them firſt with ſcraping-irons, having two handles, with the edge croſs-wiſe on a ſtretching-bench, that a ſoft thin leather remains with a clear gloſſy ſurface, free from all impurities. Other workmen then take the clean-ſcraped yufts on large clean tables, ſprinkle them on the fleſh ſide with a gentle ſhower of freſh water from their mouths, and lay them ſlightly rolled up to moiſten. This done, the ſkins are taken ſeparately one after another, folded together, and worked and calendered in all directions, to make them ſoft and pliant. They are then curried with a kind of wooden curry-comb, with ſharp irons fixed in leathers, like a card for carding wool, the ſkin being folded with the hair ſide outwards, by which the whole ſurface of the yufts acquire the croſs-ſtrokes or trellis-like marks they are always ſeen to have. Some work the ſkins with the hands firſt dry, not ſprinkling them till they are mangled with the card. Laſtly, thoſe ſkins which are too harſh and ſtiff to the feeling, are more or leſs ſprinkled with linſeed-oil, and thus are ready for the merchant.

In this connection we ſhall introduce from the ſame author an account of the Ruſſian method of preparing and dyeing their ſaffian, maroquin, or Morocco leather, which are dyed at Aſtrachan of three colours, red, yellow, and black. The treatment of the red ſaffians, which are the moſt famous, is uſually as follows:—The raw hides are firſt laid in large vats, and have river water poured upon them, in which they are left to ſoak for three or four times twenty-four hours. They are then taken out, the water is drained and ſqueezed from each ſkin, and are ſcraped one by one on the ſtretching-bank with ſcraping-irons, uraki, quite gently on the fleſh ſide, in order to take away the groſſer impurities, but principally for opening the ſkin, and to qualify it for the enſuing operation.

They now proceed to make the hair fall clean off, chiefly by the application of lime. To a hundred hides is ſtirred in about half a buſhel of unſlaked lime in vats with river water, and the hides are laid in ſo as that the lime may as much as poſſible be equally diſtributed over all of them. The Aſtrachan Tartars let the hides lie in this lime-pit frequently three weeks; but it is well known, that their ſaffians are ſo harſh and liable to crack, and even ſcorched by it, that they are fit for nothing, and can only impoſe upon an inexperienced purchaſer. They then take out ſkins, waſh them, and carefully ſcrape off the hair, now become looſe, with wooden ſcrapers. It often happens, that the hair is not perfectly looſened by the firſt lime-ley, but that many tender ſtubbles and ſmall hairs are left remaining. In this caſe, the hides muſt be put into freſh lime-ley, and be left perhaps two weeks in it; the hair then comes off, and the hair ſide of the ſkin gets a green and very white appearance, but the ſubſtance is then alſo very ſoft, and the ſaffians, by this corroſion of the lime, are very little durable in compariſon of other kinds of leather.

The method now for taking the lime again out of the hides, is the ſecond treatment with dog-excrement, or white gentian, which is carefully collected for this purpoſe. This excrement, which is indiſpenſably neceſſary, is pounded, put into a narrow not very large vat, warm water poured upon it, the maſs thoroughly ſtirred, and the cleanſed hides are put with it into another vat, ſo as that the diſſolved album grecum is ſpread and inſinuated over and between every ſkin. In theſe ingredients, the ſkins muſt lie only twenty-four hours, or if the quantity of album grecum prove not rich, ſomewhat longer. The proportion here to be obſerved cannot be accurately aſcertained; for the ſaffian-makers are guided generally by eye-meaſure, and obſerve only that the water be very thick and turbid, and conſequently acrid enough. The hides come out of this corroſive much ſofter and thinner than they were, and are now freed from the force of the lime; but no time muſt be loſt in endeavouring to extract the corroſive likewiſe, that the hide may not be even more ruined by it than by the lime. They are generally very careful that the hides lie not too long in this corroſive, which they judge of by their eye from the pliancy and ſuppleneſs of them. As ſoon as the ſkins are lifted out, the unclean moiſture is carefully and forcibly preſſed out, and they are laid without loſs of time in a vat, wherein wheat-bran is ſtirred to a tolerably thick gruel with warm water; in this they lie again about thrice twenty-four hours, whereby all the former defects are completely remedied, and the ſubſtance of the ſkin is ſofter and mellow. All theſe particulars are in ſome meaſure of no other ſervice than to bring off the hair thoroughly clean from the ſkin.

Now follows the proper preparation of the ſkins taken out of the wheat-bran. This is done chiefly by honey. To eighty hides they take about twenty-five pounds of raw honey, boil it in a kettle, pour as much water to it as is neceſſary for giving it a due conſiſtence, and ſtir it for a pretty long time boiling on the fire. They then let the kettle cool, till they can but juſt bear the hand in it, and then pour the ſtill hot honey-water on the hides lying ſingly in little trays, by ladle-fulls, till they have thoroughly imbibed the honey-water. When all the ſkins are duly drenched, they are thrown into a dry vat all together, laying at top a board with weights upon it, and covering the whole vat with felt, carpets, or furs, that the vapour during the fermentation may not eſcape; and in this manner, the ſkins muſt ferment once more thrice twenty-four hours. By this means they acquire the grain. From the honey-vat they are rinſed clean in luke-warm water, wrung as dry as poſſible, and ſteeped immediately in a moderately ſtrong pickle or brine made of common ſalt, in which they muſt be left five or ſix days. This time being elapſed, the ſkins are taken out of the pickle, and hung upon clean poles, that the brine may drain out, as it would be thought injurious to ſqueeze it out with the hands. This done, the ſkins have received their whole preparation, and may now be dyed red, but not yellow; becauſe for the yellow ſaffians, as was ſaid before, the preparation is of another kind.

For giving the red ſaffians the colour, nothing is uſed but cochineal, or, as the Tartars call it, kirmiſs, and that in the following method: Firſt, they boil a quantity of the herb ſalſola ericoides, by the Tartars called tſchagan, plentifully growing on the arid Aſtrachan ſalt-ſteppes. To about four Ruſſian vedros of water is put of this dried herb ſomewhat leſs than a pound, and it is ſet to boil for a whole hour, whereby the water acquires a dark greeniſh colour, but betrays no acrimony to the taſte. The ſaffian-maker only takes care that the water be not too deeply tinctured, and that when dropped on the thumb-nail ſhews only a ſcarce perceptible green; and in caſe it have adopted too many particles of the colour, it is drawn off, and freſh water put, in which the herb muſt boil again, till the decoction has received the due degree of ſaturation. The herb is then with a ſcoop taken clean out of the kettle, and then the previouſly nicely powdered cochineal thrown into a kettle of four Ruſſian vedros to about half a pound, well ſtirred, and freſh fire added, in which great attention muſt be paid, that the red ſcum, which ariſes from boiling, does not boil over, therefore conſtantly ſome is taken and again poured in, in order by this refrigeration to prevent the over-boiling, and to allay the foam. After boiling for about an hour and a half, the water has obtained a ſtrong tincture; but as much of it is boiled away, the kettle is filled up again with the remaining decoction of the herb tſchagan, and the thus attenuated colour boiled afreſh, till it is ſeen that the cochineal is perfectly diſſolved, and the colour become thoroughly bright. Upon this, to the whole kettle is put about two lote of pounded and burnt alum into the dye, with which it is to boil about a quarter of an hour, and then the fire is taken from under the kettle, leaving only ſome hot embers, that the dye may retain as much heat as the hand can but juſt bear. This done, the ſkins prepared for dyeing are taken in hand, the dye poured by ladles into trays, one ſkin folded together after another, with the hair ſide outwards, and then are worked in their portion of dye ſo long, till they have uniformly abſorbed all the dyeing particles, and only ſomewhat of a pale moiſture remains. The leathers being thus for the firſt time ſtained are quickly ſqueezed out, hung up ſingly acroſs poles, and when they are all done, they are directly taken for the ſecond time, and imbued in the ſame manner with dye, and this treatment is repeated for the third and the fourth time; ſo that each ſkin gets four ladles of the dye. From the fourth dye the ſkins are no more preſſed out, but hung up entirely wet, to be ventilated, upon poles.

After the dye, the ſkins are once more curried with the leaves of the tan-tree, which the Armenians call belgè. The cruſhed or pounded dry leaves, which the Aſtrachan ſaffian-makers get from the Terek, are ſtirred in broad troughs to a thick gruel with river water, and the coloured ſkins laid in it, between each of them, leaving a ſufficiency of the leaf-ooze; the tanner then goes barefoot into the troughs upon the ſkins lying on one another. In this tan, or quas, as the workmen call it, the ſaffians lie eight days and nights, adding freſh tan every other day; ſo that four tans are neceſſary.

Here it muſt be obſerved, that ſome Armenians who prepare ſaffians, for enhancing the quality of the red colour of their ſaffians, to half a pound of cochineal add two lote, or rather more of ſorrel, (or lutor, or loter, as they call it,) in the dye-kettle, but it is uſually omitted in Aſtrachan, on account of its high price; for which reaſon the Aſtrachan ſaffians are excelled by the Turkiſh in beauty of colour. Secondly, it is to be known, that inſtead of the leaves of the tan-tree, bruiſed nut-galls are held to be ſtill more serviceable for giving the ſaffians the tan. By this means, the colour is ſo durable as never to paſs away but with the leather; whereas the ſaffians prepared with the tan-tree begin ſoon to be diſcoloured. But the nut-galls are likewiſe too dear in Aſtrachan to be cuſtomarily uſed by the ſaffian-makers. The Kazan Tartars colour their ſaffians with red wood, and tan them with the ſhrub uva urſi, but it makes the worſt ſaffians of all, as they preſently fade.

When the ſaffians are lifted out of the tan, ſtill the laſt work remains. They are firſt left ſome time in the air to dry, they are afterwards ſcraped on the ſtretch-bank with ſharp ſcrapers on the fleſh ſide, quite ſmooth and clean, then waſhed in running water, each ſkin duly ſtretched with pegs all round the edges, and thus left till they are dry.

The ſkins muſt now be ſmoothed on the hair ſide with a wooden inſtrument for that purpoſe; and laſtly, they are laid on a thick felt, where, with an iron heckle that has blunt points, thoſe little pittings, which the ſaffians are generally ſeen to have, are impreſſed on the ſame ſide. And thus they are ready for ſale, without being ſmeared with linſeed-oil, as is mentioned in Gmelin's travels, which would infallibly ſpoil them.

The yellow ſaffians are little made in Aſtrachan, as the demand for them is much leſs, and there are but few ſaffian-makers who know much of the matter. The dye which they make uſe of for this purpoſe is of the berries of a ſort of rhamnus (perhaps lycioides), which are brought from Perſia under the name of uloſcharr, and uſually bought for ſix to nine rubles the pood. The Kazan Tartars colour their ordinary yellow ſaffians with the flowers of the yellow camomile, which they gather under the name ſare tſchetſchiak, *i. e.* yellow-flower.

In preparing the yellow ſaffians, they obſerve in Aſtrachan the following difference of treatment: 1. They make no uſe whatever of honey in the preparation. 2. They never at all put the hides into the ſalt brine. 3. Inſtead of the honey-preparation and the pickling, they lay the hides before the dyeing, in the foregoing manner, in the tan of the leaves of the kitzliar tan-tree, leaving them in it eight days. 4. For preparing the dye, they have no need of the herb tſchagan, but the berries alone are boiled in clear water, of which to four Ruſſian vedros of water about ten pounds are requiſite, and heighten the colour afterwards with three lotes of alum to every pound of berries. The dyeing is performed in the ſame manner as has been related with the red, and after the dyeing there is no need to lay the ſaffians in the tan, as having before received it. Nothing more is neceſſary than to ſcrape them clean, to work them thoroughly, to poliſh and to ornament them. The yellow ſaffians uſually are ſold at one ruble twenty kopeeks; but the red at ſomewhat more, on account of the dearneſs of the dye, generally one ruble eighty kopeeks.

YUG, or Yog, the more correct mode of writing the word *jogue*, by which the Hindoos diſtinguiſh the poetical or mythological ages of the world. We have noticed theſe wild ſpeculations under the more popular word *jogues;* to which, to Gentoos, Kalki, Kalpa, and Yogeswara, we refer thoſe deſirous of farther information hereon.

YUGASIRI, in *Hindoo Mythology*, is the name of the wife of *Vairava*, an incarnation of *Siva*. See thoſe articles.

YUHAGHIRS, in *Geography*, a Ruſſian tribe, which occupies the northernmoſt parts of the territory of the Yakutes, bordering on the Frozen ocean, from the Yama to the Kolyma. They were known to the Ruſſian conquerors as early as the Yakutes; but on account of their wild and impaſſable deſerts, could not be brought into entire ſubjection until the year 1639. They had never ſeen a horſe, though that ſpecies of animals was found among the Yakutes; and therefore they appear to have been for a long time confined to their cold, fenny, and mountainous diſtricts. The whole people, at the reviſion before the laſt, ſays Mr. Tooke, paid taxes only for about 1000 heads; but it was ſo eaſy for them in their deſerts to evade the payment, that their entire population may be computed at a much higher number. See Yakutsk.

YVIAS, a town of France, in the department of the North coaſts; 4 miles E.N.E. of Pontrieu.

YVICA. See Ivica.

YUKANLOOT, a town of Candahar; 10 miles E.N.E. of Suffa.

YULDUZ. See Yolotou.

YUMA, or Yumba, or *Long Iſland*, one of the Bahama iſlands: about 50 miles in length, of very unequal breadth. N. lat. 23° 20′. W. long. 74° 50′.

Yuma, in *Mythology*. See Tscheremisses.

YUMAR, the name of the object of worſhip among the Votiaks; ſimilar probably to Yuma, Yummel, and Yummala, among other tribes of the ancient Finns.

YUMBA Bay, in *Geography*, a bay on the E. coaſt of the iſland of Hiſpaniola, S. of Cape Spada.

YUMETOS, a cluſter of ſmall iſlands, among the Bahama iſlands, about 20 miles S.W. from Yuma.

YUMFONG, a ſmall iſland, near the coaſt of China, about three miles from the iſland of Tſeng-ming. N. lat. 31° 42′. E. long. 121° 17′.

YUMMALA, in *Mythology*, an idol deity of the Finns, who had a rich temple in Permia, or Biermia, ſuppoſed to have extended from the White ſea to the mountains of Ural. This temple was decorated with a profuſion of gold and jewels. See Permians.

YUMMEL, an appellation by which the Lieflanders and Eſthonians worſhipped the true God; in ſubordination to whom they only admitted inferior deities as beneficent and malicious ſpirits.

YUN, in *Geography*, a city of China, of the ſecond rank, in Yun-nan; 1262 miles S.W. of Peking. N. lat. 24° 32′. E. long. 99° 35′.

Yun, or *Tong-pe*, a city of China, of the firſt rank, in Yun-nan; 1135 miles S.W. of Peking. N. lat. 26° 44′. E. long. 100° 34′.

YUNA, a river of Hiſpaniola, which runs into the Somana bay.

YUNCHA, a town of South America, in the province of Tucuman; 60 miles S. of St. Jago del Eſtero.

YUNG-KANG, a city of China, of the ſecond rank, in Quang-ſi; 1140 miles S.S.W. of Peking. N. lat. 22° 56′. E. long. 107° 26′.

YUNG-NGAN-POU, a fortreſs of China, in Chen-ſi, on the borders of Tartary; 110 miles N. of Ling-tao.

YUNG-NING, a city of China, of the ſecond rank, in Chan-ſi; 300 miles S.W. of Peking. N. lat. 37° 35′. E. long. 110° 39′.

YUNGUS, or Vungus Vicus, in *Ancient Geography*, a place of Gaul, on the route from Reims to Treves. Anton. Itin.

YUN-HING, in *Geography*, a city of China, of the firſt rank, in Ho-nan. The country within its diſtrict is very large, and is partly flat, and partly mountainous, eſpecially to the north and ſouth; it is watered by ſeveral rivers, which render the ſoil very fruitful. There are two towns of the ſecond rank, and twelve of the third under its juriſdiction; 430 miles S. of Peking. N. lat. 33°. E. long. 113° 52′.

YUN-LEAN-HO, a canal of China, formed of the river Pay-ho, or rather the river itſelf made navigable from Hiam-ho to Tien-tſin, in the province of Pe-tche-li, for the purpoſe of conveying corn towards Tong-tcheou and Peking. The name in the Chineſe language is ſaid to mean corn bearing.

YUN-NAN, a province of China, bounded on the N. by Se-tchuen and Thibet, on the E. by Quang-ſi and Koei-tcheou, on the S. by Laos, and on the W. by Ava and Pegu; about 300 miles in length, and 250 in breadth. This province is reckoned one of the moſt fertile and opulent in China. Its inhabitants are brave, robuſt, affable, and fond of the ſciences, which they cultivate with ſucceſs: its rivers, gold, copper, and tin-mines; its amber, rubies, ſapphires, agates, pearls, precious ſtones, marble, muſk, ſilk, elephants, horſes, gums, medicinal plants, and linen, have procured it a reputation which renders it reſpectable to the Chineſe. Its commerce is immenſe, as well as its riches, which are ſaid to be inexhauſtible. This province contains 21 cities of the firſt claſs, and 55 of the ſecond and third. Sir George Staunton eſtimates the population at eight millions.

Yun-nan, a city of China, of the firſt rank, and capital of Yun-nan, ſituated at the north extremity of a lake. It was formerly celebrated for its extent, and the beauty of its public edifices. Here were ſeen magnificent buildings, vaſt gardens, tombs, triumphal arches, and elegant ſquares; but the Tartars, in their different invaſions, deſtroyed all theſe monuments; and the city at preſent contains nothing remarkable: it is, however, the reſidence of the governor of the province. It comprehends in its diſtrict four towns of the ſecond claſs, and ſeven of the third; 1152 miles S.S.W. of Peking. N. lat. 25° 6′. E. long. 102° 28′.

YUNTAI, an iſland near the coaſt of China, in the

Eaſtern ſea, 30 miles in circumference; about two miles and a half from the continent. N. lat. 34° 35′. E. long. 119° 19′.

YVOY. See Carignan.

YUPURA, a river of Peru, which branches off from the Caqueta, about N. lat. 1°, and after an eaſterly courſe of about 500 miles, runs into the river of the Amazons by many mouths, 100 miles W. of Fort Rio Negro. S. lat. 4°.

YURATZKOI, the denomination of the ſhore that lay between the rivers Yeniſſey and Oby.

YURCUP. See Urcup.

YURE L'Eveque, a town of France, in the department of the Sarte, on the Huiſe; 3 miles E. of Le Mans.

YURIEF, a name given by the Ruſſians to Dorpat, built by order of Yaroſlaf in the year 1030.

YURIMAGUAS, a town of South America, in the audience of Quito, on the Guallaga; 60 miles S. of La Laguna.

YURNA, a ſmall iſland on the coaſt of Braſil, at the mouth of the river Amazons, near the equinoctial line. W. long. 50° 40′.

YVRY, a town of France, in the department of the Eure; 11 miles N. of Dreux.

YUSDROME, in *Commerce*, a weight of Turkey, the oke being the 44th part of the cantaro, quintal, or kintal, containing four yuſdromes, or chequees, or 400 druns; the chequee of cotton yarn being = $11\frac{1}{2}$ ounces avoirdupois; the chequee of goat's wool = 5 lbs. 10 oz. avoirdupois; and the chequee of opium = 27 oz. 10 dr. avoirdupois.

YUTHIA, in *Geography*, the capital city of Siam, ſituated on an iſland formed by the river Meinam. See Siam.

YUTI, a town of Paraguay, on a river of the ſame name, which runs into the Paraguay, 115 miles S.E. of Aſſumption.

YU-YANG, a town of Corea; 15 miles S. of Kang.

YXIR, a word uſed by ſome of the old chemiſts to expreſs any thing good in medicine.

YZQUAUHTLI, in *Ornithology*, the Indian name for a bird deſcribed by Nieremberg, and called the creſted eagle.

YZQUIEPATL, in *Zoology*, the name of an American animal of the weaſel kind, with a ſhort ſlender noſe; ſhort ears and legs; black body, full of hair; long tail, of a black and white colour; its length from noſe to tail is about eighteen inches. It inhabits Mexico, and perhaps other parts of America. It lives in the caves and in the hollows of rocks, where it breeds, and brings up its offſpring. It feeds on worms, beetles, and other inſects, and ſmall animals: when purſued, it breaks wind backward with an inſupportable ſtench. See Conepatl.

Profeſſor Kalm was one night in danger of being ſuffocated by one that was purſued into a houſe where he ſlept; and it affected the cattle ſo that they bellowed through pain.

Another, which was killed by a maid-ſervant in a cellar, ſo affected her with its ſtench, that ſhe lay ill for ſeveral days; and all the proviſions in the place were tainted to ſuch a degree, that the owner was obliged to throw them away.

Neverthele ſs, the fleſh is reckoned good meat, and not unlike that of a pig; but it muſt be ſkinned as ſoon as killed, and the bladder taken carefully out. Pennant.

Z.

Z, The laſt letter in the alphabet, and one of the double conſonants, both among the Latins and Greeks.

Its pronunciation is much more ſoft and obtuſe than that of the *x*; which makes Quintilian call it *jucundiſſima*, and *dulciſſima*. Neverthele ſs, the ſound was not always the ſame as it is now; which is but, as it were, half that of an *s*: or, that, expreſſed by its name *izzard* or *s hard*, of an *s* uttered with cloſer compreſſion of the palate by the tongue, as *freeze*, *froze*.

It had ſomething originally in it of the *d*; but only what ſounded very ſmoothly: thus, *Mezentius* was pronounced as if it had been *Medſentius*, &c.

The Z had alſo an affinity with the *g*: thus Capella, “z à Græcis venit, licet etiam ipſi primo *g* Græca utebantur.”

Z begins no word originally Engliſh; although it is found in the Saxon alphabets, ſet down by grammarians, it is read in no word originally Teutonic. Johnſon.

Z was alſo a numeral letter, ſignifying two thouſand; according to the verſe:

> “Ultima Z tenens, finem bis mille tenebit.”

When a daſh was added at the top, $\overline{Z}$, it ſignified two thouſand times a thouſand.

This letter formerly ſtood as a mark for ſeveral ſorts of weights. Sometimes it ſignified an ounce and a half, and very frequently it ſtood for half an ounce: ſometimes for the eighth part of an ounce, that is, a drachm Troy-weight; and it has in earlier times been uſed to expreſs the third part of an ounce, or eight ſcruples.

On French coins, Z denotes thoſe ſtruck at Grenoble.

ZZ, theſe letters were uſed by ſome of the ancient phyſicians to expreſs myrrh. At preſent they are often uſed to ſignify *zinziber*, or *ginger*.

ZAAB, or Zeb, in *Geography*, a diſtrict of Africa, in the country of Sahara, belonging to the Algerines. It was anciently a part of the Mauritania Sitifenſis, and is a narrow tract of land lying immediately under the Atlas. N. lat. between 34° 30′ and 35°.

ZAARA. See Sahara.

Zaara, a word uſed by the *Arabian phyſicians*, to expreſs the *vigilia morboſa*, or continual watchings of perſons in many illneſſes.

ZAARAM, in *Ancient Geography*, a town of Arabia Felix, which, according to Ptolemy, was the reſidence of the king of the Cinædocolpites.

ZAARON, in *Geography*, a mountain of Africa, on the weſtern ſide of the plain of Fez, in ſight of Mequinez, on which is a village conſecrated to Mahometan devotion. It contains the ſanctuary of Sidi Edris, who came from Medina at the end of the 8th century, introduced Mahometaniſm, and was the firſt ſovereign of his race in this part of Africa. This ſanctuary is an aſylum for malefactors, and never violated by the emperor of Morocco.

ZAB, a town of the Arabian Irak, on the Euphrates; 65 miles W.S.W. of Bagdad.

Zab, *Great*, the Zabatus of Xenophon, and Lycus of Ptolemy, a river of the Lower Kurdiſtan, in the pachalic of Bagdad, which riſes in the ſame range of hills, and contiguous to thoſe of the Diala, mentioned in hiſtory by the names of Delos and Arba; this latter river, increaſed by ſeveral ſtreams, continues its courſe to the ſouth, and enters the Tigris, about 5 miles above Tauke Keſra. During the ſummer it is fordable at Bakooba, 9 leagues from Bagdad, on the road to Kermanſhaw, and is near 150 yards wide, at the place where a bridge of boats is thrown acroſs it, for the convenience of travellers, juſt before it approaches the Tigris. The Great Zab at firſt purſues a northerly courſe, when meeting with a ſmall ſtream, which comes from the diſtrict of Alhak, it proceeds to the weſtward, unites with the Hakiar, or river of Julamerick, and then flowing in a S.W. direction, forms a junction with the Hazir ſu (anciently Bumadus), and diſembogues into the Tigris at Toprukala, 14 furſungs (or about 42 miles) below Moſul. Between Moſul and Erbille, this river can only be forded in the ſummer, and when low, it is ſo deep and ſo rapid that it is difficult of paſſage. The 10,000 Greeks commenced their retreat by croſſing this river in the face of the Perſian army. Xenophon reckons it 400 feet wide; but when the Greeks paſſed it, it muſt have been fordable.

Zab, *Little*, the *Zabus Minor* and *Caprus* of the Macedonians, a river of Kurdiſtan, formed by the junction of a great number of little brooks, which originate in the hilly country to the E. of Khoi Sindjack. At Altun Kupri, 68 furſungs from Bagdad, on the route to Moſul, it joins the Altun ſu, or golden water, and terminates in the Tigris, oppoſite to the large and rich city of Cœne, or the preſent village of Senn, 30 miles below Haditha. This river is narrow, winds very deep, and very rapid. That part of the Lower Kurdiſtan that lies N. of the Little Zab, has in every age been a rich and productive province; and ſtill continues to ſupply Bagdad, Moſul, and the other cities, with corn, cattle, cheeſe, butter, dried fruits, and almoſt every other kind of proviſion. Another river, the Odorneh, ſuppoſed by ſome authors to be the *Phuſkus* of Xenophon, is alſo formed by the junction of many ſtreams, which ariſe in the hills between Kerkuk, the largeſt town in the Lower Kurdiſtan, (N. lat. 35° 29′,) and *Solymania* (which ſee). *Kerkook* or *Kerkuk*, (which ſee,) entitled *Demetrius* by Strabo, and *Corcura* by Ptolemy, lies in the direct road from Bagdad to Moſul, 59 furſungs from the former, and 41 from the latter, on a commanding eminence, but with narrow and filthy ſtreets and mean houſes. The population is eſtimated at 18,000 ſouls, Turks, Armenians, Neſtorians, and Kurds; but this eſtimate is ſuppoſed to exceed the truth by 5000. It is defended by a mud wall, has 2 gates, 7 moſques, 14 coffee-houſes, one hummum, one caravanſera, one Armenian church, and 12 pieces of uſeleſs artillery. The ſuburbs contain 5 moſques, 9 ſmall caravanſeras, 13 coffee-houſes, 3 convents, and 3 catholic churches. Around the town the country is hilly, and on the N. ſide a low range of barren and rocky mountains ſeparates the diſtrict of Kerkook from the fine plain of Altun Kupri. At a ſmall diſtance there is a number of naphtha pits, which ſupply the neighbouring country with the naphtha, which in a liquid ſtate is raiſed in leathern buckets, and depoſited in earthen jars. The river Odornah, after purſuing a S.W. courſe, falls into the Tigris, 20 furſungs above Bagdad. Its bed is about 60 yards broad, and its ſprings contain a large body of water. Kinneir's Perſia.

ZABA, or Sabana *Emporium*, (*Batu-Saber*,) in *Ancient Geography*, a conſiderable place, and one of the principal trading towns of India, in the peninſula beyond the Ganges; marked in the map of D'Anville, a little W. of the S.E. point of this peninſula.

ZABACHA, in *Geography*. See Azof.

ZABADÆANS, in *Ancient Geography*, Arabs who lived to the eaſt of the mountains of Galaad. In the 1ſt book of the Maccabees we learn that Jonathan marched againſt them, and defeated them.

ZABATRA, in *Geography*, a town of Aſiatic Turkey, in the government of Maraſch; 48 miles N.E. of Maraſch.

ZABDA, a large and pleaſant town of Syria, ſituated among the mountains, and chiefly, if not ſolely, inhabited by Chriſtians, which furniſhes 700 men fit for war. The town is divided into five diſtricts, each having its ſeparate ſcheick, who pays tribute to the emir of the Druſes: they complain of oppreſſion; and the ſtate of the place and the adjacent country ſhew that their complaints are not unfounded. The town is ſheltered by mountains, but the locuſts are very deſtructive. Tobacco is one of the chief articles of cultivation. A rivulet, rolling from the rocks, turns the mills, and waters the ground. The air is ſalubrious, unmoleſted with exceſſive heat. Near it is a long ſtructure, apparently part of an aqueduct, called "the tomb of Noah." It extends about 60 feet, being the ſtature of Noah, according to oriental tradition. The pilgrims who formerly came to worſhip in an adjacent moſque were very numerous; and the religious revenue is ſaid to amount to 300 purſes annually. Browne's Travels.

ZABDICENA, in *Ancient Geography*, a country of Aſia, and one of thoſe called by Ammianus Marcellinus Tranſtigritanes, becauſe they lay beyond the Tigris, with reſpect to Perſia. It was extended along the Tigris.

ZABECES, a people of Africa, in Libya, neighbours of the Marges and Zygantes, according to Herodotus.

ZABELTITZ, in *Geography*, a town of Saxony, in the margravate of Meiſſen; 4 miles N. of Groſſen Hayn.

ZABER, a river of Wurtemberg, which runs into the Neckar, near Lauffen.

ZABERN, Conrard de, in *Biography*, born in Germany about 1450, was a very learned man, and much reſpected for his morals. He wrote two treatiſes on muſic; the firſt of which is entitled "De Monochordo," and the ſecond "De Modo bene Cantandi." He was much beloved by the emperor Frederic III.

Zebern, in *Geography*. See Bergzabern.

ZABI, or Zaba, in *Ancient Geography*, a place of Africa, in Mauritania Sitifenſis, on the route from Carthage to Cæſarea, between Aræ and Macri. Anton. Itin.

ZABII, or Zabians. See Sabæans and Sabaism.

ZABIN, in *Geography*, a town of Lithuania; 30 miles N.E. of Minſk.

ZABIRNA, in *Ancient Geography*, a river of Aſia, in Meſopotamia, which diſcharges itſelf into the Tigris.

ZABLOTOW, in *Geography*. See Sablotow.

ZABLOWICZE, a town of Lithuania; 86 miles E.S.E. of Pinſk.

ZABOLA, a town of Tranſylvania; 10 miles N. of Cronſtadt.

ZABORE, a town of Ruſſia, in the government of Irkutſk; 36 miles S.S.W. of Kirenſk.

ZABRZEH. See Hohenstadt.

ZABULISTAN. See Sablestan.

ZABULON. See Zebulun.

Zabulon, *Tribe of*, in *Ancient Geography*, was bounded on the N. by the tribes of Aſher and Naphtali, on the S. by the torrent of Kiſhon, on the E. by the ſea of Galilee, and on the W. by the ocean. Almoſt all the towns of this tribe were on the plain of Galilee.

Zabulon, a town of Judea, ſituated on the plain of Galilee, in the tribe of the ſame name, according to Joſhua and the book of Judges. Joſephus ſays, that Ceſtius, though he admired its beauty, took, pillaged, and burnt it. It was ſituated S.E. of Ptolemais.

ZABUR, a country of Aſia, in Babylonia, in which was the town of Seleucia.

ZABUS, Zabatus, or *Zerbis*, (*Great Zab* or *Zarb*,) a river, which is the ſame with the Lycus, flowed from a ſource towards the 36th degree of latitude, and directed its courſe firſt to the N.W., then to the W., afterwards to the S.W., and finally to the S., diſcharging itſelf into the Tigris, about lat. 35° 45′. Xenophon ſays, that this river, at its entrance into the Tigris, appeared to the Greeks comparable to the Tigris itſelf. See Zab.

Zabus *Minor*, or *Caprus*, (*Leſſer Zab*, or *Altun-Sou*,) a river of Aſia, which had its ſource E. of Arbelles, and ran towards the S.W., diſcharging itſelf into the Tigris, over againſt Cœne, below or S.S.E. of the greater Zabus. See Zab.

ZACA, in *Geography*, a town of Egypt; 17 miles N.E. of El Ariſh.

ZACANTHA, in *Ancient Geography*, a town of Hiſpania, in Iberia, ſaid by Steph. Byz. to have been taken by Hannibal, and to have been called Zacynthus or Saguntum.

ZACAPA, in *Geography*, a town of Mexico, in the province of Vera Paz; 42 miles S. of Vera Paz.

ZACAPULA, a town of Mexico, in the province of Chiapa; 130 miles S.E. of Chiapa dos Eſpagnols.

ZACATECAS, a province of Mexico, bounded on the north by New Biſcay, on the eaſt by Guaſteca, on the ſouth by the provinces of Mechoacan, Guadalajara, and Chiametlan, and on the weſt by Chiametlan and Culiacan. It is well inhabited, and abounds with large villages. Part of it lies in the temperate and part in the torrid zone: it is about 100 leagues in length, and 45 in breadth. The weſtern part of it is an arid tract, and would not be inhabited were it not for the mines, which were formerly reckoned the richeſt in America; but the eaſtern part abounds with corn, and fruits of various kinds, and its foreſts are full of deer.

Zacatecas, the capital of the fore-mentioned diſtrict, the importance of which has declined with the mines. It formerly contained about 12,000 families of Spaniards and mixed breeds, though conſiſting chiefly of one ſtreet, in a deep paſſage between high rocks, crowned with cottages. Luis de Potoſi on the S.E. is ſaid by Alcedo to contain only 1600 families of Spaniards, Mulattoes, and Indians, though it has ſix magnificient churches. The ridge of St. Peter, five leagues from the city, contained rich mines of gold and ſilver; but they are now in part exhauſted, and the fuel has become ſcarce. The opulence of this city has in courſe declined, and the chief trade is in goat-ſkins and tanned leather.

Zacatecas. See St. Louis *de Zacatecas*.

ZACATLAN, a town of Mexico, in the province of Tlaſcala; 30 miles N. of Puebla de los Angelos.

ZACATULA, or Sacatula, a town of Mexico, in the province of Mechoacan, on a river of the ſame names, near the Pacific ocean; 95 miles S. of Mechoacan. N. lat. 18° 35′. W. long. 103°.

Zacatula, a ſmall but fertile province in the dominion of Mexico.—Alſo, a river of Mexico, which runs into the Pacific ocean, near the town of Zacatula.

ZACCARIA. See Tevo.

ZACCHIA, Paolo, in *Biography*, an eminent phyſician, was born at Rome in 1585, and in the progreſs of life was diſtinguiſhed by his learning, and by his ſkill in muſic, painting, poetry, and eloquence, as well as in the more appropriate ſciences relating to his own profeſſion. He was phyſician to pope Innocent X., and celebrated among his contemporaries by various publications; of which the principal is intitled "Queſtiones Medico-legales, in quibus omnes materiæ medicæ quæ ad legales facultates videntur pertinere, proponuntur, pertractantur, reſolvuntur;" a work which has been often reprinted. He was alſo the author, in Italian, of two eſteemed works, "Del Vitto Quadrageſimale," 1637, the ſubject of which is the regimen of diet in Lent; and "De' Mali Ipocondriachi," 1639, a diffuſe treatiſe on hypochondriacal affections. He died in 1659, aged 75. Haller. Eloy. Gen. Biog.

ZACCONI, P. Lodovico, of Peſaro, author of an ample treatiſe of muſic, entitled "Prattica di Muſica," the firſt part of which was printed at Venice, 1592, and the ſecond in 1596; a publication in which the author not only propoſes to give inſtructions for the regular compoſition, but the accurate performance of every ſpecies of muſic. The idea is ſplendid; but the world has been ſo frequently deceived by the titles of books, that authors are obliged to abate in their promiſes, in proportion as the expectations of the public are diminiſhed. If arts and ſciences could be acquired by the dead letter of ſilent inſtruction, every one who could read, in Italy, might, during the times under conſideration, have been a muſician. But though no ingenious occupation was perhaps ever yet completely taught by books, without a maſter, or by a maſter, without books, yet they are excellent helps to each other. It is hardly poſſible for a didactic work to ſatisfy all the doubts that ariſe in an inquiring mind during ſolitary meditation; particularly in the firſt ſtages of a ſtudent's journey through the rugged roads of ſcience. But when he has made ſome progreſs, if he ſhould be ſeparated from his guide, the way becomes daily ſo much more ſtraight and ſmooth, that by the help of theſe kinds of charts, he will be enabled to advance with tolerable ſpeed and facility by himſelf.

Zacconi's work, though ſometimes dry and tedious, contains much uſeful and practical knowledge. And as he is almoſt the only Italian writer on the ſubject of muſic who has not bewildered himſelf in inquiries concerning the ſyſtems of the ancient Greeks, or the philoſophy of ſound, he has had the more leiſure for analyſing the art, and facilitating the ſtudent's progreſs. This author regarded Okenheim, Joſquin, Iſaac, Brumel, Mouton, and Senfelio, as ancients compared with Willaert, Morales, Cipriano, Zarlino, and Paleſtrina; and theſe laſt, ancient with reſpect to himſelf and cotemporaries; and ſays (lib. i. cap. x.), that as the ancient Greeks and Romans produced their muſical effects by mere melody, united with poetry, and Joſquin and other early contrapuntiſts, by notes of different lengths, harmonized and worked into perpetual fugue; ſo the more modern, though the rules of harmony are the ſame, by a different diſpoſition of concords, inverſions, and other contrivances, produce a greater variety of effects.

He likewiſe obſerves (cap. xxiii.), that "every age has vainly thought its muſic brought to as great a degree of perfection as was poſſible; but it was always found that the next age continues to change, and ſtill to think the ſame. Okenheim, the maſter of Joſquin, and even in the days of Joſquin, John Mouton, his ſcholar, had the ſame ideas of their own improvements; yet, ſince their time, muſic has not ſtood ſtill, but made great advances towards perfection, being more light and pleaſing."

The change in muſical *modes* has continued to our own time, and will doubtleſs continue to the end of *all* time; for melody, being a child of fancy and imagination, will ſubmit to no theory or laws of reaſon and philoſophy; and therefore, like love, will always continue in childhood.

Zacconi's chief labour and merit in the third book have been the explanation of the moods, and correction of errors in the notation of old compoſers, to which his work will ſerve as a uſeful collection of errata. In Book I. he dwells much on the ſuperiority of the ſinging and ſingers of his own time, over all that preceded them; and has a long chapter upon the manner of gracing and embelliſhing a melody, where he tells us, "Che ſtile ſi tenghi nel far di *gorgia;* dell' uſo de i moderni *paſſagi*, come ſi *fioriſchino* le cantilene;" and ſpeaks of *acconciature*, as the modern Italians do of *riffioramenti*, or graces. The diviſions, however, into which he breaks paſſages, in order to *embelliſh* them, if adopted by an opera-ſinger of the preſent times, would be like a modern fine lady appearing at court in the furbelows and flounces of queen Elizabeth, or a fine gentleman in the peruke of ſir Cloudeſley Shovel.

ZACHAN, or Sochan, in *Geography*, a town of Hinder Pomerania; 14 miles E. of Stargard. N. lat. 52° 13′. E. long. 15° 28′.

ZACHAREVSKAIA, a fort of Ruſſia, in the government of Ekaterinoſlav, on the Konſkija; 28 miles W. of Mariupol.

ZACHARIÆ, Justus Frederick William, in *Biography*, was born at Frankenhauſen in Thuringia, in 1726; and during the courſe of his elementary education at his native place, he diſtinguiſhed himſelf by various poetical pieces. In 1743 he went to Leipſic to ſtudy juriſprudence, but directing his chief attention to the belles lettres, he produced his mock-heroic poem, entitled "Renommiſten," which Eichorn, in his Hiſtory of Literature, ſays, was the commencement of heroi-comic poetry among the Germans. In the following year, he was admitted as an aſſociate by the young men who contributed to the work publiſhed under the title of "Amuſements of Reaſon and Wit." From Leipſic, where he remained about three years, he removed to Gottingen, where, attracting the notice of profeſſor Klaproth, he was recommended by him to be a member of the German ſociety. In 1748 he was appointed tutor at the Caroline college at Brunſwick, and in 1761 he became profeſſor of poetry in that inſtitution; to which, in the ſucceeding year, were annexed the offices of inſpector of the typographic and bookſelling eſtabliſhment belonging to the Orphan Houſe, and director of the Brunſwick Intelligencer. From 1768 to 1774, he was editor of the New Brunſwick Gazette; in 1775 he was appointed to the diaconate of St. Syriac, at Brunſwick; and he died in the month of June, 1777, in the 51ſt year of his age. His biographer ſtates, that "he poſſeſſed a very fertile and vivid imagination, with a fine taſte, improved by obſervation and acquaintance with the world. As a poet, he compoſed with uncommon facility, and tried his talents in almoſt every ſpecies, but was the moſt ſucceſsful in the deſcriptive and heroi-comic. His burleſque poems were diſtinguiſhed from every thing of the kind that had before appeared in Germany." A collection of Zachariæ's poetical works was publiſhed at Brunſwick in 1763—1765, 9 vols. 8vo. Gen. Biog.

ZACHARIAH, or Zechariah, one of the minor prophets, who commenced the exerciſe of his gift in the 8th month of the 2d year of Darius, the ſon of Hyſtaſpes; and on account of the preciſion and clearneſs of his predictions, he has been intitled "the ſun among the minor prophets." The moſt remarkable of his prophecies are thoſe that relate to the advent of the Meſſiah, and to the deſtruction of Jeruſalem. Dupin.

ZACHARIAS, *Pope*, a native of Greece, ſucceeded Gregory III. in 741; at a time when the Roman territory was threatened with an invaſion by Luitprand, king of the Lombards, and when the ſons of Charles Martel were too much engaged by domeſtic broils to undertake its defence. The pope, therefore, tried how far he might avail himſelf of the authority of religion in averting the ſtorm; and by a ſolemn embaſſy and perſonal viſit, he not only obtained peace, but induced Luitprand to reſtore to the Roman ſee four cities which he had taken from it. He alſo interpoſed, in 743, with Luitprand on behalf of the exarch of Ravenna, and prevailed with him to deſiſt from an invaſion of the exarchate, and to grant peace, as well as to give back the fortreſs of Ceſena to the exarch; and in the ſame year he held a council at Rome to ſettle ſome matters of diſcipline, particularly ſuch as related to the clergy. During the pontificate of Zacharias in the year 746, Carloman, the eldeſt ſon of Charles Martel, who had ſurrendered his dominions to his brother Pepin, went to Rome, and aſſumed the monaſtic habit, with which he was ſolemnly inveſted by the pope. Rachis, the ſucceſſor of Luitprand, who, upon his acceſſion to the throne in 747, was peaceable diſpoſed towards the pope and the Romans, took up arms againſt them; but his hoſtile purpoſes were averted by the remonſtrances of Zacharias, and thoſe of ſome of his principal clergy and nobility, who viſited his camp, in order to obtain peace; nor were they ſucceſsful merely in this object; but the reſult of their interview was Rachis's reſignation of his crown, the aſſumption of the monaſtic habit conferred upon him by the pope, and retirement to the monaſtery of Monte Caſino, where Carloman reſided. In 752 Pepin applied to the pope for permiſſion to ſeize the crown of France, and to ſet aſide Childeric III.; the pope conſented, and Childeric was provided for in a monaſtery. Zacharias, having diſplayed talents in the exerciſe of his office, which gave him rank among the greateſt of the popes, and having eſtabliſhed an eſtimable character by his liberality to the poor, and by his munificence in public works, died in 752, in the 11th year of his pontificate. Some of his decrees and epiſtles, and alſo his tranſlation of the dialogues of St. Gregory from Latin into Greek, are extant. Bower.

ZACHAROVA, in *Geography*, a fort of Ruſſia, in the government of Irkutſk; 32 miles N.N.E of Kirenſk.

ZACHAU, a town of Brandenburg, in the Middle Mark; 10 miles E. of Brandenburg.

ZACHAW, Frederic Wilhelm, in *Biography*, an able muſician and organiſt at Halle, in Saxony, was born at Leipſic in 1665. He had the honour and good fortune to have Handel for his ſcholar. He is ſtill celebrated by the Germans as a maſter, who had eſtabliſhed an admirable ſchool of muſic at Halle, and as one who was deeply ſkilled in all the arcana of compoſition and performance.

ZACHEO, or Deſechio, in *Geography*, a ſmall iſland in the Weſt Indies, between Hiſpaniola and Porto Rico; about 27 miles N.E. of Mona.

ZACHTLEVEN, Cornelius, in *Biography*, was born at Rotterdam in 1606, and became an admirable painter of ſcenes of humour, imitating the ſtyle of Bronwer; but in ſubjects of a more ſober deſcription, which he alſo painted, ſuch as farm-houſes, kitchens, and the recreations of villagers, &c. he choſe the more light and agreeable ſtyle of Teniers for his model; and in that ſtyle attempted to embody the ſame deſcription of perſons and compoſitions. In neither, however, of his imitations did he attain an equal degree of ſpirit or of truth with his prototypes. His works are well compoſed, and the touch with which they are executed is bold and free; they are not often met with, but are thought deſerving of a place in the beſt collections.

Zachtleven, Herman, was the younger brother of Cornelius, and was born at Rotterdam in 1609. He is ſaid to have been the pupil of Van Goyen, but did not follow the ſtyle of that maſter. His principal occupation appears to have been in painting views of the banks of the Rhine and the Meuſe. Theſe he executed in a very neat manner, but with a mean and common-place ſtyle of ſelection and imitation. The tones and hues of his pictures are generally cold, but freſh; and as he appears to have had great knowledge of aërial perſpective, his diſtances are well preſerved; and the forms drawn with great care and minuteneſs. He never left Flanders, though it has been aſſerted that he went to Italy. His drawings are numerous, and are carefully preſerved in the beſt collections. He died in 1685, aged 76. Both he and his brother Cornelius employed the etching-needle, and left ſeveral neatly executed plates, from deſigns of their own.

ZACINTHA, in *Botany*, whether ſo called by Matthiolus, the author of the name, becauſe this plant was originally found in the iſle of Zante, or for what other reaſon, does not appear.—Matth. Valgr. v. 1. 457. t. 460. Schreb. Gen. 534. Willd. Sp. Pl. v. 3. 1624. Ait. Hort. Kew. v. 4. 468. Sm. Prodr. Fl. Græc. Sibth. v. 2. 145. Tourn. t. 269. Poiret in Lamarck v. 8. 831. Gærtn. t. 157.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ-ſemifloſculoſæ*, Linn. *Cichoraceæ*, Juſſ.

Gen. Ch. *Common Calyx* double: the *outermoſt* ſhort, erect, of ſeveral lanceolate leaves, membranous at the edges; *innermoſt* larger, ſimple, furrowed, of eight permanent, linear, acute, converging leaves; at length ſwelling and very prominent at the baſe. *Cor.* compound, imbricated, uniform: florets equal, perfect, of one petal, ligulate, linear, abrupt, with five teeth. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen ovate-oblong; ſtyle thread-ſhaped, the length of the ſtamens; ſtigmas two, reflexed. *Peric.* none, except the interior calyx, which becomes woody, cloſed, depreſſed, with a point, having eight rounded protuberant angles, each ſcale enfolding one of the marginal ſeeds. *Seeds* ſolitary to each floret; the *marginal* ones ovate-oblong, incurved, compreſſed at the ſides, gibbous at the back, tapering below, ſtriated; longitudinally channelled, and villous, in front; *central* ones oblong, ſlightly incurved, quadrangular, compreſſed at the back, ſtriated, ſmooth. Down ſeſſile, ſomewhat feathery. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Seeds of the circumference incurved; of the centre ſtraight. Down very ſhort, finely feathery. Outer calyx membranous; inner with eight protuberances.

1. Z. *verrucoſa*. Warty Zacintha. Gærtn. v. 2. 358. Willd. n. 1. Ait. n. 1. Sm. Fl. Græc. Sibth. t. 820, unpubliſhed. (Lapſana Zacintha; Linn. Sp. Pl. 1141. Cichorium verrucatum, Zacintha; Cluſ. Hiſt. v. 2. 144. C. verrucarium; Ger. Em. 289.)—Native of Italy, Crete, Lemnos, and Zante, as well as of mount Athos. *Sibthorp.* The *root* of this, the only known ſpecies, is annual. *Stems* ſomewhat leafy, round, ſmooth, branched and forked, ſpreading, from a ſpan to eighteen inches high. *Leaves* runcinate, ſmooth; the radical ones largeſt and moſt numerous. *Flowers* yellow, ſmall. The ſwelling part of the *calyx*, after flowering, aſſumes a purple colour. See Lapsana and Rhagadiolus.

ZACO, in *Geography*, a territory which probably belonged to the province of Adiabene, and was generally comprehended between the Tigris and the Caprus, or Little Zab. The ridges or mountains of Zaco are a part of the Kurdiſtan region, on which was the road along the Tigris, between Moſul and Jezirah. Theſe ridges were lofty, ſteep, and rocky, and the path rugged and difficult of aſcent. It was part of the road of the 10,000 Greeks in their retreat. The preſent town of Zaco ſtands near the northern part of the ridge, denominated from it; and it is the moſt conſiderable place that occurs between Moſul and Jezirah; and is ſurrounded by a fertile diſtrict, which produces a great variety of excellent fruits. Zaco ſtands in an iſland of the river Kurnib, which deſcends from the Kurdiſtan or Carduchian mountains, and falls into the Tigris, a few miles below the town.

ZACONDA, a town of Africa, in the country of Ante, where the Dutch built a fort. It was a conſiderable town at one time, till in a war between the people of Ante and Adom, it was burnt down by the latter; ſince which it has never been thoroughly repaired.

ZACUTO, or Zacutus Lusitanus, in *Biography*, a phyſician, was born at Liſbon in 1575, and educated at Salamanca and Coimbra. In his 20th year he took the degree of doctor, and ſettling in his native city, practiſed with reputation for thirty years. As he was a deſcendant of Jewiſh parents, his dread of the Inquiſition, after the edict of Philip IV. againſt the Jews was iſſued in 1625, induced him to retire to Holland, where he openly profeſſed the religion of his family, and maintained a character highly reſpectable, both in his profeſſion as a phyſician, and in his moral conduct. He died at Amſterdam in the year 1642; and left behind him a collection of works, amounting to 2 vols. fol. The principal of his works are, "De Medicorum Principum Hiſtoria," lib. vi. in which he approves himſelf a ſtrenuous advocate of Galen and the Greek phyſicians; "Praxis Hiſtoriarum Morborum," lib. v.; and "Praxis Medica admiranda," lib. iii. In all his works he blends acuteneſs of obſervation with a certain degree of ſuperſtitious credulity; but they are nevertheleſs conſulted and quoted. Haller. Eloy.

ZACYNTHUS, in *Ancient Geography*, an iſland of the Ionian ſea, W. of that part of the Peloponneſus on which is the Sinus Chelonitis. It is now called *Zante*. Strabo makes its compaſs 160 ſtadia. It had many forts, and was very fertile. In this iſle was a town of the ſame name, ſituated in the eaſtern part, with a citadel. According to Dionyſius of Halicarnaſſus, it derived its name from Zacynthus, ſon of Dardanus, who, accompanied by a number of Phrygians, ſettled here. According to Thucydides, the firſt Greeks known in this iſland were Achæans, who came hither from Achaia. It paſſed under the dominion of Philip, king of Macedon, who ſurrendered it to Amynander, king of the Athamanes, who confided the government of it to Philip of Megalopolis, by whom it was transferred to Hierocles of Sicily. After the defeat of Antiochus at Thermopylæ, Hierocles ſold it to the Achæans. Livy ſays, that the town and citadel were aſſaulted and captured by Levinus; and Pauſanias informs us that it was called Pſophis. According to Scylax it had one port; and Pliny ſays that it was very fertile, and that its port was named Hyrie; but P. Mela diſtinguiſhes Hyrie from Zacynthus.

Zacynthus, a town of Africa, in Libya. Steph. Byz.

Zacynthus, an epithet uſed by the ancients to a liquid bitumen, from the iſland Zante.

ZAD, in *Geography*, a name given to the Niger of Africa, in Bornou, which is deſcribed in Horneman's Journal as flowing eaſtwards. Its breadth was given to him for one mile, and he was told that it flowed towards the Egyptian Nile, through the land of the heathens. The courſe here given is directly towards the Congo; and it is ſaid, that Zad is the name of the Congo at its mouth, and it is the name of the Congo for at leaſt 650 miles inland.

ZADADRUS, in *Ancient Geography*, a river of India, on this ſide of the Ganges; which received the waters of the Hypaſis and Adris, according to Ptolemy.

ZADAN, in *Geography*, a town on the weſt coaſt of the iſland of Celebes. S. lat. 2° 55′. E. long. 119° 9′.

ZADAON, a river of Portugal, which runs into the Atlantic, near Setuval.

ZADELSDORF, a town of Saxony, in the circle of Neuſtadt; 3 miles S.S.E. of Auma.

ZADONZK, a town of Ruſſia, in the government of Voronez, on the Don; 92 miles N. of Voronez. N. lat. 53° 4′. E. long. 39° 14′.

ZADRACARTA, in *Ancient Geography*, a very large town of Aſia, the capital of Hyrcania, according to Arrian.

ZADRAMA, a town of Arabia Felix, the capital of the Cinædocolpites. Steph. Byz.

ZADRAN, in *Geography*. See Hatvany.

ZADRIS, in *Ancient Geography*, a town of Aſia, in the interior of the Colchide. Ptol.

ZADURA, in the *Materia Medica* of the ancients, a name given to a foreign root, which was round and ſmooth, and of the colour of ginger.

It was at that time imported from the Indies, and greatly eſteemed in peſtilential caſes.

ZÆA, or Zea, in *Ancient Geography*, a very ancient town of Greece, in Bœotia. Steph. Byz.

ZÆTIA, or Zetia, a town of Arcadia, N. of Megalopolis. It had two temples, one of Ceres, another of Diana.

ZÆZAR, in *Geography*, a town of Spain, in the province of Murcia; 22 miles N.W. of Murcia.

ZAFANIN, a town of Fez, near the coaſt of the Mediterranean; 35 miles S.E. of Melilla.

ZAFARANBOLI, a town of Natolia; 28 miles S. of Amaſieh.

ZAFFABEN, a word uſed by ſome of the chemical writers to expreſs putty.

ZAFFE Ibrahim, in *Geography*, a town on the eaſt coaſt of Madagaſcar. S. lat. 17°.

ZAFFER, Zaffre, or Saffre, in *Chemiſtry*, is the reſiduum of cobalt, after the ſulphur, arſenic, and other volatile matters of this mineral have been expelled by calcination: ſo that it is a kind of calx or oxyd of cobalt, mixed with a portion of ſiliceous matter, of a grey or reddiſh colour; in which ſtate it is imported from Saxony. It is uſed to produce a very fine blue colour, when it is melted with fuſible and vitrifiable matters.

The blue colour produced by the vitrification of zaffer proceeds from the earth or calx of a ſemi-metallic ſubſtance contained in cobalt, called by chemiſts *regulus of cobalt*. This is proved by melting zaffer with a reducing flux, like any other roaſted ore, by which means the regulus will be obtained. The ſcoria in this fuſion has alſo a blue colour, proceeding from a portion of the calx of the regulus that is not reduced, but is vitrified together with the ſcoria. The calx, therefore, or metallic earth of the regulus of cobalt, is the ſole cauſe of the blue colour produced by zaffer.

But as this is contained in cobalt in various quantities, ſome zaffers produce more blue than others. The heterogeneous fixed matters contained in cobalts contribute, according to their quantity, not only to the greater or leſs intenſity of the blue colour, but alſo to its luſtre and beauty; and, therefore, thoſe who manufacture zaffer from cobalt make frequent eſſays of the roaſted ore, by mixing it with vitreous matters, in order to diſcover the intenſity and beauty of the blue colour.

Good cobalt calcined would form too deep a blue, and almoſt a black glaſs, if it were not previouſly mixed with a certain quantity of vitreous frit. In the manufacture of zaffer, therefore, the calx of cobalt, the ſtrength of which has been determined by previous eſſays, is mixed with ſuch a quantity of ſand, or of powdered flints and quartz, that with the addition of ſome ſaline flux, a deep blue glaſs may be formed. See Cobalt.

The zaffer that is commonly ſold, and which comes from Saxony, is a mixture of oxyd of cobalt with ſome vitrifiable earth: it is of a grey colour, and ſome zaffers are clearer than others, according to the intenſity of the colour which they are capable of producing.

Zaffer is employed in the manufacture of pottery and of porcelain, for painting the ſurface of the pieces of ware, upon which it is applied, together with ſome ſaline flux, previouſly to the baking or glazing, that the ſame fire may vitrify this colouring material.

The blue of zaffer is the moſt ſolid and fixed of all the colours that can be employed in vitrification; it ſuffers no change from the moſt violent fire. It is ſucceſsfully employed to give ſhades of blue to enamels, and to the cryſtal glaſſes made in imitation of ſome opaque and tranſparent precious ſtones, as the lapis lazuli, the turquois, the ſapphire, and others of this kind.

To prepare zaffer for uſe in the glaſs-trade, put it in groſs pieces into earthen pans, and let it ſtand half a day in the furnace; then put it into an iron ladle to be heated red-hot in the furnace; take it out while thus hot, and ſprinkle it with ſtrong vinegar: and when cold, grind it on a porphyry to an impalpable powder, then throw this into water in glazed earthen pans; and when it has been well ſtirred about, let it ſettle and pour off the water: repeat this waſhing often, and the foulneſs of the zaffer will be thus wholly ſeparated. Dry the powder, and keep it for uſe.

ZAFFRAM, a word uſed often by authors to expreſs ſaffron, but ſometimes as the name of other things of a yellow colour; thus ochre was called by this name.

ZAFFRAMEN, a word uſed by ſome medical writers to expreſs ſaffron.

ZAFRA, in *Geography*, a town of Aſiatic Turkey, in the government of Maraſch; 15 miles S.W. of Tarſus.—Alſo, a town of Aſiatic Turkey, in the government of Trebiſond, on the Black ſea; 50 miles N.W. of Trebiſond.—Alſo, a town of Spain, in Eſtremadura; 22 miles E. of Xeres de los Caballeros.

ZAFRANIA, in *Colours*, a term uſed by the Greeks to expreſs the yellow of ſaffron. The barbarous writers of the after-ages tranſlated it into the Latin *crocietas*, or ſaffron colour.

The later Greek writers only uſe it, and they have taken it literally from the Arabians, Avicenna, and Serapio. This was a term uſed by them to expreſs the colour of the fine bole-armenic of Galen, which they tell us ſtained paper to a fine and beautiful gold colour.

ZAGA, in *Botany*, Poiret in Lamarck Dict. v. 8. 831. (Zaga Pohon, or *Corallaria latifolia*, Rumph. Amboin. v. 3. 175. t. 110.)—This is one of thoſe trees, whoſe hard red ſeeds are uſed for ornament, in the form of necklaces, bracelets, &c. by the natives of tropical climes, and even by the inhabitants of the moſt poliſhed countries of Europe, as faſhion, from time to time, is pleaſed, in her capricious wiſdom, to ordain. Such are the beautiful red and black ſeeds of *Abrus precatorius*, of which there is a pearly white variety, of rare occurrence. Such alſo are thoſe much larger ſeeds, of the ſame combination of colours, produced by the Weſt Indian genus Ormosia. (See that article.) The *Zaga* of Rumphius and Poiret is evidently a papilionaceous plant, with pinnate *leaves*, compoſed of about three pair of elliptic-oblong, entire, ſtalked, rather large leaflets, with an odd one. *Flowers* in panicled terminal cluſters. *Legumes* elliptic-oblong, pointed, hard and ſmooth, each containing one, rarely two, hard, ſhining, round *ſeeds*, all over of the colour of red coral, larger than thoſe of *Adenanthera pavonia*, being as broad as the fore-finger nail, and deſtitute of the defined circumſcribed area, for which the ſeeds of the *Adenanthera* are remarkable.

ZAGALA, in *Geography*, a town of Spain, in Eſtremadura; 25 miles S. of Alcantara.

ZAGAN, a town of the principality of Georgia, in the province of Kaket; 3 miles N. of Teflis.—Alſo, a town of Perſia, in the province of Irak; 12 miles S.W. of Hamadan.

ZAGARA, a mountain of Greece, in Livadia, anciently called Helicon.

ZAGATHAI, a name given from the ſecond ſon of Zingis to Great *Bucharia;* which ſee.

ZAGATIS, in *Ancient Geography*, a river of Aſia, in the Colchide, according to Arrian, who fixes its mouth between Athenæ and Anchiane Regia.

ZAGAWA, in *Geography*, a city of Africa, in Bornou, on a river which runs into the ſame lake, where the Niger is by ſome ſuppoſed to be loſt. N. lat. 19° 10′. E. long. 25° 50′.

ZAGGOS, a mountain of Africa, in which are ſome mines of ſalt; 100 miles S. of Algiers.

ZAGHARA, a town of Africa, in Bornou.

ZAGI. See Zegi.

ZAGILLONITIS, in *Ancient Geography*, a country of Aſia, in Cappadocia. Strabo.

ZAGING, in *Geography*, a town of Auſtria; 3 miles N. of St. Polten.

ZAGIRA, in *Ancient Geography*, a town of Aſia, in Paphlagonia, at a ſmall diſtance from the ſea. Ptol.

ZAGLIA, in *Geography*, a town of the iſland of Corſica; 8 miles S.E. of Calvi.

ZAGORA, a town of European Turkey, in Romania, on a lake which communicates with the Black ſea; 12 miles S.W. of Burgas.

Zagora, in *Ancient Geography*, a town of Aſia, in Paphlagonia, on the coaſt of the Euxine ſea, between Caruſa and the mouth of the river Halys, according to the Periplus of Arrian.

ZAGOROLO, in *Geography*, a town of the Popedom, in the Campagna di Roma; 3 miles W. of Paleſtrina.

ZAGOROW, a town of the duchy of Warſaw; 20 miles S. of Kaliſch.

ZAGRAB. See Agram.

ZAGROS, Mount, a mountain of Perſia, in the province of Irak, along the brink of which extends the diſtrict of Kurrend, from the vicinity of Holwan to the village of Goour. It is covered with foreſts of oak, and inhabited by an extraordinary race of men, among whom ſubſiſt cuſtoms ſimilar to thoſe of the Kadmuſia in Syria, deſcribed by Volney. It is ſaid that in their nocturnal feſtivals, the garments of the fair ſex, at the expiration of a certain period, are thrown into a heap, and jumbled together. The lights are then extinguiſhed, and the clothes being regularly diſtributed among the men, the candles are relighted; and it is ſettled by the rules of the ſociety, that the lady muſt patiently ſubmit to the embraces of the perſon who has become poſſeſſed of her dreſs, whether father, ſon, huſband, or brother. The lights are then once more extinguiſhed, and all of this licentious tribe paſs the remainder of the night in the indulgence of the moſt promiſcuous luſt.

ZAGRUS, or Zagrius Mons, in *Ancient Geography*, a mountain of Aſia, in Media. It made a part of mount Taurus, commencing in Armenia, and extending as far as the Chalonitide, between Media and Adiabene. Pliny. It is reckoned by Ptolemy one of the moſt conſiderable countries in Media. According to Strabo, it was this chain of mountains which touched the Niphates, and ſeparated Media from Babylonia.

ZAGU, in the *Materia Medica*, the name given by ſome authors to the ſago-tree, the *todda pauna*, or *palma fructi pruniforme*.

ZAGUANANAS, in *Geography*, a river of conſiderable length in New Mexico, which flows from the ſame ſources with the Rio Bravo, and joins the *Colorado;* which ſee.

ZAGYTIS, in *Ancient Geography*, a country of Africa, in Libya. Steph. Byz.

ZAHARA, in *Geography*, a town of Spain, in the province of Seville. In 1407, this town was taken from the Moors; about two years after the Moors retook the town, but not being able to reduce the citadel abandoned it. In 1481, it was ſurpriſed by the Moors, in a dark ſtormy night; moſt of the inhabitants were put to the ſword, and the reſt ſent ſlaves to Grenada; 36 miles S.E. of Seville. N. lat. 36° 50′. W. long. 5° 33′.

Zahara. See Sahara.

ZAHIA, a word uſed by the Arabian phyſicians to expreſs a ſort of dyſentery, in which there was a very large diſcharge of blood from the rectum, attended with an evident ſenſation of abraſion, or pain in the bowels.

ZAHNA, in *Geography*, a town of Saxony; 8 miles N.E. of Wittenberg. N. lat. 51° 56′. E. long. 12° 54′.

ZAHRADKA, a town of Bohemia, in the circle of Czaſlau; 17 miles S.S.W. of Czaſlau.

ZAHRINGEN, an ancient citadel in the Briſgau, which gave the title of duke to a noble family that became extinct in the 13th century; 1 mile N. of Friburg.

ZAIBAC, one of the many names by which the ancient chemiſts have called mercury.

ZAIDIR, a name by which ſome of the chemical writers have called verdigriſe, or the ruſt of copper; and others, the metal itſelf; and ſome braſs.

ZAIM and TIMAR, lordſhips granted under thoſe names in the Ottoman empire for life, as military rewards and encouragements. Thoſe who poſſeſs a zaim, or timar, are honoured with the title of aga; they are bound to a military perſonal ſervice, and obliged to bring with them to war one or more *gébélis*, horſemen or foot-ſoldiers, armed and equipped according to the revenue and extent of the lordſhip. The timar differs in no reſpect from the zaim, except that it is of leſs value, and that the aga who poſſeſſes it does not arm as many horſemen and foot-ſoldiers as the other. The number of zaims in Turkey in Europe is 914, and that of the timars is 8356. Nearly the ſame number is reckoned in Aſia, which furniſhes, with the *gébélis*, a militia of upwards of 60,000 men, better diſciplined, and more inured to war than the ſpahis and the janizaries. This militia for a long time conſtituted the principal force of the Ottoman empire: to this principally the firſt ſultans were indebted for the aſtoniſhing ſucceſs of their arms, and the rapid progreſs which they made in a little time in Aſia, in Europe, and even in Africa.

On the death of a zaimat, or a timariot, the ſultan is to draw a year's revenue from the lordſhip, and nevertheleſs, give it up again to the ſon of an aga, a ſpahis, or any other military man, eſpecially to him who, by a brilliant action, has diſtinguiſhed himſelf in battle, who has firſt mounted to the aſſault, penetrated into the enemy's intrenchments, killed a great number of infidels, or contributed to put them to the rout. But ſince the ſultans prefer to the fatigues of war and the dangers of battle the tranquillity of their ſeraglio, and the pleaſures of their harems; and more eſpecially ſince avarice and a love of gain have cauſed to be put up to auction the places intended for the recompence of valour and merit, the lordſhips are become the patrimony of the rich and of intriguers. Thus the beſt inſtitutions degenerate; thus the Muſſulman, formerly intrepid and valiant, becomes merely a vile plunderer, or a ferocious aſſaſſin; and the Ottoman armies, ſo formidable to their enemies, are become an object of contempt or pity, and this vaſt empire would no longer exiſt, if ſome European power were not intereſted in its ſupport.

ZAIN, in *Horſes*, a term uſed by the French to ſignify a horſe of a dark colour, neither grey nor white, and without any white ſpot or mark upon him in any part. See HORSE.

ZAINAH, in *Geography*, a town of Algiers, in the province of Conſtantina; ſuppoſed, from ſome conſiderable ruins, to have been Zama, an ancient and royal city of Numidia; 25 miles S.E. of Seteef.

ZAINE, or *Wadel Berber*, a river of Africa, which runs into the Mediterranean, N. lat. 36° 54′. E. long. 9° 16′.

ZAIRA KAKONGO, an iſland in the Atlantic, at the mouth of the river Zaire.

ZAIRAGIA, or ZAIRAGIAH, a kind of divination in uſe among the Arabs; performed by means of divers wheels, or circles, placed concentric to one another, and noted with ſeveral letters, which are brought to anſwer to each other, by moving the circles according to certain rules.

This is alſo called *zariah*, becauſe the circles of this machine, which are called *mutazariat*, *laſlak*, &c. are intended to correſpond to the orbs of the planets, and the atmoſpheres of the ſeveral elements.

ZAIRE, or SAIRE, in *Geography*, a river of Africa, which riſes in the country of Matamba, about S. lat. 10°, and takes a northerly courſe to lat. 3°, in the kingdom of Congo; after which it takes a ſouth-weſterly direction, and runs into the Atlantic, S. lat. 6°. E. long. 12° 20′.

It has been an important queſtion, with regard to which geographers have entertained various opinions, what are the courſe and termination of the Niger. The ingenious geographer, Mr. Rennell, on comparing the various accounts of the progreſs of the Niger beyond Houſſa, declared his opinion to be, that its waters had no communication, either with the river Nile, as was thought, or with the ſea, as others imagined; but that they were ſpread out into a great lake in Wangara or Ghana, and evaporated by the heat of the ſun. (See NIGER.) Mr. Park, the late African traveller, directed his particular attention to this ſubject, and was induced to conclude that the Congo would be found to be the termination of the Niger from the following conſiderations: 1. The total ignorance of all the inhabitants of North Africa reſpecting the termination of that river. If the Niger ended any where in North Africa, it is not eaſy to account for this total ignorance, and for their ſo generally deſcribing it as running to the Nile; and in fact, to a country with which they had not any acquaintance. A ſecond conſideration has been already ſuggeſted under the article ZAD. A third is deduced from the general ſuppoſition that the river of Dar-Kulla, mentioned by Mr. Browne in his "Travels," was the Niger, or at leaſt that it communicated with that river; and this, it is ſaid, would be exactly the courſe which the Niger ought to take in order to join the Congo. 4. The quantity of water diſcharged into the Atlantic by the Congo cannot be accounted for on any other principle, but that it is the termination of the Niger. If the Congo derived its waters entirely from the S. ſide of the mountains, which are ſuppoſed to form the belt of Africa, one would naturally ſuppoſe, that when the rains were confined to the N. ſide of the mountains, the Congo, like the other rivers of Africa, would be much diminiſhed in ſize; and that its waters would become pure. On the contrary, the waters of the Congo are at all ſeaſons thick and muddy. The breadth of the river, when at its loweſt, is one mile, its depth is fifty fathoms, and its velocity ſix miles *per* hour. 5. The annual floods of the Congo commence before any rains have fallen ſouth of the equator, and agree correctly with the floods of the Niger, calculating the water to have flowed from Bambarra at the rate of three miles *per* hour. Mr. Park, during his reſidence in Scotland, became acquainted with a Mr. George Maxwell, formerly an African trader, who was well acquainted with the whole weſtern coaſt of Africa, more eſpecially S. of the equator, and had publiſhed a chart of the river Congo. Mr. M. had been led by a variety of circumſtances to conjecture that the ſource of the Congo lay conſiderably inland, and far to the north; and from a peruſal of Mr. Park's travels he concluded, that the Congo and the Niger were one and the ſame ſtream. Mr. Maxwell's reaſoning confirmed Mr. Park in his opinion; and in this opinion he perſevered to the end of his life.

Since the diſcoveries of Mr. Park, it is very generally allowed that the courſe of the Niger is from weſt to eaſt; and his opinion with regard to its termination in the Congo, or, as it is ſometimes called, the Zaire, has received a conſiderable degree of confirmation from the account of the Congo given by Mr. Maxwell. “Before ever the Niger came to be the topic of converſation,” ſays Mr. M., “it ſtruck me, that the Congo drew its ſource far to the northward, from the floods commencing long before any rains take place S. of the equator; ſince it begins to ſwell perceptibly about the latter end of October, and no heavy rains ſet in before December, and about the end of January, the river muſt be ſuppoſed to be at its higheſt. At no time, however, can the rains to the ſouthward of the line be compared with thoſe in the Bight of Guinea, where ſhips are obliged to have a houſe erected over them during theſe months.”—“If the Niger has a ſenſible outlet, I have no doubt of its proving the Congo, knowing all the rivers between Cape Palmas and Cape Lopas to be inadequate to the purpoſe; nor need the immenſe courſe of ſuch a river ſurpriſe us, when we know that the river St. Lawrence, contemptible in ſize compared with the Congo, encompaſſes the whole of North America, iſſuing through a chain of lakes. But inſtead of ſeven or eight lakes, the Congo may be ſuppoſed to paſs through ſeventeen or eighteen; which will ſolve any difficulty as to the floods of the Niger not immediately affecting the Congo.” He adds, the river Congo, compared with other rivers, muſt rank as the third or fourth in magnitude. Conſidering the force of the current it produces in the ſea, carrying out floating iſlands ſixty or ſeventy leagues from the coaſt, the Amazon or Plata only can cope with it. At the diſtance of 600 miles from its mouth, the Congo traders report that it is as large at the place from which they came, and that it went by the name Enzaddi, as it does among all the nations upon the coaſt. If the ſhallow water oppoſite to Suenda ſhould be thought to detract from the aſſumed ſize of the Congo, it ſhould be conſidered, that the river there is ſpread out ten miles in width, the middle channel of which has never been accurately ſounded. “It has long been my opinion, that Leyland's or Molyneux iſland at Embomma, (a ſettlement on the banks of the Congo, diſtant thirty leagues from its mouth,) either of which might be rendered as impregnable as Gibraltar, at a very ſmall expence, could be a choice ſtation for eſtabliſhing an extenſive commerce with the interior of Africa. Indeed, if the idea of the Congo being the outlet of the Niger prove ſo upon trial, we may conſider it is an opening deſigned by Providence for exploring thoſe vaſt regions, and civilizing the rude inhabitants.” The Congo appears from other teſtimonies to be a river of the firſt claſs, and larger, probably, than the Nile. The waters of the Congo, it is ſaid, may be diſtinguiſhed at ſea more than thirty leagues from the coaſt; and the water is freſh at the diſtance of thirty miles. If theſe accounts are thought to be exaggerations, it is a general opinion among navigators that this river has a wonderful ſize and force. All accounts concur in repreſenting that the ſtream of the Congo is of a more uniform height, and ſubject to much leſs variation from the dry and rainy ſeaſons, than any tropical river which is known; and that on a compariſon with ſuch rivers, it may be conſidered to be in “a perpetual ſtate of flood.” The average riſing of the Ganges in the rainy ſeaſon is ſtated by major Rennell to be thirty-one feet, being almoſt the ſame with that of the Nile; whereas, the difference between the higheſt point of the Congo about February, and the loweſt, in September, is only about nine feet; and the river, at the latter period, has all the appearance to a ſtranger of being in full flood. It is this remarkable peculiarity which diſtinguiſhes the Congo from other great rivers of a ſimilar deſcription, and which leads to important concluſions with regard to its origin and cauſe. “In ſupport then of the hypotheſis which identifies the Congo with the Niger, the following arguments deduced from the preceding facts and obſervations may be alleged: 1. The great magnitude of the Congo. 2. The probability that this river is derived from very remote ſources, perhaps conſiderably north of the equator. 3. The fact, that there exiſts a great river N. of the equator (the Niger), of which the termination is unknown, and which may, perhaps, form a principal branch of the Congo.

“Such being the evidence in favour of the hypotheſis reſpecting the Congo, the objections muſt be admitted to be weighty and formidable: the principal of theſe are, 1. That it ſuppoſes the courſe of the Niger to be through the vaſt chain of the mountains (anciently *Montes Lunæ*), the great central belt of Africa.”—“It is difficult to underſtand how the Niger could penetrate this barrier, and form a paſſage ſouthwards. 2. The courſe of the Niger, eſtimated from its ſource in the mountains of Senegal, (ſuppoſing it to be the ſame river with the Congo, and to flow by Wangara and Caſhna, through the centre of Africa into the Atlantic,) would be conſiderably more than 4000 miles. But the courſe of the Amazon, the greateſt river in the old or new world, is only about 3500 miles; and although the exiſtence of a river conſiderably greater than any yet known may be within the limits of phyſical poſſibility, yet ſo improbable a ſuppoſition ought not to be adopted upon ſlight or conjectural reaſoning, or upon any thing much ſhort of diſtinct and poſitive proof.”

The editor of Mr. Park's Travels, &c. in 2 vols. 8vo. 1816, which we are now citing, very laudably expreſſes a hope, “that this diſtinguiſhed river, which hitherto has been only known as one of the greateſt marts of the Slave Trade, may at length be rendered conducive to objects of civilization and ſcience; and that ſome uſe will now be made of this great inlet into Africa, for the purpoſe of exploring a part of that continent which as yet is entirely unknown; or, at leaſt, of obtaining more complete and authentic information relative to the Congo itſelf, which muſt unqueſtionably be conſidered as a very curious and intereſting ſubject of inquiry.”

Another opinion with regard to the termination of the Niger has been advanced by M. Reichard, a German geographer, and publiſhed in the “Ephemerides Geographiques,” at Weimar, in Auguſt 1808. This opinion is, that the Niger, after reaching Wangara, takes a direction towards the ſouth, and being joined by other rivers from that part of Africa, makes a great turn from thence towards the ſouth-weſt, and purſues its courſe till it approaches the north-eaſtern extremity of the gulf of Guinea, where it divides, and diſcharges itſelf by different channels into the Atlantic; after having formed a great Delta, of which the Rio del Rey conſtitutes the eaſtern, and the Rio Formoſa, or Benin river, the weſtern branch. This hypotheſis, though it diminiſhes the diſtance which the Niger has to flow in its courſe to the Atlantic, does not remove the objection ariſing from the Niger's being conceived to penetrate the Kong mountains. But we muſt not purſue this ſubject any farther. For the lengths of the courſe of the moſt noted rivers, ſee River.

ZAKA. See Scharedsje.

ZAKEPH GADHOL, *Rex Pauperrimus*, one of the Hebrew accents, ſometimes denoting no kind of pauſe, and marked over a letter thus (ב֕).

Zakeph *Katon Rex*, one of the Hebrew accents, conſtituting either a *comma* or ſemicolon, and marked over a letter thus (ב֔).

ZAKERZEZIN, in *Geography*, a town of Kurdiſtan; 26 miles N.N.W. of Van.

ZAKIEH, a town of the Arabian Irak, on the Tigris; 10 miles N. of Korna.

ZAKLIKOW, a town of Auſtrian Poland, in Galicia; 40 miles S. of Lublin.

ZAKROCZYN, or Sakrotschim, a town of the duchy of Warſaw, on the Narew. In 1794 the confederate Poles were defeated here by the Ruſſians; 40 miles N.W. of Warſaw.

ZAL Aleksandrovskoi, a bay of the Caſpian ſea; 260 miles S.S.E. of Aſtrachan. N. lat. 43°. E. long. 51° 14′.

ZALA, in *Botany*, ſo called by Loureiro, Cochinch. 405, from ζαλη, *a tempeſt*, or *agitation of the ſea*, becauſe the plant floats, and is driven about, at the mercy of the winds and waves. This is no other than the Pistia of Linnæus (ſee that article); where the generic characters, as corrected by Schreber, come ſufficiently near to thoſe of Loureiro, to leave no doubt in the mind of the reader, allowance being made for the peculiarities of ſtructure in ſo ſingular a flower.

Zala, in *Ancient Geography*, a town ſituated in the vicinity of Amaſæa, which was a town of the Peloponneſus, in Achaia Propria.

Zala, in *Geography*. See Wadan.

ZALACA, in *Ancient Geography*, a town of Aſia, in the interior of Media. Ptol.

ZALACUS, a town of Africa, in Mauritania Cæſariana. Ptol.

Zalacus *Mons*, (*Van-naſh-reeſe*,) mountains of Mauritania, at ſome diſtance from and to the S. of the river Chinalaph. Ptol.

ZALAKNA, in *Geography*, a town of Tranſylvania; 14 miles W. of Weiſſemburg.

ZALAMEA, a town of Spain, in the province of Seville; 38 miles W.N.W. of Seville.

Zalamea *de la Serena*, a town of Spain, in the province of Eſtremadura. This town was anciently called Ilipa, and many veſtiges remain of its former ſplendour; 27 miles N.E. of Llerena.

ZALANTZ, a town of Hungary; 10 miles S.E. of Caſchau.

ZALAPA, in *Ancient Geography*, a town of Africa Propria, S. of Adrumetum. Ptol.

ZALESCE, in *Geography*, a town of Auſtrian Poland, in Galicia; 32 miles S. of Lemberg.

ZALEUCUS, in *Biography*, a philoſopher and legiſlator of Greece, and founder of the Locrian ſtate, flouriſhed in the 7th century B.C. He was of obſcure birth, and lived in ſervitude as a ſhepherd; but his extraordinary abilities and merit attracted notice even in his humble ſtation, and advanced him to the government. His laws were deemed ſevere, but being adapted to the circumſtances and manners of the Locrians, their conſtitution was for ſeveral ages highly celebrated. His diſcipline was rigorous, ſo that he prohibited the uſe of wine, otherwiſe than as a medicine; and he ordained, that adulterers ſhould be puniſhed with the loſs of their eyes. When his ſon had incurred this penalty, he blended paternal lenity with a pretence of maintaining the authority of the laws, by ordering his ſon to be deprived of one eye, and by ſubmitting to the loſs of one of his own eyes. In order to ſecure the permanent ſtability of his ſyſtem of legiſlation, he required that a perſon who propoſed a change in any one of them ſhould come before the aſſembly with a cord about his neck, that he might be inſtantly ſtrangled, if upon examination the old law were preferred. Valer. Max. Diod. Sic. Laert. Brucker by Enfield.

ZALGIN, in *Geography*, a town of the iſland of Cuba; 47 miles N. of St. Jago.

ZALIKARA, the moſt conſiderable city of Mingrelia, ſituated on the right bank of the Hippus, which riſes in the higheſt mountain of the Soane, not far from the ſource of the Phaſis, flows through Letſghuani, divides Mingrelia from Iberia, and enters the Phaſis near the Tredia: an open place, at the confluence of the Hippus and Phaſis, well peopled by different nations, particularly Jews.

ZALISCUS, in *Ancient Geography*, a river of Aſia, in Galatia. The mouth of this river in the Euxine ſea lay between Cyptaſia and Galorum.

ZALISSA, a town of Aſiatic Iberia. Ptol.

ZALLANT, in *Geography*. See Salland.

ZALSSING, a town of Auſtria; 5 miles N.W. of Aggſpach.

ZALUZIANSKIA, in *Botany*, ſo named by Necker, in "Act. Palat. v. 3. phyſ. 303," according to Willd. Sp. Pl. v. 5. 538, is no other than Marsilea *quadrifolia*, which the reader will find in vol. xxii. The above name is deſigned, as we preſume, to commemorate a Poliſh botaniſt, author of *Methodi Herbariæ*, publiſhed at Prague, anno 1592, in 4to., and at Frankfort in 1604. This work is ſpoken of by Haller, *Bibl. Bot.* v. 1. 387, as a tranſpoſition of the arrangement of Dodonæus, without any improvement or additional information.

ZAM, in *Geography*, a town of Grand Bucharia; 85 miles N.W. of Balk.

ZAMA, a town of Peru, in the dioceſe of Arequipa; 30 miles N. of Arica.

Zama, in *Ancient Geography*, a town of Africa Propria, 5 journeys from Carthage. This town, to which ancient authors give the title of royal and a fortreſs, is famous in the wars of Jugurtha and Juba, and more eſpecially on account of a battle between the Carthaginians under Hannibal and the Romans, commanded by Scipio, in the year 551 of the Republic. At the time when this town was in a flouriſhing ſtate, it was aſſigned to Numidia. Cornelius Nepos ſays, that it was 300 miles from Adrumetum. Appian ſays 3000 ſtadia. It was ſituated on a plain, and owed its ſtrength to its fortifications more than to its ſituation. Hirtius ſays, that it was the ordinary reſidence of king Juba, where he had his wives, children, and treaſures. Pliny ſays, that it became a Roman colony.

Zama, a town of Cappadocia, in the prefecture of Chamane.—Alſo, a town of Aſia, in Meſopotamia. Ptol.

ZAMAMIZON, a town of Africa Propria, between the town of Tabraca and the river Bagradas. Ptol.

ZAMBOSE, or Cumana, in *Geography*, a river of Africa, which riſes in the interior parts of Mocaranga, and runs into the Indian ſea at ſeveral mouths: the principal of which takes the name of Luabo. S. lat. 19°. E. long. 37°.

ZAMBOZIN, a town of Congo; 24 miles S.S.W. of St. Salvador.

ZAMBRANO, Juan Luis, in *Biography*, a Spaniſh painter, was born at Cordova in 1599. He was a diſciple of Paolo de Ceſpedes, and was a ſucceſsful follower of the ſtyle of that maſter. His principal works are in the cathedral at Cordova, and in the church of the convent of Los Martyros, where he painted two altar-pieces, repreſenting the ſtoning of St. Stephen, and the martyrdom of St. Aciſclo and St. Victoria. In the colegio di Santa Catalina is a fine picture by him of a guardian angel, and a St. Chriſtopher, which Palomino deſcribes as deſigned in the great ſtyle of M. Angelo. He paſſed the latter part of his life at Seville, where he painted ſeveral altar-pieces for the church of St. Baſil, and died in that city in 1639, at the age of 40.

ZAMBROKRI, in *Geography*, a town of Hungary; 14 miles S.W. of Roſenberg.

ZAMBROW, a town of the duchy of Warſaw; 80 miles N.E. of Warſaw.

ZAMECH, a name given by ſome writers to the lapis lazuli.

ZAMETUS, in *Ancient Geography*, a mountain of Arabia Felix. Ptol.

ZAMFARA, or ZANFARA, in *Geography*, a town of Africa, and capital of a kingdom of the ſame name; 170 miles E.N.E. of Wangara. N. lat. 18° 20′. E. long. 16° 15′.

ZAMIA, in *Botany*, from ζημια, *damage*, or *loſs*. This name, which firſt occurs, as the appellation of a genus, in the Gen. Pl. ed. 6. of Linnæus, is taken from Pliny, who uſes it for ſuch cones of the fir as "ſplit while they are upon the tree," and, as he ſays, "require to be taken off, that they may not injure the reſt." This ſhould ſeem to apply to the male catkins, however falſe the phyſiology of Pliny, and the practice founded upon it, may be. Our *Zamia* anſwers to his, merely in the cone-like form of its fructification, which, being male on one plant, and female on another, exhibits in the former the appearance of loſs, or ſterility, like the male catkins of the fir.—Linn. Gen. 574. Suppl. 68. Schreb. Gen. 778. Willd. Sp. Pl. v. 4. 845. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 410. Brown Prodr. Nov. Holl. v. 1. 348. Purſh 648. Juſſ. 16. Poiret in Lamarck Dict. v. 8. 831. Lamarck Illuſtr. t. 892. Gærtn. t. 3.—Claſs and order, *Dioecia Polyandria*. Nat. Ord. *Filices*, Linn. Juſſ. *Cycadeæ*, Perſoon, Brown.

Gen. Ch. Male, *Cal.* Catkin ovate, teſſellated-ſcales horizontal, obtuſe, thickened towards the end, permanent. *Cor.* none. *Stam.* Filaments none; anthers numerous, ſeſſile, crowded on the under ſide of each ſcale, eſpecially towards the extremity, elliptical, ſmooth, of two valves and one cell, ſplitting lengthwiſe.

Female, *Cal.* Catkin ovate, teſſellated: ſcales horizontal, obtuſe, more or leſs peltate, permanent. *Cor.* none. *Piſt.* Germens two, oval, ſeſſile, horizontal, inflexed, on the under ſide of each ſcale, near the extremity; ſtyle very ſhort, ſomewhat conical; ſtigma obtuſe, undivided, pervious. *Peric.* Drupa roundiſh, ſomewhat angular, of one cell. *Nut* hard, roundiſh or elliptical, of one cell.

Eſſ. Ch. Male, Catkin teſſellated. Scales abrupt. Anthers oval, ſeſſile at the under ſide of each ſcale. Female, Catkin teſſellated. Scales peltate. Drupas two, at the under ſide of each ſcale.

Obſ. Mr. Brown, to whom we are obliged for the remark of the ſtyle being finally pervious, records an idea of the late Mr. Dryander, that the American *Zamiæ*, which conſtitute the original genus, having more perfectly peltate ſcales to the male *catkin*, and the *anthers* aſſembled in two diſtinct maſſes might poſſibly form a diſtinct genus from the Cape and New Holland ſpecies; more eſpecially as in theſe American plants, the *leaflets* are each manifeſtly articulated with a projection from the main rib of the leaf; whereas in the others they are either very obſcurely jointed, or perfectly decurrent. We conceive, however, that they all together compoſe a very diſtinct genus, which cannot, without violence to nature, be divided. It is neareſt akin to *Cycas*, but differs eſſentially in the female part of the fructification being a *catkin*, whoſe ſcales bear two *germens* underneath; inſtead of an aſſemblage of *fronds*, or leafy *receptacles*, bearing an indeterminate number upon their margins. The *herbage* is perennial, generally without a *ſtem*. *Leaves* abruptly pinnate, ſingularly hard, rigid, and often ſpinous; rarely lobed. *Catkins* radical, ſtalked.

It being extremely difficult to obtain and to compare good ſpecimens of the different ſpecies, as well as to detect and define their eſſential characters, authors have not very clearly deſcribed them. Jacquin has publiſhed magnificent figures of ſeveral; but their moſt ſatisfactory marks require to be ſought at an earlier period of their growth, and in more minute parts, than he has generally exhibited.

1. Z. *cycadifolia*. Sago-palm-leaved Zamia. Jacq. Fragm. 27. t. 25, 26. Willd. n. 1.—Leaflets very numerous, two-ranked, linear, entire, with ſimple ſpinous points; common ſtalk ſemicylindrical, channelled, downy. Catkin of the fruit elongated, ſomewhat cylindrical.—Native of the Cape of Good Hope. Cultivated in the Imperial gardens at Schoenbrun, but not mentioned by Mr. Aiton as known to our Engliſh collectors. The thick globular ſcaly head of the *root*, near a foot in diameter, bears numerous ſpreading pectinate *leaves*, very much reſembling, at firſt ſight, thoſe of *Cycas revoluta*. The *ſtalk* of each is, in its naked part, two feet long, as thick as a ſwan's quill, all over downy, as is alſo its leafy portion, and the young leaflets themſelves. The full-grown *leaflets* are from 50 to 80, rigid, parallel, acute, pungent, each about three inches long; the lowermoſt gradually ſhorteſt, and rather more diſtant. The ripe *fruit*, brought from the Cape, is ovate-oblong, about fifteen inches in length, and five in diameter, brown, each *ſcale* bearing two ovate, angular, orange-coloured *drupas*, about an inch long, their points directed towards the baſe of the ſcale. *Nut* not much ſmaller, ovate, angular.

2. Z. *pungens*. Needle Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 1. Willd. n. 2. Poiret n. 3. (Palma ſobolifera ægyptia, foliis lævioribus, fructu nigro; Till. Piſ. 129. t. 45.)—Leaflets awl-ſhaped, ſpreading, ſtraight, rigid, pointed, entire; their outer margin rounded at the baſe; common ſtalk nearly cylindrical, unarmed.—Native of the Cape of Good Hope, from whence it was brought by Mr. Maſſon, to Kew garden, in 1775, but has not yet flowered. The *leaflets* are very thick and coriaceous, much fewer than in the preceding ſpecies, moſtly oppoſite, four or five inches long, and one broad; their under ſurface ſomewhat ſtriated; the upper ſmooth and ſhining; margin quite entire; point ſimple, ſpinous, ſtout and rigid.

3. Z. *tridentata*. Three-toothed Zamia. Willd. n. 3.—Leaflets linear, obſcurely furrowed, ſmooth, with three ſpinous teeth at the end; common ſtalk ſemicylindrical, channelled.—Suppoſed to be a native of the Cape of Good Hope. The *leaflets* are fourteen to ſixteen pair, linear, tapering at each end, with two lanceolate, pointed, terminal teeth, and a third ſituated a little lower at the outer edge. *Common ſtalk* ſmooth. *Willdenow*. No other author appears to know this ſpecies. We have ſpecimens in the herbarium of the younger Linnæus, without name, indication of their native country, or any traces of fructification, which

anſwer to the above characters ; except the *leaflets* being more numerous, ſometimes with a ſimple ſpinous point only, on the ſame ſtalk with others that have two or three, very rarely four ; and in one inſtance the leafy part of the common *footſtalk* is ſhaggy with ſoft hairs. Each *leaflet* is two, or two and a half inches long, thick-edged and ſlightly revolute, entire, except the above-mentioned points ; ſmooth on both ſides ; furrowed beneath ; tapering at the baſe, and ſomewhat decurrent at its inſertion. See n. 15.

4. Z. *anguſtifolia.* Narrow-leaved Zamia. Jacq. Coll. v. 3. 263. Ic. Rar. t. 636. Willd. n. 4. Poiret n. 6.—Leaves linear, elongated, entire, obtuſe, with two terminal callous points ; common ſtalk ſemicylindrical. Fruit ovate, pointed.—Native of the Bahama iſlands ; cultivated at Schoenbrun, where it was raiſed from ſeed, and bore flowers and fruit, the catkins being about eight months in going through their different ſtages. The *root* is ſcarcely bigger than a large radiſh ; its ovate crown enveloped in a few pointed, very broad, ſcales. *Leaves* about a yard high, with ſlender ſtalks and *leaflets ;* the latter drooping, a ſpan long, and two lines broad. *Catkins* three inches long, on ſtalks about the ſame length ; the male ones moſt ſlender, and nearly cylindrical. *Fruit* three inches long, of a thick ovate, or elliptical figure, with a blunt point. *Drupas* concealed, red.

5. Z. *tenuis.* Slender Zamia. Willd. n. 5.—" Leaflets linear, obtuſe, ſomewhat revolute ; tapering at the baſe ; with one or two obſolete teeth near the extremity ; common ſtalk triangular, ſmooth."—Native of the Bahama iſlands. Willdenow ſaw a living male plant. *Leaflets* about fourteen pair ; the upper ones furniſhed, near the point, with one or two very inconſpicuous teeth. An intermediate ſpecies between the laſt and the following ; agreeing nearly with Z. *anguſtifolia* in the form of its *leaflets*, but they are broader, and their *ſtalk* is triangular : the *leaflets* are narrower than thoſe of the following, neither are they minutely ſerrated towards the point ; but the *ſtalks* are ſimilar. *Willdenow.*

6. Z. *media.* Intermediate Zamia. Jacq. Hort. Schoenbr. v. 3. 77. t. 397, 398. Willd. n. 6. Poiret n. 7.—Leaflets linear-lanceolate, obtuſe, flat ; obſcurely ſerrated towards the point ; common ſtalk triangular, ſmooth.—Native of the Weſt Indies ; cultivated at Schoenbrun. The crown of the *root* is as big as the fiſt. *Leaves* two feet long, beſides their naked *ſtalk*, which is half as much. *Leaflets* from fourteen to twenty pair ; five inches long, and one-third or half an inch broad, flat, for the moſt part entire, except a few ſhallow diſtant ſerratures towards the extremity, which is bluntiſh, and without any ſpinous termination. *Female catkins* on ſhort thick ſtalks, ovate, with a blunt point. *Fruit* oval, brown, rough, three inches long. *Jacquin.* That author conſiders the preſent ſpecies as allied, on the one hand, to his *anguſtifolia* (ſee n. 4.), and on the other to *integrifolia*, n. 8. Still we cannot queſtion its being ſpecifically diſtinct from both.

7. Z. *debilis.* Lax-leaved Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 2. Willd. n. 7. (Palma prunifera humilis non ſpinoſa, inſulæ Hiſpaniolæ, fructui jujubino ſimilis, oſſiculo triangulo ; Commel. Hort. v. 1. 111. t. 58.)—Leaflets lanceolate, acute, pointleſs, ſerrated towards the point ; common ſtalk triangular, ſmooth.—Native of the Weſt Indies, from whence it is ſaid to have been imported, in 1777, by the late Meſſrs. Kennedy and Lee. It flowers in the ſtove, in July and Auguſt. The *leaflets* are five or ſix pair, half an inch broad ; though only two and a half or three inches long, and are diſtinguiſhed from all the foregoing by their conſpicuous ſerratures, all indeed near the end, the greater part of the leaflet being entire : the upper ſide is ſmooth and ſhining ; under furrowed or ſtriated. Commelin originally raiſed this ſpecies from ſeed in the Amſterdam garden, and was informed that the *fruit* was reddiſh, growing partly underground.

8. Z. *integrifolia.* Dwarf Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 478. ed. 2. n. 3. Willd. n. 8. Purſh n. 1. Poiret n. 5. excluding the reference to Commelin. Jacq. Coll. v. 3. 261. Ic. Rar. t. 635. Lamarck t. 892, copied from Jacquin. (Z. pumila ; Linn. Sp. Pl. 1659, excluding all the ſynonyms.)—Leaflets ſmooth, ſtriated, lanceolate ; rounded, obtuſe, and finely ſerrated at the end ; tapering at the baſe. Common ſtalk ſmooth, ſomewhat quadrangular.—Native of Eaſt Florida, from whence it was introduced into the Engliſh ſtoves, by the celebrated John Ellis, eſq. in 1768. Jacquin ſays it grows alſo in Hiſpaniola. The crown of the *root* is ſometimes as thick as a man's arm, dividing below into ſeveral ſtout branches and fibres. *Leaves* uſually about eighteen inches long ; ſometimes twice as much. *Leaflets* from ten to twenty pair, oppoſite or alternate, each two and a half or three inches long, varying in breadth from one-quarter to three-fourths of an inch, entire, rather ſhining, ſtrongly ſtriated on both ſides, with many parallel ribs ; the extremity rounded and pointleſs, with a greater or leſs number of ſlight tooth-like ſerratures in proportion to its width. *Catkins* on ſhort ſtalks, ovate, clothed with dark brown pubeſcence ; the male ones about two inches long. *Fruit* three inches long, elliptical, pointed, downy ; its *ſcales* finally widely ſeparating, each of them peltate and angular, ſupported by a rather ſlender angular ſtalk, above an inch in length, and remaining long after the fruit is fallen. Each *drupa* is elliptical, about half an inch, or more, in length, with a ſmall quantity of ſweet orange-coloured pulp, and a large, rather pointed, nut. The *leaflets* are too ſtrongly ſerrated in Lamarck's plate ; and rather broader and more luxuriant than uſual in Jacquin's, otherwiſe admirable, repreſentation. The male *catkins* are very frequently produced ; the female ones we know only from dried ſpecimens, and the works of Jacquin.

9. Z. *muricata.* Prickly-ſtalked Zamia. Willd. n. 9.—" Leaflets oblong, pointed, ſmooth, ſtriated ; ſerrated from the middle to the extremity ; common ſtalk ſpinous."—Gathered by Humboldt and Bonpland, in South America, near Porto Cabello. *Leaflets* about four pair, ſix inches long ; tapering at the baſe ; ſtriated and ribbed on both ſides ; ſharply ſerrated in their upper half. *Footſtalk* channelled, armed with very ſhort, blunt, ſcattered ſpines. *Willdenow.*

10. Z. *furfuracea.* Broad Ruſty-leaved Zamia. Linn. fil. MSS. Ait. Hort. Kew. ed. 1. v. 3. 477. ed. 2. n. 4. Willd. n. 10. Poiret n. 2. (Palma americana, foliis polygonati brevioribus, levitèr ſerratis, et nonnihil ſpinoſis, trunco craſſo ; Pluk. Phyt. t. 103. f. 2. and t. 309. f. 5. P. americana, craſſis rigidiſque foliis ; Herm. Parad. 210. t. 210. Palmifolia fructu clavato polypyreno ; Trew Ehret, 5. t. 26.)—Leaflets elliptic-oblong, pointleſs ; copiouſly ſerrated from the middle to the extremity ; ſtriated and hairy beneath ; common ſtalk ſpinous.—Native of the Weſt Indies. Plukenet ſaw it in the royal gardens at Hampton-Court in king William's time. It is ſtill preſerved in our ſtoves, flowering towards autumn. The crown of the *root* is often a foot in diameter. *Leaves* from one to two feet long, excluſive of their prickly ſtalks. *Leaflets* uſually eight or nine pair, three or four inches long, and one or one and a quarter broad, very rigid and coriaceous ; ſhining, and roughiſh to the touch, on the upper ſide ; more

furrowed, and clothed with ſhaggy, chaffy pubeſcence, which gives them a ruſty or tawny hue, underneath. Their ſerratures, or teeth, are numerous, obtuſe, very irregular. *Catkins* ovate, hoary and downy, about three inches long, on *ſtalks* about the ſame length. Hermann ſays this plant produces a white inſipid gum.

11. Z. *ſpiralis*. Spiral Zamia. Saliſb. Prodr. 401. Willd. n. 11. Ait. n. 5. Brown n. 1.—Leaflets numerous, linear, very ſmooth, ſomewhat curved, with a few ſpinous teeth at the extremity. Catkins ſmooth, with pointed ſcales; thoſe of the male ones wedge-ſhaped. —Native of New South Wales, from whence ſeeds were ſent, in 1791, by Dr. John White, to the writer of this, and plants were raiſed from them in the following year, by the late Mr. Fairbairn, in Chelſea garden, being the firſt introduction of this ſpecies into Europe. The whole cone, filled with theſe nuts, was about half as large as a man's head; the nuts themſelves about the ſize of ſmall cheſnuts. They were ſaid to be eaten roaſted by the natives of New South Wales, but on being tried by our Engliſh ſettlers, occaſioned ſickneſs. Their flavour is certainly inferior to a cheſnut, and even to the nuts of *Cycas revoluta*, ripened in the biſhop of Wincheſter's ſtove at Farnham caſtle. The plants ſoon grew to a conſiderable ſize, and according to Mr. Aiton, this ſpecies flowers in the ſtove, in July and Auguſt. The *leaves* are very ſmooth, of a fine green, a yard or more in length, ſpreading, each compoſed of from thirty to forty pair of long narrow *leaflets*, tipped with from three to five ſpinous teeth. *Footſtalks* ſaid to be ſomewhat ſpiral. The *catkins* are ſtalked, cylindrical, about five inches long, and two in diameter, ſquarroſe, ſmooth, not downy nor hairy: *ſcales* of the *male ones* obovate-wedge-ſhaped, an inch long, with a ſhort, broad, ſharp, aſcending, poliſhed point; their upper ſide ſmooth and naked; under nearly covered with an uninterrupted heart-ſhaped aſſemblage of crowded, oval *anthers*, the ſize of poppy-ſeed: *ſcales* of the *female catkins* ſtalked, gibbous, two-edged and depreſſed, larger than the male ones, each tipped with an erect, ſword-ſhaped, pungent, ſmooth point, an inch long, and, as the fruit ripens, extended to three inches, the gibbous fleſhy part of the ſcale being then alſo much enlarged. *Germens* two, ovate, ſeſſile, cloſe together, at the inner edge of this fleſhy part of the ſcale, and directed horizontally inward. *Drupas* roundiſh, gibbous, an inch or inch and a half in diameter, orange-coloured, with a rather thin pulp, at leaſt in the dried ſtate, and a large, ovate, hard *nut*, not burſting, whoſe kernel, after keeping twenty-five years, is horny, ſemitranſparent, and as hard as the ſhell. Mr. Brown ſuſpects there may be two ſpecies confounded under Z. *ſpiralis;* one found in the neighbourhood of Port Jackſon, to which our deſcription and ſynonyms entirely belong, and which is from two to four feet high; the other, often ten feet in height, noticed by Mr. Brown on the ſouthern coaſt of New Holland, and which we have never ſeen. Mr. Brown remarks, that in both, the *catkins*, uſually ſolitary, ſometimes grow two together.

12. Z. *longifolia*. Tall-leaved Zamia. Jacq. Fragm. 28. t. 29. Willd. n. 12. Poiret n. 10.—Leaflets numerous, elliptic-lanceolate, pointleſs, entire, clothed with ſhaggy down. Scales of the male catkins wedge-ſhaped, with abrupt quadrangular points.—Native of ſouthern Africa, above a hundred miles from the Cape of Good Hope. Cultivated at Schoenbrun. The crown of the *root* is ſcaly, a foot in diameter, ſmooth. *Leaves* ſlightly ſpreading, from five to ſeven feet high; their *ſtalks* quadrangular, without ſpines; *leaflets* from forty to fifty or ſixty pair, two-ranked, three or four inches long and one broad, coriaceous; ſtriated beneath; clothed on both ſides, as well as the leafy part of their common ſtalk, with a cobweb-like down, eaſily rubbed off; the lower ones only ſomewhat pointed. This ſpecies has not flowered in Europe; but the male *catkin*, brought from Africa, and repreſented in Jacquin's magnificent plate, is elliptic-oblong, near two feet in length, and five inches in diameter, brown, ſmooth, compoſed of innumerable wedge-ſhaped *ſcales*, covered underneath with *anthers*, and each tipped with a quadrangular, or pyramidal, abrupt, prominent point, without any of the ſpinous termination ſeen in the laſt.

13. Z. *lanuginoſa*. Woolly-ſcaled Zamia. Jacq. Fragm. 28. t. 30, 31. Willd. n. 13. Poiret n. 9. —Leaflets lanceolate, ſmooth, ſpinous-pointed, with a few unilateral ſpinous teeth. Radical ſcales woolly.—Native of ſouthern Africa, from whence a ſingle plant was brought long ago to the Imperial ſtove at Schoenbrun. After twelve years' culture, it had made but ſlow progreſs, and ſhewed no ſigns of fructification. The *root* conſiſts of numerous, very thick, tap-ſhaped radicles; its crown being as large as a man's head, and covered with imbricated, deltoid, pointed ſcales, two or three inches broad, all clothed with ſoft, denſe, hoary wool. *Leaves* a yard high, or more, dark green, very ſmooth and ſhining, with unarmed quadrangular *ſtalks*, and from twenty-five to thirty pair of linear-lanceolate *leaflets*, each four inches long, with a ſhort ſpinous point; their margins all entire, except being often furniſhed with one, two, or three broad, ſpinous, tooth-like lobes, always at the lower edge of each leaflet, by which this ſpecies is at firſt ſight readily diſtinguiſhed. Profeſſor Willdenow ſuſpected it might not be diſtinct from Z. *cycadis* (ſee our 15th ſpecies); but we ſee no reaſon to concur in that opinion.

14. Z. *horrida*. Grey Thorny Zamia. Jacq. Fragm. 27. t. 27, 28. Willd. n. 14. Ait. n. 6. Poiret n. 8.—Leaflets lanceolate, glaucous, acute, ſpinous-pointed, with a few unilateral, lanceolate, ſpinous teeth. Radical ſcales ſmooth. —Native of ſouthern Africa, a hundred miles above the Cape of Good Hope. Cultivated at Schoenbrun, and introduced into the Engliſh green-houſes, in 1800, by John Liptrap, eſq., who poſſeſſed, for ſeveral years, a ſplendid collection of exotics at Mile-end; but it does not ſeem to have bloſſomed either here or in Germany. The ſcaly crown of the *root* is as large as the preceding, but the ſcales are not woolly. The *leaves* and their ſtalks are all over finely glaucous, which diſtinguiſhes the plant from the reſt of its genus. The *leaflets*, as well as their lateral ſpinous lobes, are longer, and more pointed, than in Z. *lanuginoſa;* the points and baſes green, as the whole ſurface becomes when rubbed. A ripe female *cone*, brought from its native country, is fifteen inches long and eight thick, brown, teſſellated, and warty, but not ſpinous. *Drupas* orange-coloured, oval, each with a thick, elongated, obtuſe point, in the place of the *ſtyle*. *Nut* oval, ſomewhat triangular. This ſpecies is, as Willdenow obſerves, very nearly related, in ſize and general habit, to the laſt, but differs in its ſmooth crown of the *root*, and glaucous colour of the *herbage*.

15. Z. *cycadis*. Bread-tree Zamia. Linn. Suppl. 443. Ait. n. 7. Poiret n. 4. (Cycas caffra; Thunb. Nov. Act. Upſal. v. 2. 284. t. 5.)—Leaflets lanceolate, ſpinous-pointed, ſmooth, entire; tapering at the baſe. Scales of the catkins abrupt, obtuſe, pointleſs.—Native of the north-eaſt part of ſouthern Africa, far above the Cape of Good Hope, from whence living plants were ſent to Kew, by Mr. Maſſon, in 1775. This is the ſpecies figured by Gærtner. It grows on the ſides of hills, in dry open ſpots, eſpecially where the ground has been cleared by burning, and flowers in Auguſt, or the following months. The crown of the *root* is round and large, imbricated with ſcales, and, according to

Linnæus, downy; with age, the plant acquires, like the palm tribe, a thick ſcaly *ſtem*, as tall as a man. The *leaves* are from a ſpan to two feet long, of rather numerous and crowded *leaflets*, each two or two and a half inches in length, and one-quarter or one-third of an inch in breadth; ſmooth and even above; ſtriated beneath; the younger ones, or rather thoſe of young plants, tipped with a ſharp tooth or two, beſides the terminal ſpine. *Common ſtalks* ſmooth. *Catkins* ſtalked, ovate: the *male* a ſpan long; its *ſcales* ſomewhat triangular, very obtuſe, rugged, ſmooth; flat on the upper ſide; keeled underneath, and covered with *anthers* the ſize of millet-ſeed: *female catkin* larger than the male, near a foot long, green and ſmooth; its *ſcales* ſtalked, with a quadrangular, peltate, thick termination, lodging a pair of ovate angular *drupas*, with a red pulp. *Nut* of each the ſize of an acorn, not very hard, with a white ſolid kernel. Thunberg ſays, the older plants, which have acquired a *ſtem*, are broken off, or cut down, by the Caffres and Hottentots; and the pith, which is of conſiderable thickneſs, being tied up in the ſkin of a ſheep or calf, previouſly well rubbed with greaſe, is buried in the ground. After remaining there a month, or longer, it is taken up in a putrefying ſtate, and being bruiſed between two ſtones, and moiſtened with water, forms a ſort of paſte, which is made into little round cakes, about an inch in thickneſs. Theſe are baked in wood-aſhes, and are eſteemed a great luxury; though, as the author obſerves, not very tempting to people of more refined habits, eſpecially if they happen to have witneſſed the whole proceſs of preparation.

We are not without a ſuſpicion that Willdenow's *Z. tridentata* (ſee n. 3.) may be this very ſpecies. This is more probable, at leaſt, than his own conjecture, of Jacquin's *lanuginoſa*, n. 13, being *Z. cycadis*.

Authors, even the moſt intelligent, uſe the term *frond*, inſtead of *leaf*, in their deſcriptions of this genus, becauſe Linnæus conſidered *Zamia* as either a Palm, or a Fern. But its fructification is by no means cryptogamic, or obſcure; nor do the leaves bear the flowers of either ſex. There is a curious coincidence of ſtructure and appearance between its *anthers*, and the ſuppoſed *capſules* of ſome of the ſpiked or racemoſe *Filices*, eſpecially of *Botrychium* (the *Oſmunda lunaria*, &c. of Linnæus); indeed the likeneſs is ſo great, that we can ſcarcely perſuade ourſelves that the two parts in queſtion are not deſtined to anſwer the ſame purpoſe.

Zamia, in *Gardening*, compriſes ſome low plants of the tender palm kind, among which the ſpecies chiefly cultivated in this climate are, the dwarf pinnated palm (Z. pumila), the thorny dwarf palm (Z. ſpinoſa), and the entire leaved palm (Z. integrifolia).

The firſt is the fineſt ſort, but the other two are occaſionally preſerved in ſome ſtove collections among other plants of the ſame claſs.

Method of Culture.—They may be raiſed from ſeeds, and by other means, in pots plunged in the bark-beds of hot-houſes and ſtoves, where they muſt conſtantly be kept in light rich earth or mould, having the management of other exotics of ſimilar kinds.

They afford variety in all ſuch collections of tender plants.

ZAMIANSK, in *Geography*, a fort of Ruſſia, on the Volga; 20 miles N.W. of Aſtrachan.

ZAMIN, a town of Grand Bucharia; 50 miles N.E. of Samarcand.—Alſo, a river of Aſia, which riſes about 70 miles S. of Kogend, and after a N.W. courſe of about 150 miles, loſes itſelf in the earth.

ZAMIRÆ, in *Ancient Geography*, a people of India that were Anthropophagi, near mount Mœcander. Ptol.

ZAMOLXIS, in *Biography*, a celebrated perſon among the Scythians, was, as ſome have ſuppoſed, a ſlave of Pythagoras, who, having attended him into Egypt, obtained his freedom, and taught his maſter's doctrine among the Getæ. It has been alſo ſaid, that in order to enforce the belief of the immortality of the ſoul, he dug a ſubterraneous apartment, and concealed himſelf in it for three years; but re-appearing as one riſen from the dead, he there eſtabliſhed his authority as a teacher. But Herodotus, who relates this fabulous ſtory, as a common tradition, gives it no credit, but expreſsly ſays, that ſo far from being a Pythagorean, he flouriſhed at a much earlier period than Pythagoras. The general teſtimony of the ancients furniſhes reaſon for concluding, that Zamolxis was a Thracian, who, at a very remote period, taught the Scythians the doctrine of the immortality of the ſoul, and that after his death, they enrolled his name among the divinities, with whom they aſſured themſelves they ſhould aſſociate in the inviſible world. Herodotus relates, that at certain feſtivals, they choſe ſeveral perſons by lot, who were to be deputed as meſſengers to Zamolxis; and that they put them to death, by throwing them up into the air, and catching them, as they fell, upon the points of their ſpears; and this ſtory is thought to be the more credible, becauſe it is well known, that the practice of offering human ſacrifices prevailed among the Scythians and the Thracians. Herodotus. Brucker by Enfield, vol. i.

ZAMORA, in *Geography*, a town of Spain, in the province of Leon, on the Duero; the ſee of a biſhop, ſuffragan of Compoſtella. In the year 967, this town was taken by the Moors and deſtroyed; but afterwards rebuilt and fortified. It is now a frontier town againſt Portugal, and place of arms. The ſtreets are narrow, and the general appearance of the town is gloomy; 120 miles N.W. of Madrid. N. lat. 41° 50′. W. long. 6°.—Alſo, a town of Algiers, founded in honour of a Mahometan ſaint. Here is a ſmall garriſon; 28 miles W. of Seteef.—Alſo, a town of Mexico, in the province of Guadalajara; 80 miles N.W. of Mechoacan. N. lat. 20° 54′. W. long. 103° 40′.—Alſo, a town of South America, in the audience of Quito, on a river of the Amazons. In the neighbourhood are ſome gold-mines; 200 miles S. of Quito. S. lat. 4°. W. long. 78° 46′.

ZAMOSCIE, or Samostzic, a town and fortreſs of Auſtrian Poland, in Galicia, built by the famous great chancellor, John Zamoyſki. It has a ſtately cathedral, and ſeveral other churches, a decayed univerſity, a charitable foundation called Mons Pietatis, and ſeveral valuable privileges; but the fortifications are now in a bad condition. The proprietor of this town, &c. ſtiled himſelf prince Zamoſcie. It now belongs to Auſtria; 60 miles N.W. of Lemberg. N. lat. 50° 31′. E. long. 23° 15′.

ZAMPALA, a river of Mexico, which riſes in the province of Tlaſcala, and runs into the gulf of Mexico, N. lat. 19° 40′.

Zampala, *Chempoalla*, or *Zempoala*, a city of Mexico. When Cortez landed in the year 1519, the chief or lord of this place, who was tributary to Montezuma, offered his ſervice to the Spaniards. It was at that time a large city and exceedingly populous, the loweſt account reckoning the inhabitants at 20,000 or 30,000. It was the capital of a country called Totonacapan, now the N.E. part of the province of Tlaſcala; 90 miles E. of Puebla de los Angelos. N. lat. 20° 10′. W. long. 97° 50′.

ZAMPERINI, Anna, in *Biography*, of Venice, arrived in England in 1767, as a buffa ſinger, a *parte eguale*, with the Guadagni, ſiſter to the great ſinger and actor Guadagni, who had been here in early youth.

The Zamperini was a very pretty woman, coquetiſh, and an affected ſinger. Her firſt appearance on our ſtage was in La buona figliaola Maritata of Piccini, of which the muſic was ſo difficult to perform, and not eaſy to hear, that it was never ſufficiently repeated for the public to be familiarly acquainted with it. They were glad, therefore, as well as the performers, to return to La buona figliaola, for their own relief from a too ſerious attention.

The ſiſter of Guadagni, an elegant ſinger, and graceful actreſs, the original performer of the part of Cocchina in Italy, being ſuperſeded in that part by the Zamperini, occaſioned a great rupture between Guadagni juſt arrived here in 1769 for the ſecond time, and the honourable patentee and impriſario of the opera; which generated faction and a party ſpirit that deſtroyed the comfort of the opera, ſerious and comic, at a time when the public, in a ſtate of tranquillity, would have been more delighted than at any other period.

We never heard the Zamperini ſing ſerious muſic, but are told by M. Laborde (Eſſai ſur la Muſ.), that "having a natural talent for muſic, and great ſpirit and fire in her action, though her excellence of performance was principally manifeſted in comic operas, yet ſhe ſung equally well in the ſerious. After performing with great applauſe in London, Liſbon, and Italy, ſhe quitted the ſtage, and was well married."

ZAMPIERI, Domenico, called *Domenichino* in the Hiſtory of Painting, was born at Bologna, in 1581, and placed when very young under the tuition of Denis Calvert; but being ill treated by him, he prevailed upon his father to permit him to enter the ſchool of the Carracci, at the time when Guido and Albano were both ſtudents there. He ſoon diſtinguiſhed himſelf, but more by his care and aſſiduity than by brilliancy of talent. He here attached himſelf to Albano, and, when he left the Carracci, they travelled together to Parma, Modena, and Reggio, to ſtudy the works of Corregio and Parmeggiano, and ſoon afterwards they both went to Rome. In that city his firſt patron was cardinal Agucchi, who employed him in his palace, and commiſſioned him to paint three pictures for the church of S. Onofria, of ſubjects from the life of S. Jerome. His former maſter, An. Carracci, alſo employed him for ſome time to aſſiſt in his great work at the Farneſe gallery; and he painted from his own deſigns, in the loggia in the garden, the Death of Adonis, when Venus ſprings from her car to aſſiſt her unfortunate lover.

As the health of A. Carracci became rapidly impaired, and he was neceſſitated to refuſe many commiſſions offered to him, he recommended them to his ſcholars; and had the ſatisfaction of ſeeing Guido and Domenichino employed by the cardinal Borghes to paint the freſcoes in S. Gregorio, which have ſubſequently become ſo celebrated, and of which the Flagellation of S. Andrea by the latter is ſo juſtly admired. The cardinal Farneſe alſo employed him to paint ſome freſcoes in the chapel of the abbey at Grotto Ferrata; among them is that picture of the Cure of the Demoniac Youth, which has been compared with and by many preferred to the one of Raphael in the Transfiguration. Another cardinal, Aldrobrandini, availed himſelf of the eſtabliſhed renown of Domenichino, and engaged him to paint in freſco ten pictures of the hiſtory of Apollo, in his villa at Fraſcati, which added greatly to his reputation. Soon afterwards he completed the work which more than any other has ſerved to immortalize his name, his well-known picture of the Communion of S. Jerome, painted for the principal altar of the church of S. Girolamo della Caritá. This fine production ranks with the beſt of any age. It is ſaid with great ſemblance of truth, that the arrangement of its compoſition was borrowed of Agoſtino Carracci, who painted the ſame ſubject for the Certoſi at Bologna. But if Domenichino did borrow the thought, he has amply made amends by the mode in which he has adorned it. It received its due meed of applauſe at the time, and was ranked as the work next in value to the Transfiguration by Raphael; but while the merit of its author thus excited the admiration of the public and moſt of the artiſts of Rome, it elicited in the minds of ſeveral, and among them of Lanfranco, the bitteriſt ſpirit of envy and malignity, which was actively exerted againſt him. He was reviled as a plagiariſt, and the execution of his pictures condemned as heavy and ungraceful; and in ſpite of their powerful effect, the influence of his adverſaries ſo far prevailed, that for a time he failed of commiſſions, and had ſerious thoughts of changing his profeſſion for that of ſculpture. The celerity and freedom with which Lanfranco invented and painted, and all thoſe machiniſts who applauded the means of art above the end, were oppoſed to the ſlow and uncertain power of invention poſſeſſed by Domenichino. But upon this ſubject Lanzi juſtly obſerves, that if Domenichino had had the good fortune which he merited, he would, like the Carracci in Bologna, have ſoon triumphed over his adverſaries, admitting that he was an imitator, but not a ſervile one, and that if his works were more ſlow in their birth than thoſe of his enemies, they merited a much longer exiſtence. "The public," he adds, "is juſt in its judgment, but before its tribunal a good cauſe is not ſufficient of itſelf unleſs able pleaders give it credit. Domenichino timid and ſolitary, maſter of little, had not then ſufficient means to protect himſelf againſt the torrent which overwhelmed him, and report ſeemed to verify the remark of the cardinal Agrecchi, that his worth would not be duly appreciated till after his death. Impartial poſterity does him juſtice, and there is now no gallery which is regarded as complete without ſome ſpecimen of his talents."

The virulence of theſe perſecutions diſguſted and diſturbed Domenichino ſo much, that he returned to Bologna, and there he tranquilly paſſed ſome years in the delightful practice of his art. Among the moſt renowned of his productions about this period are his pictures of the Martyrdom of S. Agnes, for the church of that ſaint, and the Madonna della Roſario, both large works, and of ſufficient merit to attract the inſipidity of the French, and for a while they adorned the walls of the Louvre; but they are now returned to their original deſtinations. When malice and envy had exhauſted themſelves, and fame added freſh laurels to the brow of Domenichino, he was invited back to Rome by pope Gregory XV., who appointed him his principal painter, and architect to the pontifical palace. The cardinal Montotto engaged him to paint the vault of S. Andrea della Valle, where he repreſented the four Evangeliſts with Angels; and in the chapel of cardinal Bandini, in the church of S. Sylveſtro, in the Quirinal, he painted four pictures, which rank amongſt his beſt: the ſubjects are, Eſther before Ahaſuerus, Judith with the Head of Holofernes, David playing and ſinging before the Ark, and Solomon and his Mother Bathſheba ſeated on a Throne. The former are certainly of a very high claſs of art, and though lacking the ſimplicity and grandeur of M. Angelo or Raffaelle, yet they are full of rich and fine forms, particularly thoſe of the angels, &c. which accompany the figures. The latter are not of ſo elevated a ſtyle, but are more familiar, and wrought with fine colour: they are engraved by Jacomo

Frey. About the ſame time he painted four of the Cardinal Virtues in the angles of S. Carlo Catenari, which have been preſerved to us by the graver of G. Andran.

Domenichino not only excelled in hiſtorical painting, in works both great and ſmall, but he has alſo left us many landſcapes of extraordinary excellence in point of tone; ſeldom can ſo much be ſaid of their compoſitions. They are generally ſelect in ſcenery, of a grave and dignified character, and are executed with boldneſs and freedom, and enriched with figures. A very fine one may be ſeen in the collection of the marquis of Stafford. He is univerſally eſteemed as the beſt among the diſciples of the Carracci, and Nicolo Pouſſin is ſaid to have preferred him before them: but that favour, if we except the Communion of S. Jerome, his works will ſcarcely be found to ſupport. M. Fuſeli has remarked, that "expreſſion which had languiſhed after the death of Raphael ſeemed to revive in Domenichino; but his ſenſibility was not ſupported by equal comprehenſion, elevation of mind, or dignity of motive." His forms are by no means ſo pure or graceful, or his actions ſo natural and unconſtrained, as thoſe of that divine painter. His invention does not appear to have been vivid, but his ſtudy was unremitting, and with all his defects he well deſerved the title of a great painter, and certainly has not ſince been equalled. He died in 1641, aged 60.

ZAMPOGNA, in the *Italian Muſic*, is uſed to denote any inſtrument that ſounds like a flute; and particularly a bagpipe, being an aſſemblage of divers pipes of different ſizes. It is alſo taken for a common flute.

ZAMRECOTTA, in *Geography*, a town of Bootan; 34 miles S.E. of Damſong.

ZAMZEVRIZI, a town of the principality of Georgia, in the province of Carduel; 15 miles S.W. of Gori.

ZANA, a river of Peru, which runs into the Pacific ocean, S. lat. 7°.

ZANAATHA, in *Ancient Geography*, a town in the interior of Arabia Petræa. Ptol.

ZANCHI, Basilio, in *Biography*, an elegant Latin poet, was born at Bergamo in 1501, and purſued his ſtudies under Giovita Rapicio with ſo much ardour, that at the age of ſeventeen he made a collection of Latin poetical epithets, which was afterwards publiſhed. Before he had attained the age of twenty he viſited Rome, and was much noticed by the poets of that city. According to the practice which then prevailed he changed his baptiſmal name Pietro into L. Petreius; but afterwards, returning to Bergamo, and entering, in 1524, among the canons-regular of Lateran, he aſſumed that of Baſil; devoting his attention to ſacred literature, and publiſhing ſome works on the ſcriptures. In the progreſs of his life he frequently changed his reſidence; and was every where reſpected, on account of his learning and talents, by the principal ſcholars of the age. Under the ſevere decree of pope Paul IV. iſſued in 1558, which commanded, under the threatened penalty of the priſon or galleys, all the religious to return to the cloiſters to which they belonged, Zanchi was impriſoned, and fell a ſacrifice to the rigour of confinement. One of his biographers ſays, that he had few equals in the ſweetneſs, and fewer in the elegance of his poetry; ſpecimens of which occur in his eight books of poems, one of which bears the title of "De Horto Sophiæ," and deſcribes the moſt remarkable facts and doctrines of the Catholic religion. Some of his poems are inſerted in the "Deliciæ," and the "Carmina Poetarum Italorum." He alſo publiſhed a kind of Lexicon, entitled "Latinorum Verborum ex variis auctoribus Epitome." Moreri. Gen. Biog.

Zanchi, Girolamo, an Italian Proteſtant, was born in 1516 at Alzano, in the territory of Bergamo, and entered among the canons-regular of Lateran at the age of fifteen, in which connection he remained for ten years. But Peter Martyr having communicated to him, and others of his fraternity, the opinions of the reformers, he departed with him from Italy in 1530, and went to Geneva. From Geneva he removed to Straſburg upon an invitation to ſupply a vacancy in the profeſſorſhip of ſacred literature, which he accepted in 1553, and which he occupied for about eleven years. Having ſigned the Augſburg confeſſion, with ſome reſtrictions, he was aggregated to the chapter of St. Thomas, in Straſburg. Although his diſpoſition was moderate and conciliatory, he was engaged in ſome diſputes with the zealous Lutherans, who determined to procure his expulſion. With this view, they acquired his ſignature of a formulary, to which he aſſented in the following terms: "Hanc doctrinæ formulam ut piam agnoſco, ita etiam recipio." The ambiguity of this declaration was not ſatisfactory to his adverſaries, and he was therefore induced to reſign, and to accept an invitation to a church in Chiavenna. The articles with regard to which he was ſuſpected by the Lutherans were predeſtination, the perſeverance of the ſaints, the euchariſt, ubiquity, images, antichriſt, and the end of the world. Having reſided at Chiavenna from the year 1563 to 1568, he removed to the theological chair at Heidelberg, when he took the degree of doctor. When Frederick III., who was a zealous Lutheran, ſucceeded the elector palatine, and removed the Heidelberg profeſſors, Zanchi declining offered ſettlements at Leyden and Antwerp, took a place in count John Caſimir's college at Newſtadt. Upon the reſtoration of the expelled profeſſors, Zanchi, on account of his age, was declared "emeritus;" and having loſt his ſight, died at Heidelberg in 1590.

Highly eſteemed among Proteſtants in general on account of his learning and invincible attachment to their principles, John Sturmius affirmed of him, "that he ſhould not be at all anxious for the cauſe of reformed religion, if Zanchius alone were to diſpute in the council of Trent againſt all the fathers preſent." Bayle.

ZANCLE, in *Ancient Geography*, a town of Sicily, on the ſtrait which ſeparates this iſland from Italy. According to Herodotus, the Meſſenians, driven from the Peloponneſus by the Lacedæmonians, tranſplanted themſelves into Sicily, took poſſeſſion of Zancle, and gave it the name of Meſſana, whence Meſſina.

ZANDENDORF, in *Geography*, a town of Germany, in the margravate of Anſpach; 2 miles S.W. of Cadolzburg.

ZANDHOP, a town of Pruſſia, in Ermeland; 16 miles S.E. of Heilſberg.

ZANE, a town of Virginia; 9 miles S.S.E. of Wincheſter.—Alſo, a townſhip of Champaign county, in the diſtrict of Ohio, with 645 inhabitants.

ZANES, in *Ancient Geography*, a town of Upper Mœſia, fortified by Juſtinian, ſo as to render it one of the ſtrongeſt bulwarks of the empire.

ZANESVILLE, in *Geography*, a townſhip of the ſtate of Ohio, in the county of Muſkingum, on the Scioto, with 2154 inhabitants.

ZANETTI, Antonio, in *Biography*, of Venice, maeſtro di capella to the duke of Modena, the latter end of the 17th and beginning of the 18th century, for whom, and for the theatres in Venice, he produced ſix or ſeven operas that were much eſteemed in thoſe days.

Zanetti, Francisco, was born in the year 1740, maeſtro di capella in the cathedral at Perugia in 1770. He had previouſly paſſed ſome time in London, where ſome elegant and eaſy ſonatas of his compoſition were publiſhed by Bremner. He loſt his place in the church at Perugia, by having appeared on the Alberti ſtage at Rome, as a ſinger in an opera of his own compoſition, and that, merely to ſupply the place of the principal tenor, who had run away, and to prevent the piece from being ſtopped: he however married afterwards a pretty woman, who ſung well, and indemnified him for the loſs of his place.

Since his marriage he has compoſed ſeveral ſucceſsful operas, in which ſignora Zanetti has performed the principal female part, particularly one at Milan in 1785, in which ſhe was much applauded, as well as her huſband's muſic. He has compoſed much natural and pleaſing muſic for inſtruments; as ſix violin trios, ſix quintets for three violins, and two violoncellos, &c.

ZANFARA, in *Geography*. See ZAMFARA.

ZANGARISA, a town of Naples, in Calabria Ultra; 6 miles N.E. of St. Severina.

ZANGESAIR, or SANGUSEER, a ſea-port of Hindooſtan, in Concan, with a good harbour, but not much frequented; 15 miles S. of Severndroog. N. lat. 17° 38′. E. long. 72° 54′.

ZANGUEBAR, a name given to a large territory of Africa, bordering on the Eaſtern ſea, including many kingdoms; the name is ſaid to import "the coaſt of the negroes," all the inhabitants being blacks, with curled woolly hair; extending from two degrees north to the twenty-firſt degree of ſouth latitude. The principal kingdoms on the coaſt have been ſeparately ſpoken of and deſcribed. Of the country in general little is known; the whole tract is repreſented as barren and unhealthy, the lands lying low, and interſected with rivers, lakes, thick woods, foreſts, and marſhy grounds. The fruits of it are very unwholeſome, their rivers, for the moſt part, covered or choked up with weeds, buſhes, and thickets; all which ſo ſtagnate the air, and corrupt the products of the earth, and render the inhabitants ſo ſickly and indolent, that they receive little or no benefit from its produce. The Bedouin Arabs are the only people who make advantage of it by breeding multitudes of cattle, and living moſtly upon their fleſh and milk; whilſt the negroes, or Zanges, content themſelves with feeding upon wild beaſts and fowl, which ſwarm all over thoſe parts. To ſupply the want of corn, pulſe, roots, and other wholeſome food, of which they are deſtitute, the Divine Providence hath interſperſed that whole country with mines of gold, eaſily got, by the help of which they can purchaſe all the neceſſaries and conveniences of life from other parts: but this is the very circumſtance that makes them ſo extremely jealous of letting ſtrangers penetrate into the inland; more eſpecially ſince the Portugueſe have made themſelves maſters of ſuch a number of places along this coaſt. They are in their nature fierce and ſtout, ignorant and brutiſh, without religion, eſpecially the negroes; upon which laſt account they have the name of Caffers. As for the Bedouins, they have ſome kind of religion, or rather obſerve a variety of ſuperſtitious rites, but are no leſs ignorant and uncivilized than the Caffers; yet they chiefly herd among themſelves, and live at a great diſtance from the coaſts, and by the ſides of lakes and rivers, for the convenience of paſture for their numerous herds. They go all naked, both Caffers and Arabs, excepting that they wrap a piece of cotton cloth round their middle, which deſcends a little below the knee; but thoſe who live along the coaſts are ſomewhat more civilized, affect a little more finery in their dreſs, and inſtead of cotton cloth cover themſelves with the ſkins of wild beaſts, more or leſs rich, according to their rank, with the tails of animals trailing behind on the ground; they likewiſe adorn their necks, arms, and legs, with a variety of beads, bugles, and other trinkets, of amber, jett, glaſs, and other materials, which they purchaſe from the merchants with their gold, furs, ivory, and other commodities. There are among theſe coaſters a great number of Mahometans, but a much greater number ſtill among the iſlanders along the coaſt; they being for the moſt part deſcended from thoſe Arabs who were baniſhed out of their country. The countries are, Melinda, Mongala, Jubo, Moſambique, and ſome others.

ZANHAGA, or ZANZAGA, or *Zenhaga*, a province of Africa, in the country of Sahara, bordering on the Atlantic.

ZANIA, in *Ancient Geography*, a town of Aſia, in the interior of Media. Ptol.

ZANNA, the name of a medicinal earth, deſcribed by Oribaſius: he ſays it is found in Armenia, in that part which borders on Cappadocia; and that it is very drying, and of a pale colour, and eaſily diſunited by water, falling into a fine powder like lime.

It is called by the natives *zarina*, and the mountain from which it is taken is near the city Baganona. It is of a drying and aſtringent nature.

ZANNICHELLI, JOHN JEROME, in *Biography*, a phyſician and naturaliſt, was born at Modena in 1662, and ſettling in the medical department at Venice, he publiſhed a work on the preparation of chemical medicines, entitled "Promptuarium Remediorum chymicorum." In 1702 he was created, by a patent of the duke of Parma, doctor of medicine, ſurgery, and chemiſtry. He afterwards formed a muſeum of natural hiſtory, and made many journies in order to collect foſſils and other ſubjects for this repoſitory. Some of his excurſions were undertaken by public authority, as he was nominated by the chamber of health, phyſician-naturaliſt to all the ſtates of Venice. He died in 1729. During his life-time he publiſhed ſeveral tracts relating to botany and lithology; and after his death his ſon John James edited from his MSS. "Opuſcula Botanica Poſthuma," 1730, and "Iſtoria della Piante che naſcono nel lidi intorno à Venizia," 1735, being a deſcription, with figures, of the plants on the Venetian ſhores. Haller. Eloy.

ZANNICHELLIA, in *Botany*, was ſo named by Micheli, in compliment to John Jerome Zannichelli, an eminent apothecary at Venice, who ſpared no expence or labour, even at an advanced age, in the ſtudy of botany, on account of which he undertook ſeveral hazardous and difficult journies. He was particularly devoted to the obſervation of marine productions, as well animal as vegetable. In purſuit of theſe he was Micheli's companion and guide, among the iſlands and ſhores of the Adriatic; and has wrote an account of the plants there to be found; which, with the hiſtory of ſome of his mountain tours, were printed after his deceaſe. Zannichelli publiſhed a pamphlet on the medical qualities of *Ruſcus*, as well as various chemical and geological works. He died in 1729, aged 67. His ſon, John Jacob Zannichelli, wrote on the properties of the horſe-cheſnut, as well as an account of his own and his father's muſeum. — Mich. Nov. Gen. 70. t. 34. Linn. Gen. 476. Schreb. 616. Willd. Sp. Pl. v. 4. 181. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 229. Sm. Fl. Brit. 955. Prodr. Fl. Græc. Sibth. v. 2. 225. Purſh 4. Juſſ. 19. Poiret in Lamarck Dict. v. 8. 836. Lamarck Illuſtr. t. 741. Gærtn. t. 19. (Graminifolia; Dill. Gen. 168.)—Claſs and order, *Monoecia Monandria*. Nat. Ord. *Inundatæ*, Linn. *Naiades*, Juſſ.

Gen. Ch. Male, *Cal.* none. *Cor.* none. *Stam.* Filament one, ſimple, elongated, erect; anther ovate-oblong, erect.

Female, cloſe to the male. *Cal.* Perianth of one leaf, inferior, hollow, ſwelling, oblique, with two or three teeth. *Cor.* none. *Piſt.* Germens from four to eight, ſtalked, oblong, converging; ſtyles as many, ſimple, rather ſpreading; ſtigmas ovate, peltate, flat, ſpreading outwards. *Peric.* none. *Seeds* as many as the germens, naked, ſtalked, oblong, compreſſed, a little incurved, beaked with the permanent ſtyles, tuberculated at the back, with a ſimple coriaceous coat.

Obſ. Schreber ſpeaks of ſome ſolitary, diſperſed, male flowers, furniſhed with a ſingle-leaved calyx, whoſe orifice is oblique, acute at the poſterior part, and entire. He follows Gærtner in conſidering the coat of each ſeed as a capſule; but the latter allows there is ſcarcely any internal coat, or integument, to the kernel, and the outer one is deſtitute of valves; ſo that although the ſtyle be permanent, we rather follow Linnæus than other authors; and we conceive that if the exiſtence of a naked ſeed be admitted in any inſtance, it muſt be in the preſent; there being only a ſimple covering to the embryo, which is indiſpenſable.

Eſſ. Ch. Male, Calyx none. Corolla none. Filament elongated, erect. Anther oblong.

Female, Calyx of one leaf. Corolla none. Germens four, or more. Stigmas peltate. Seeds ſtalked, naked.

1. Z. *paluſtris*. Marſh Horned-Pondweed. Linn. Sp. Pl. 1375. Willd. n. 1. Fl. Brit. n. 1. Engl. Bot. t. 1844. Purſh n. 1. Mill. Illuſtr. t. 77. Fl. Dan. t. 67. (Z. paluſtris major, foliis gramineis acutis, flore cum apice quadricapſulari, embryonis clypeolis integris, et vaſculo non barbato, capſulis ſeminum ad coſtam dentatis; Mich. n. 1. t. 34. f. 1. Potamogeito ſimilis, graminifolia, ramoſa, ad genicula polyceratos; Pluk. Phyt. t. 102. f. 7.)—Anther of four cells. Stigmas entire.—Native of ponds, ditches, and rivulets, in Italy, as well as other parts of Europe, from Sweden to Conſtantinople, flowering in ſummer. It is found alſo in Virginia, near the ſweet ſprings, according to Clayton and Purſh. The *root* is annual. *Stem* ſlender, floating, branched, round, leafy, and ſmooth, with the habit of a *Potamogeton*. *Leaves* linear, graſſy, ſeſſile, narrow, acute, and entire, two or three inches long. *Bractea* membranous, tubular, axillary, including a pair of green *flowers*, one male, the other female. *Anther* tawny. *Seeds* blackiſh when ripe, rugged or toothed at the back.

2. Z. *dentata*. Toothed Horned-Pondweed. Willd. n. 2. Poiret n. 2. (Z. paluſtris minor, foliis gramineis acutiſſimis, flore minimo cum apice bicapſulari, embryonis clypeolis circumcrenatis, et vaſculo barbato, capſulis ſeminum ad coſtam aſperis; Mich. n. 2. t. 34. f. 2.)—Anther of two cells. Stigmas toothed.—Found in the neighbourhood of Florence, with the foregoing, as well as in mountain pools in the adjacent country. Rather ſmaller than the firſt ſpecies, with ſhorter *leaves;* but moſt eſſentially different in having only two cells to the *anther*, and remarkably toothed *ſtigmas*. The *ſeeds* alſo are tuberculated all over, not merely toothed at the back, or keel.

Loureiro has a Z. *tuberoſa*, Fl. Cochinch. 543, to which he attributes "ovate-oblong ſingle-ſeeded *berries*." It grows in the waters of Cochinchina, and has tuberous perennial *roots*, radical, ſword-ſhaped *leaves*, ſpiked *flowers*, the *calyx* of the female in ſix deep ſegments. We agree with M. Poiret that it would be too hazardous to admit this ſpecies without examination. Loureiro had probably never ſeen a real *Zannichellia*.

ZANOE, in *Ancient Geography*, a town of Paleſtine, in the mountains of the tribe of Judea.—Alſo, a town of Paleſtine, in the plain of the tribe of Judea. Joſhua.

ZANONA, in *Geography*, a ſmall iſland in the Mediterranean; 2 miles N.E. of Ponza.

ZANONIA, in *Botany*, bears that name in memory of an Italian botanical writer of the 17th century, James Zanoni, ſuperintendant of the public garden at Bologna. He publiſhed in 1675 a folio volume, in Italian, entitled *Iſtoria Botanica*, with 80 plates, of new or rare plants, accompanied by deſcriptions. Monti gave an enlarged edition of this work, in Latin, in 1742. Zanoni died in 1682, aged 67. Plumier, who ſpeaks of him as a learned and critical inveſtigator of the plants of the ancients, publiſhed a *Zanonia*, in his Nov. Gen. 38. t. 38, which Linnæus has reduced to COMMELINA (ſee that article, ſp. 12.); and which ſome botaniſts reckon a *Tradeſcantia*.—Linn. Gen. 523. Schreb. 690. Willd. Sp. Pl. v. 4. 769. Mart. Mill. Dict. v. 4. Juſſ. 397. Poiret in Lamarck Dict. v. 8. 837. Lamarck Illuſtr. t. 816.—Claſs and order, *Dioecia Pentandria.* Nat. Ord. *Cucurbitaceæ*, Linn. Juſſ.

Gen. Ch. Male, *Cal.* Perianth of three ovate ſpreading leaves, ſhorter than the corolla. *Cor.* of one petal, in five deep, ſpreading, pointed, inflexed, equal ſegments. *Stam.* Filaments five, ſpreading, the length of the calyx; anthers ſimple.

Female, on a ſeparate plant, *Cal.* Perianth as in the male; ſeated on the germen, deciduous. *Cor.* as in the male. *Piſt.* Germen oblong-clubſhaped, inferior; ſtyles three, ſpreading, conical, reflexed, permanent; ſtigmas divided, criſped. *Peric.* Berry large, elongated, abrupt; tapering at the baſe; encompaſſed near the top with a criſped ſuture, of three cells. *Seeds* two in each cell, rounded-oblong, flat, in the centre of a lanceolate ſcale, or wing.

Eſſ. Ch. Male, Calyx of three leaves. Corolla in five deep ſegments.

Female, Calyx ſuperior, of three leaves. Corolla in five deep ſegments. Styles three. Berry of three cells, with a lid. Seeds winged, two in each cell.

1. Z. *indica*. Climbing Indian Cucumber. Linn. Sp. Pl. 1457. Willd. n. 1. Poiret n. 1. ("Penar-valli; Rheede Hort. Mal. v. 8. t. 49, male; t. 47, 48, female.")—Native of Malabar and Ceylon. A ſtranger in the gardens of Europe, nor do we recollect having ever ſeen a ſpecimen, Linnæus having, in this inſtance, confided entirely in the *Hortus Malabaricus*, which was very rarely his cuſtom. The herbaceous branching *ſtem* appears to climb by means of ſimple, ſpiral, axillary *tendrils*. *Leaves* alternate, ſtalked, ovate-oblong, acute, entire, ſmooth. *Flowers* in lax drooping *cluſters*, which in the male appear to be ſomewhat compound. *Fruit* oblong, abrupt, obſcurely triangular, with the flavour of a cucumber according to Rheede. There can be little doubt of this genus belonging to the gourd tribe, whether it anſwers to all the characters which authors have been pleaſed to apply to that tribe or not. The opening of the *fruit* betrays ſome analogy to *Momordica operculata*.

ZANORI, in *Geography*, a town of Mexico, in the province of Culiacan; 80 miles N. of Culiacan. N. lat. 25° 40′. W. long. 108° 10′.

ZANOTTI, FRANCIS MARIA, in *Biography*, a mathematician and philoſopher, was born at Bologna in 1692, began his education among the Jeſuits, and purſued a courſe of natural philoſophy at the place of his nativity. Declining the proſecution of juriſprudence, to which he directed his firſt attention, he devoted himſelf to the ſtudy of philoſophy, laying the foundation in an acquaintance with mathematics, and commencing with the works of Deſcartes and Malebranche. But being deſirous of ſtudying the works of Ariſtotle and Plato in the original language, he applied with diligence to acquire a knowledge of the Greek, ſo that he became able not only to read but to write it. Thus furniſhed, he obtained leave to give lectures in philoſophy; in the courſe of which he inſtituted a compariſon between the ſyſtem of Deſcartes and that of Newton, avowing a decided preference to the latter; more particularly as it reſpects optics and aſtronomy. It was by his advice, and under his direction, that Algarotti undertook to compoſe a popular treatiſe on light and colours. Declining to go to Padua for the purpoſe of giving lectures, he was appointed librarian to the Inſtitute at his native place, and afterwards ſecretary, in which office he drew up in Latin an account of the tranſactions of the academy, with a hiſtory of its inſtitutions, which he continued till the year 1766. This work was rendered peculiarly pleaſing and inſtructive by the clearneſs of his arrangement, and the excellence of his ſtyle; in both which reſpects he ſeems to have formed himſelf on the model of Fontenelle. To theſe tranſactions he was himſelf a contributor; communicating a method of ſquaring different ſpaces of the hyperbola, and ſeveral important diſcoveries with regard to the circle, ſphere, and circumſcribing figures. Of theſe diſcoveries he tranſmitted an account to the Academy of Sciences at Montpellier, of which, as well as of the Royal Society of London, he had been elected a member. He alſo diſcovered a method of ſeparating indeterminate quantities, detected ſeveral errors in philoſophy, and proſecuted a variety of experiments; on theſe and other ſubjects he delivered papers to the Bologna Inſtitute, which were publiſhed in his commentaries. Several of his papers on the central forces were alſo inſerted in the Tranſactions of the Academy. His theorem on the means of determining the velocity of a body drawn or repelled from its centre, in any point of its orbit, were held in high eſtimation by Paul Friſius, who availed himſelf of it in the compoſition of his work on univerſal gravity. On the ſubject of the "Vis viva," which in his time engaged particular attention, he wrote three dialogues in Italian, diſtinguiſhed for perſpicuity and elegance. In theſe he adopted the opinion of Deſcartes in oppoſition to that of Leibnitz, who conceived that this force was not to be eſtimated from the velocity, as he aſſerted, but from the ſquare of the velocity. The properties of numbers likewiſe engaged his peculiar attention; and he ſhewed, that if any multiple of the number 9 be taken, the ſum of the figures forming that multiple will be alſo a multiple of 9. In his ſpeculations on moral philoſophy, he defended the Peripatetics againſt Maupertuis; and his adverſary Anſaldi, in his "Vindiciæ Maupertuſianæ," accuſed him of depreciating the Catholic religion, as he aſcribed too great influence to the Stoic philoſophy in alleviating the misfortunes of human life. This controverſy gave occaſion to many publications. Zanotti was a poet as well as a mathematician and philoſopher, and wrote verſes both in the Tuſcan and Latin languages; aiming, in imitation of the moſt celebrated poets of Italy, to blend the ſuavity of Petrarch with the energy and vigour of Dante. Many of his Italian poems were publiſhed by Euſtatio Manfredi; and ſome of his Latin elegies were edited by J. Antonio Vulpi; who ſays of them, that Catullus himſelf would not have been aſhamed to acknowledge them. Both his Italian and Latin poems were afterwards publiſhed ſeparately, firſt at Florence, and laſtly at Bologna; and in this edition are contained imitations of Tibullus, Ovid, and Virgil, as well as of Catullus. After the death of Beccaria, Zanotti, whoſe modeſty was no leſs conſpicuous than his talents and acquirements, accepted the office of preſident of the Inſtitute, which he deemed peculiarly honourable, as it was a token of eſteem conferred upon him by his countrymen. Among the learned men with whom he maintained intercourſes of friendſhip or correſpondence were the famous anatomiſt Morgagni, Voltaire, and pope Benedict XIV. He died in the month of January 1777. For an account of his works, which, beſides thoſe to which we have already referred, were numerous, we refer to "Fabroni Vitæ Italorum Doctrina excellentium;" and for an abſtract of their titles, and time and place of publication, to Gen. Biog.

ZANOTTI, GIOVANNI PIETRO, was born at Paris, though of Italian parentage, in 1674. He was ſent young to Bologna, and became a pupil of Lorenzo Paſſinelli. Under that maſter he acquired an agreeable tone of colouring, a mellow pencil, and an intelligent acquaintance with the principle of the chiaro oſcuro. He painted ſeveral altar-pieces for the churches at Bologna, of which the moſt eſteemed are, the Incredulity of St. Thomas, in the church of S. Tommaſo del Mercato; the Reſurrection, in S. Pietro; the Nativity, in La Purita; and a large picture in the palazzo publico, repreſenting the ambaſſadors from Rome ſwearing fidelity to the Bologneſe. He reſided great part of his life at Cortona, where he alſo diſtinguiſhed himſelf by ſeveral pictures painted for the churches, particularly Chriſt appearing to the Magdalen, Chriſt bearing his Croſs, and the Murder of the Innocents.

Zanotti was a laborious and intelligent writer on art. Of his numerous publications the moſt conſiderable is his "Storia dell' Academia Clementina di Bologna," publiſhed in two vols. 4to. in 1739. He died in 1765, aged 91. Bryant's Dict.

ZANOTTI, L'ABATE GIANCALISTO, of Bologna, a diſciple of Padre Martini, was born in 1770, of whoſe compoſition at the annual performance of the muſical ſtudents, who were members of the celebrated Philharmonic Society in Bologna, founded in 1666, we heard a *dixit*, in which there were all the marks of an original and cultivated genius. The movements and even paſſages were well contraſted; and to make uſe of the language of painters, there were diſcernible in it not only light and ſhade, but even mezzo tints. He proceeded from one thing to another by ſuch eaſy and inſenſible gradations, that it ſeemed wholly the work of nature, though conducted with the greateſt art. The accompaniments were judicious, the ritornels always expreſſed ſomething, the melody was new and full of taſte, and the whole was put together with great judgment, and even learning. We have very ſeldom been more pleaſed or completely ſatisfied than by this production; and yet the vocal parts were but indifferently executed, for there were then no great ſingers at Bologna. We expected to have heard of future works by this moſt promiſing young compoſer, who was one of the maeſtri di capella in the church of San Petronio; but as that has not happened, we fear he did not long ſurvive this performance.

ZANOW, in *Geography*, a town of Pomerania; 6 miles E.N.E. of Coſslin.

ZANTE, an iſland in the Mediterranean, near the coaſt of the Morea, about 12 miles in length, and ſix in breadth, chiefly inhabited by Greeks, till lately under the Venetians, who appointed a governor, called proveditor, and two counſellors. The Greeks have 40 churches, beſides convents, and a biſhop; the Roman Catholics have three convents and a biſhop. By the treaty of Campo Formio, Zante was given to France; but in 1799 it was taken by the united fleets of Ruſſia and Turkey, and in the year 1800 connected with other neighbouring iſlands, to form a republic of the Seven iſlands, named the Ionian, which are to pay a tribute to the Porte, and guaranteed both by the Turks and Ruſſians. Corfu, Cephalonia, and ſome others lately in the poſſeſſion of Venice, were of this number. The iſland produces excellent wine, and that ſpecies of grapes called currants, olives, figs, melons, peaches, and other choice fruits: towards the coaſts, the iſland is in general mountainous, but level in the interior parts. It is much ſubject to earthquakes. N. lat. 37° 40′. E. long. 21° 4′.

Zante, a town and capital of the iſland of Zante, ſituated on the N.E. ſide, with a harbour ſafe and commodious for veſſels of any ſize. The town ſtretches between the harbour and the foot of a mountain about a mile in length, but narrow; the ſtreets are not paved, and the houſes in general low. On a mountain above the town is a citadel, which commands the harbour, and contains a little city within its walls. It is to be aſcended with difficulty, is ſtrong, and well ſupplied with ſtores, and furniſhed with a garriſon. This is the reſidence of the governor and officers. Zante is the ſee of a Greek and Latin biſhop. There are ſeveral churches, and the Jews have a ſynagogue; 21 miles S.S.W. from the town of Chiarenza in the Morea. N. lat. 37° 50′. E. long. 21° 8′.

ZANTHENES, in *Natural Hiſtory*, a name given by the ancients to a foſſile ſubſtance found in Media. Pliny quotes Democritus for ſaying, that if rubbed in palm wine and ſaffron, it became ſoft as wax, and yielded a very ſweet ſmell.

ZANTHER, in *Geography*, a town of Pomerelia; 10 miles S. of Marienburg.

ZANTHORRHIZA, in *Botany*, L'Herit. Stirp. Nov. t. 38. See Xanthorrhiza.

ZANTHOXYLUM, Linn. Gen. 519. See Xanthoxylum.

Zanthoxylum, in *Gardening*, contains plants of the hardy and tender exotic ſhrubby kinds, in which the ſpecies cultivated are, the Canada tooth-ache-tree, or Hercules's club (Z. clava Herculis), and the Chineſe tooth-ache-tree (Z. trifoliatum).

The firſt is a plant of the tree kind, of which there is a variety; the aſh-leaved tooth-ache-tree, with oval-oblong folioles, and prickly mid-ribs.

And the laſt is a woody branching plant.

Method of Culture.—Theſe plants may be increaſed by ſeeds and layers. The ſeeds ſhould be ſown in the ſpring, either in an eaſt border, or in pots placed in the morning ſun all the ſummer, being ſheltered in a frame in winter; and in the ſpring following removed to the full air till October, giving proper waterings all the ſummer; and towards winter be placed again under ſhelter from froſt till March, when the young plants may be potted ſeparately; and thus continued for a year or two, being ſheltered in the winter, when they may be tranſplanted into the ſhrubbery, where they are to remain.

The layers of the young wood may be laid down in autumn or early ſpring, and when they have ſtricken root be taken off and managed as the ſeedlings.

They alſo ſucceed by cuttings in ſpring or ſummer, planted in pots, aſſiſted by a hot-bed, in which they ſoon ſtrike, when they ſhould be inured to the full air; and the young plants will be fit for planting out in the autumn, or the ſpring following.

The firſt is a very ornamental plant in the borders and other dry parts of ſhrubberies, and the latter among potted plants in the green-houſe collections.

ZANTOCH, in *Geography*, a town of the New Mark of Brandenburg; 8 miles E. of Landſberg.

ZANZALUS, in *Biography*. See Baradæus.

ZANZIBAR, or **Zangibar**, in *Geography*, an iſland of Africa, in the Indian ſea, near the coaſt of Zanguebar, governed by a king, who is tributary to the Portugueſe. S. lat. 6°. E. long. 41° 15′.

ZANZOUR, a town of Africa, in the country of Tripoli; 15 miles W.N.W. of Tripoli.

ZAOIE, a town of Egypt, on the left bank of the Nile; 13 miles N. of Beniſuef.

ZA-OSTROG, a town of Morlachia, near the coaſt; 15 miles S.E. of Macarſka.

ZAOZERSKOI, a town of Ruſſia, in the government of Novgorod, on the Sula; 28 miles W. of Tcherepovetz.

ZAPATA, or **Sapata**, a kind of feaſt, or ceremony, held in Italy, in the courts of certain princes, on St. Nicholas's day, in which people hide preſents in the ſhoes or ſlippers of thoſe they would do honour to; in ſuch manner, as to ſurpriſe them on the morrow, when they come to dreſs.

The word is originally Spaniſh, *capato;* and ſignifies a ſhoe, or ſlipper.

It is done in imitation of the practice of St. Nicholas; who uſed, in the night-time, to throw purſes of money in at the windows, for portions to poor virgins in their marriage.

F. Meneſtrier has deſcribed theſe zapatas, their origin, and different uſages, in his Treatiſe des Ballets Anciens et Moderns.

ZAPATERO, in *Geography*, a ſmall iſland of Mexico, in lake Nicaragua, near the weſt coaſt; 30 miles S.E. of Grenada.

ZAPATILLA Lagoon, a bay on the eaſt coaſt of Yucatan. N. lat. 18° 52′. W. long. 89° 32′.

ZAPETRA, in *Ancient Geography*, a town of Aſia, in the mountains of Comagene, upon a ſmall river, which diſcharged itſelf into the Euphrates, S. of that town.

ZAPFENDORF, in *Geography*, a town of Bavaria, in the biſhopric of Bamberg; 9 miles N. of Bamberg.

ZAPHOR, a name given by ſome writers to *Zaffer;* which ſee.

ZAPOROGIAN Cossacks, in *Geography*. See Cossacks.

ZAPOTITLAN, a town of Mexico, in the province of Tlaſcala; 62 miles S.E. of Puebla de los Angelos.

ZAPOTLAN, a town of Mexico, in the province of Mechoacan; 25 miles N. of Colima. N. lat. 20° 10′. W. long. 104° 36′.

ZAPPANIA, in *Botany*, was ſo named by Scopoli, in honour of Paul Anthony Zappa, an Italian botaniſt, to whom the public garden at Pavia was indebted for many valuable communications. The French, not always exact in orthography, will have it *Zapania*, and they have miſled our more accurate countryman Mr. Brown, who follows Juſſieu and Lamarck in adopting this genus, in his Prodr. Nov. Holl. v. 1. 514. Scopoli publiſhed it in his Deliciæ Floræ et Faunæ Inſubricæ, v. 1. 34. t. 15. The ſpecies, on which he founds the genus, and which he erroneouſly ſuſpected might be the *Lantana involucrata* of Linnæus, is the *Verbena globiflora* of L'Heritier. (See Verbena, n. 3.) We do not find it neceſſary or expedient to retain *Zappania* as a diſtinct genus.

ZAPUNTELLO, in *Geography*, a town of the iſland of Melada, which ſometimes gives name to the iſland.

ZAQUALPAN, a town of Mechoacan, in the province of Mechoacan; 6 miles S. of Zacatula.

ZARA, a city and ſea-port of Dalmatia, ſee of an archbiſhop, ſituated in a diſtrict, called "The County of Zara," which was purchaſed of the king of Naples, in the year

1409, by the Venetians, in whoſe hands it afterwards continued. Zara is ſurrounded on all ſides by the ſea, except that it has a communication eaſtward with the continent, by means of a draw-bridge, commanded by a fort. It is reckoned one of the beſt fortifications in Dalmatia, and deemed almoſt impregnable. The citadel is divided from the town by a very deep ditch, hewn out of a rock. The harbour, which lies to the north, is capacious, ſafe, and well guarded. The rain is carefully preſerved in ciſterns, to ſupply the want of freſh water. In the caſtle reſides the governor or proveditor of Dalmatia, whoſe office is only triennial. It now belongs to the kingdom of Italy; 28 miles N.W. of Scardona. N. lat. 44° 22′. E. long. 15° 38′.

Zara *Vecchia*, *Old Zara*, or *Biograd*, or *Alba Maritima*, a town of Dalmatia, now little better than a village. In the time of the Romans it was a place of conſiderable figure, and received a new ſet of inhabitants by a numerous colony of that people. In the middle ages it was called *Belgrad*, or *Alba Maris*, and more anciently *Blandona*. According to ſome it was ruined by Attila; but we know with more certainty that it was deſtroyed in the war between the Venetians and the Hungarians, by the doge Ordelafo Falieri. Some banditti afterwards mixing with the inhabitants that remained, the republic, to check their exceſſes, ordered a general maſſacre of the robbers, in which the ancient inhabitants were not ſpared. Here was alſo a biſhop's ſee, which, on the demolition of the town, was removed to Scardona; at preſent its inhabitants conſiſt only of a few peaſants; 18 miles S.E. of Zara.

Zara. See Scharedsje.

Zara, in *Ancient Geography*, a town of the Moabites, taken by Alexander Jannæus.—Alſo, a town of Aſia, towards Armenia, upon the route from Arabiſſum to Satala, between Eumeæ and Dagolaſſum. Anton. Itin.

ZARAISK, in *Geography*, a town of Ruſſia, in the government of Riazan, on the Oſer; 24 miles S.W. of Riazan. N. lat. 54° 30′. E. long. 38° 24′.

ZARAMA, in *Ancient Geography*, a town of Aſia, in the interior of Media. Ptolemy.

ZARANDA, a name anciently given to the Euphrates.

ZARANG, the *Zarange* of Ptolemy, in *Geography*, a populous city of Perſia, in the province of Segeſtan or Seiſtan, ſituated pleaſantly on the banks of the Hearmund. This was the cuſtomary reſidence of Jacob Ben Lath, the conqueror of the caliph of Bagdad, and ſtood a long ſiege againſt Timur, by whom it was at laſt taken. Zarang is ſuppoſed to be the ſame with the preſent Dooſhak, the old name having been loſt in the revolutions to which this province has been ſubject for more than a century, and to which its preſent deſolated ſtate may, in a great meaſure, be attributed. For a further account of it, ſee Segestan.

ZARANIS, in *Ancient Geography*, a town of Aſia, in the interior of Media. Ptolemy.

ZARATE, Augustine de, in *Biography*, a Spaniſh hiſtorian, was ſent by Charles V. in 1543 to South America, as comptroller-general in Peru and Terra Firma; and having collected all the memoirs he could procure, he compoſed his work "Del Deſcubrimento y Conquiſta de la Provincia del Peru," firſt printed at Antwerp in 1555, 8vo. and reprinted at Seville, 1577, folio: the firſt edition being regarded as moſt authentic. It has been tranſlated into Italian and French, and is commended as a work of reputation and credit by Dr. Robertſon. Moreri. Robertſon's America.

Zarate, in *Geography*, a town of South America, in the province of St. Martha; 15 miles S. of Teneriffe.

ZARAYOS, or Sharayos, a ſuppoſed lake of America, in the courſe of the river Paraguay, which only exiſts during the annual inundations, that are on a far grander ſcale than thoſe of the Ganges, and may be ſaid to deluge whole provinces.

ZARCA, a town of Egypt, on the eaſt branch of the Nile; 10 miles S. of Damietta.

ZARCHAS, or Tcharkas, a town of Perſia, in the province of Choraſan, or Khoraſſan; 150 miles N. of Herat.

ZARCOIA, a town of Perſia, in the province of Segeſtan; 12 miles W. of Zarang.

ZARDAM. See Sardam.

ZARE, a town of Perſia, in the province of Choraſan, or Khoraſſan, on the north ſide of a lake ſo called; 70 miles S. of Herat.—Alſo, a lake of Perſia, in the province of Segeſtan; 60 miles N. of Zarang. See Zerreh.

ZARED, in *Ancient Geography*, a torrent beyond Jordan, on the frontier of the Moabites. This torrent had its ſource in the mountains, E. of the country of Moab, and proceeding from the E. to the W. diſcharged itſelf into the Dead ſea. The Iſraelites paſſed it 38 years before their departure from Kadeſh-Barnea. Numb. xxi. 12. Deut. ii. 13, 14.

ZAREPHATH. See Sarepta.

ZARESH-SHEKER, or Sarat-Afer, a city of Reuben, beyond Jordan. Joſh. xiii. 19.

ZARETHÆ, or Zaretæ, a people compriſed under the name of Scythians, on this ſide of the Imaus, ſouth of mounts Maſſæi and Alani. Ptol.

ZAREX, a port of Laconia, on the Argolic gulf, S. of Cyphanta. Near this port was a temple of Apollo, with a ſtatue of this god, holding in his hand a lyre. To the ſouth, and parallel to the coaſt, was a mountain called Zarex.

ZARFA, in *Botany*, a name given by Leo Africanus, and others, to the *lotus*, or nettle-tree.

ZARGIDAVA, in *Ancient Geography*, a town ſituated on the bank of the river Hieraſus, in the interior of Lower Mœſia, a little above Tamaſiava.

ZARIASPA, or Zariaspe, a town of Aſia, in Bactriana, watered by a river of the ſame name, which diſcharged itſelf into the Oxus. Strabo. It was alſo called Bactra. Steph. Byz.

ZARIFU, a word by which ſome of the chemical writers have expreſſed tin.

ZARIK, in *Geography*, a town of European Turkey, in the Morea; 22 miles E. of Miſitra.

ZARIMA, a town of South America, in the province of Quito; 220 miles S. of Quito. S. lat. 3° 36′. W. long. 79° 36′.

ZARJON, a town of South America, in the government of Buenos Ayres; 300 miles N.N.W. of Buenos Ayres.

ZARLINO, Giuseppe *da Chioggia*, maeſtro di capella of St. Mark's church at Venice, and the moſt general, voluminous, and celebrated theoriſt and writer on muſic in the Italian language during the 16th century, was born in 1540, and author of the following muſical treatiſes, which, though ſeparately printed, and at different periods, are generally bound up together in one thick folio volume:—"Inſtitutioni Harmoniche," Venice, 1558, 1562, 1573, and 1589; "Dimoſtrationi Harmon." Ven. 1571, and 1589; and "Sopplimenti Muſicali," Ven. 1588. We diſcover by theſe dates, that Zarlino firſt appeared as an author at the age of 18; and from that period till he had arrived at 49, he was continually reviſing and augmenting his works.

The muſical ſcience of Zarlino, who died in 1599, may be traced in a right line from the Netherlands: as his maſter Willaert, the founder of the Venetian ſchool, was a diſciple of John Mouton, the ſcholar of the great Joſquin.

A commentary upon the voluminous writings of this author would occupy too large a portion of our work; and to refer the reader to the analyſis of his ſeveral treatiſes by Artuſi would be doing him little ſervice, as the writings of Artuſi would be difficult to find. There are few muſical authors whom we have more frequently conſulted than Zarlino, having been encouraged by his great reputation, and the extent of his plan, to hope for ſatisfaction from his writings concerning many difficulties in the muſic of the early contrapuntiſts; but we muſt own, that we have been more frequently diſcouraged from the purſuit by his prolixity, than enlightened by his ſcience: the moſt trivial information is involved in ſuch a crowd of words, and the ſuſpenſe which it occaſions is ſo great, that patience and curioſity muſt be invincible indeed to ſupport a muſical inquirer through a regular peruſal of all his works.

He begins his Inſtitutes with a panegyric upon muſic, in the uſual ſtrain; then we have its diviſion into mundane and humane, faithfully drawn from Boethius; after this, there is a great waſte of words, and parade of ſcience, in attempting to explain the ſeveral ratios of greater and leſs inequality, proportion, and proportionality, &c. where, in his commenting on Boethius, we have diviſions of muſical intervals that are impracticable, or at leaſt inadmiſſible, in modern harmony.

In his account of the ancient ſyſtem, he diſcovers much reading; and that is what he chiefly wiſhes the reader ſhould know.

In deſcribing the diatonic genus, in which the tetrachord is divided into tone major, tone minor, and major ſemitone: $\frac{9}{8}$, $\frac{10}{9}$, and $\frac{16}{15}$, for which diviſion, commonly called the ſyntonous, or intenſe of Ptolemy, he conſtantly contends, we have the ſubſtance of his diſpute with Vincenzio Galilei, which will be mentioned hereafter. The ſecond part of his Inſtitutes is chiefly employed in meaſuring and aſcertaining intervals by means of the *monochord*, and an inſtrument called the *meſolabe*, which is ſaid to have been invented either by Archytas of Tarentum, or Eraſtohenes, for the purpoſe of *halving* an interval. Whether the practical muſicians of antiquity applied theſe calculations or imaginary diviſions to their flutes and lyres, we know not; but of this we are moſt certain, that the greateſt performers of modern times are Ariſtoxenians, and make the *ear* the only inſtrument of calculation; which, by means of harmony, and the conſtant opportunities of compariſon which the baſe or other accompaniment affords them, during performance, is rendered a much more truſty guide than it could be in playing a ſingle part. It ſeems, however, as if the ancient inſtruments, upon which all the tones are *fixed*, had more need of the aſſiſtance of calculation and mathematical exactneſs in regulating their intervals than thoſe of the violin-tribe at preſent; which, except in the open ſtrings, which often lead the performer to erroneous intonation, depend on the ſtrength and dexterity of the muſician's hand, and accuracy of his ear, *during performance*. See an ingenious and uſeful work, called "Eſſay upon Tune," publiſhed at Edinburgh, 1781; where the imperfections in the ſcales of modern inſtruments are clearly ſhewn, and remedies for correcting them preſcribed.

The elements of counterpoint, and fundamental rules of compoſition, which chiefly concern the practical muſician, are given in the third part of the Inſtitutes; and theſe are more ample, and illuſtrated with more examples, than in any preceding writer; particularly the laws of canon and fugue, for which no inſtructions have been given by Franchinus, though they were in ſuch high favour during his time. P. Aaron and Vicentino have indeed ſtarted the ſubject, but the purſuit of it was left to Zarlino.

In the fourth part of the Inſtitutes we have a ſhort hiſtorical account of the inventors of the ſeveral eccleſiaſtical modes: it is, indeed, a mere ſkeleton of aſſertions or conjectures without proof, more derived from traditional than written evidence. He here likewiſe gives inſtructions for compoſing in all theſe modes, in which he religiouſly keeps within their legal limits, and ſubmits to all the reſtraints which antiquity had preſcribed.

Padre Martini, ſaggio di contrappunto, in recommending the ſtudy and imitation of ancient maſters, has well deſcribed the difficulties they had to encounter; where, after confronting the eccleſiaſtical ſcales with the ſecular, we have the following paſſage: "From an attentive and comparative view of theſe ſcales, any one deſirous of learning the art of counterpoint for the ſervice of the church, will ſee what diligence and efforts were neceſſary to unite the different qualities of canto-fermo and canto-figurato; and by carefully examining the examples given of both, will diſcover what artifices were uſed by ancient maſters to avoid ſuch ſounds as differed from the canto-fermo, and with what parſimony they admitted ſuch accidents as canto-figurato requires, particularly in the third and fourth tones; where, inſtead of modulating into B *mi*, the 5th of the mode or key, as is conſtantly practiſed at preſent, they have paſſed to the key of A in the fourth tone, and C in the third, by which means they have been able, dexterouſly, to unite the different qualities of canto-fermo with thoſe of canto-figurato."

He gives excellent rules for compoſing motets and madrigals; but it is remarkable, that he adviſes the compoſer to make the *tenor* proceed regularly through the ſounds of the mode he ſhall chooſe; and above all, that this part be ſo much the more ſmooth, regular, and beautiful, as the reſt are to be built upon it; whence, ſays he, its ſounds may be called the nerves and ligaments of all the other parts: by which it appears that the cantilena, or principal melody, was not given, as it is by modern compoſers, to the *ſoprano*, or *higheſt* part; that caſtrati were not ſo common as at preſent; and that the tenor being the kind of voice moſt eaſily found, and more generally good than that of any other pitch, was judiciouſly honoured with the principal melody.

Zarlino ſays, that ſo great was the rage for multiplying parts in muſical compoſitions, that ſome maſters, not content with three or four, which ſufficed to their predeceſſors, had increaſed them to fifty; from which, he truly obſerves, nothing but noiſe and confuſion could ariſe. However, in another part of his book, he tells us, that Adriano Willaert had invented maſſes *à Due Cori, over a tre*, or, as ſome call them, *à Cori Spezzati*, which had an admirable effect. We know not how Okenheim diſpoſed his thirty-ſix parts in the motet already mentioned; but they would have furniſhed nine choirs of four voices each. In the large churches of Italy, where the performers are divided into two bands, placed in oppoſite galleries, all the imitations and ſolo parts are diſtinctly heard, and when united in at leaſt eight *real* parts, completely fill the ears of the audience with all the charms of congregated ſound.

ZARMISOGETUSA REGIA, in *Ancient Geography*, a capital town of Dacia, upon the river Sargetia. When this city became a Roman colony, it joined to its ancient name "Colonia Ulpia Trajana," or that of "Auguſta Dacica."

ZARN, in *Geography*, a town of the duchy of Berg; 4 miles E. of Duiſburg.

ZARNAB, in the *Materia Medica*, a term uſed by Avicenna and Serapio to expreſs the carpeſia of the ancient Greeks.

ZARNACH, the ſame as the word *zarnich*, the name of the orpiment of the Arabians.

It was not confined, however, to this ſenſe alone, but was uſed as a name for other things uſed in painting, and particularly for the *lapis armenus*. However, Dioſcorides and Theophraſtus call the *lapis armenus* by the name of *armenion*, and the *zarnach* by that of *arrenecon*, that is, orpiment.

ZARNAK, in *Geography*, a town of Turkeſtan, on the Sirr; 100 miles W. of Toncat.

ZARNATA, a town of European Turkey, in the Morea; 16 miles S.W. of Miſitra.

ZARNAW, a town of Poland, in the palatinate of Sandomirz; 32 miles N. of Sandomirz.

ZARNICH, in *Natural Hiſtory*, the name of a genus of foſſils, the characters of which are theſe: They are inflammable ſubſtances, not compoſed of plates or flakes, but of a plain, ſimple, and uniform ſtructure, not flexile nor elaſtic, ſoluble in oil, and burning with a whitiſh flame, and noxious ſmell, like garlic.

That theſe foſſils are really ſulphuretted arſenics is evident from ſundry experiments. When ſet on fire, the arſenical as well as the ſulphureous ſmell is plainly diſtinguiſhable. If triturated with quickſilver, and expoſed to a ſuitable heat, the ſulphur is detained by the mercury, and a pure white arſenic ſublimes. A mixture of fixed alkaline ſalt, with any vegetable or animal ſubſtance, as the compound called by the aſſayers black flux, in like manner keeps down the ſulphur, and at the ſame time revives the arſenic into its reguline or metallic form. Theſe native minerals have been uſed as medicines in the eaſtern countries, and by ſome imprudently recommended in our own. Lewis.

Of this genus there are four known ſpecies: a red one, which is the true Sandarach; a yellow one, found in the mines of Germany, and brought to us under the name of orpiment; a greeniſh one, common alſo in the mines of Germany, and ſold in our colour-ſhops under the name of a coarſe orpiment; it is alſo found in the tin-mines of Cornwall; and a whitiſh one, which has the property of turning black ink into a florid red, common in the mines of Germany, but of little value. Hill.

ZARNOWITZ, in *Geography*, a town of Pruſſian Pomerelia, on a bay of the Baltic; 40 miles N.N.W. of Dantzic.

ZARNOWNO, a town of Auſtrian Poland, in the kingdom of Galicia, on the Dnieſter; 15 miles N.W. of Halicz.

ZAROW. See Soraw.

ZARP, a river of Aſia, which runs into the Tigris, 40 miles below Moſul.

ZARPANA, or Rota, or St. Ann, one of the Ladrone iſlands, about 40 miles in circumference, with a port on the S. coaſt, and another on the N.W. coaſt; 21 miles from Guam.

ZARUANA, in *Ancient Geography*, a town of Aſia, in Greater Armenia. Ptolemy.

ZARUBINA, in *Geography*, a town of Ruſſia, in the government of Irkutſk; 60 miles N.W. of Ilimſk.

ZARUMA, a town of South America, in the audience of Quito.

ZARUTHAN, in *Surgery*, a word uſed by ſome to expreſs a hard and unequal tumour of the breaſt, attended with a burning heat, and a violent but not continual pain.

This is by ſome referred to the cancer, and accounted a ſpecies of that terrible diſorder: its cauſe is ſuppoſed to be a ſharp ichorous humour in the blood.

ZARZA, in *Geography*, a town of Spain, in Eſtremadura; 22 miles S.W. of Plaſencia.

ZARZEDO, a town of Portugal, in Eſtremadura; 20 miles N.E. of Caſtel Branco.

ZARZINA. See Sarsina.

ZASAWA, a town of Bohemia, in the circle of Kaurzim; 8 miles S.W. of Kaurzim.

ZASHIVERSK, a town of Ruſſia, in the government of Irkutſk; 1320 miles N.N.E. of Irkutſk. N. lat. 67° 25′. E. long. 138° 14′.

ZASLAW, a town of Poland, in Volhynia; 24 miles N. of Conſtantinow.

ZASMUKI, a town of Bohemia, in the circle of Kaurzim; 4 miles S.S.E. of Kaurzim.

ZASNARAS, a town of Tranſylvania; 16 miles S.W. of Weiſſemburg.

ZASPEL, in *Commerce*, a meaſure for linen and yarn at Leipſic; where a piece of woollen or cotton yarn conſiſts of 4 ſtrehns, or 12 zaſpels, and a piece of linen yarn conſiſts of 6 ſtrehns, or 12 zaſpels. A zaſpel contains 20 gebinds, 400 fadens, or 1600 ells.

ZATETZ, in *Geography*. See Saatz.

ZATHAG, or Zatag, a town of Arabia, in the province of Hedsjas; 20 miles S.E. of Karac.

ZATHUA, in *Ancient Geography*, a town of Aſia, in Greater Armenia. Ptol.

ZATIBA, in *Geography*, a town of South America, in New Grenada; 36 miles N.N.E. of Tunja.

ZATMAR, a town of Hungary. This is properly two towns, namely, Zatmar, on an iſland in the river Samos; and Nemethi, oppoſite to it, on an arm of the river: but in the year 1715, both were erected into one town; the firſt of which is fortified. The reformed held a national ſynod here in 1646; 56 miles N.N.W. of Coloſvar. N. lat. 47° 47′. E. long. 22° 24′.

ZATOR, a ſtrong town of Auſtrian Poland, in Galicia; 22 miles W.S.W. of Cracow.

ZATSCHIT Kabanovskaia, a fort of Ruſſia, in the government of Kolivan; 20 miles S. of Biiſk.

ZATUENEBO, a town of the iſland of Cuba; 65 miles S.S.E. of Havannah.

ZATURCE, a town of Poland, in Volhynia; 20 miles W.S.W. of Lucko.

ZAUALA, a town of Mexico, in the province of Mechoacan; 110 miles N. of Mechoacan.

ZAUARA, a river of Africa, which runs into the Indian ſea, S. lat. 24° 15′.

ZAVARA. See Asinara.

ZAUDNITZ, a town of Sileſia, in the principality of Troppau; 9 miles N.N.E. of Troppau.

ZAUECES, in *Ancient Geography*, a people of Africa, in the weſtern part of Libya, and in the vicinity of the Libyans Mexycans. According to Herodotus, when theſe people went to war, their wives conducted their cars or chariots.

ZAUED ul Bahri, in *Geography*, a town of Egypt, on the left bank of the Nile; 8 miles S. of Shabur.

ZAVEL, a river of Perſia, which paſſes through Choraſan, or Khoraſſan, and loſes itſelf in lake Zare, or Zarreh.

ZAVELSTEIN, a town of Wurtemberg, near which is a medicinal ſpring; 2 miles N. of Bulach.

ZAVIDEI, an iſland of Ruſſia, at the entrance of the gulf of Tchaunſkaia, in the Frozen ſea; about 60 miles in circumference. N. lat. 71° 50′ to 72° 20′. E. long. 166° 14′.

ZAVODE BIRUILEVA, a town of Ruſſia, in the government of Irkutſk, on the Argunia; 121 miles N.E. of Stretenſk.

ZAVODE *Dutcharſkoi*, a town of Ruſſia, in the government of Irkutſk; 88 miles S.E. of Stretenſk.

ZAVODE *Gazimurſkoi*, a town of Ruſſia, in the government of Irkutſk; 44 miles S.S.E. of Stretenſk.

ZAVODE *Irbinſkoi*, a town of Ruſſia, in the government of Kolivan; 40 miles E. of Abakanſk.

ZAVODE *Kutamarſkoi*, a town of Ruſſia; 100 miles E.S.E. of Nertchinſk.

ZAVODE *Lanina*, a town of Ruſſia, in the government of Irkutſk, on the W. coaſt of the Baikal lake; 80 miles N.E. of Irkutſk.

ZAVODE *Midnoi Kuruzulaevſkoi*, a town of Ruſſia, in the government of Irkutſk; 32 miles S. of Nertchinſk.

ZAVODE *Niznei Suzuiſkoi*, a town of Ruſſia, in the government of Kolivan; 32 miles S.E. of Kolivan.

ZAVODE *Novopavlovſkoi*, a town of Ruſſia, in the government of Kolivan; 80 miles S.S.E. of Kolivan.

ZAVODE *Popovo*, a town of Ruſſia, in the government of Kolivan. N. lat. 56° 31′. E. long. 95° 32′.

ZAVODE *Sibiria Kova*, a town of Ruſſia, on the Argunia; 100 miles E.S.E. of Stretenſk.

ZAVODE *Tiſova*, a town of Ruſſia, in the government of Irkutſk, on the river Poim; 124 miles N.N.W. of Niznei Udinſk.

ZAVODE *Verchoturova*, a town of Ruſſia, in the government of Irkutſk, on the Argunia; 132 miles N.E. of Stretenſk.

ZAVOLOCZE, a town of Ruſſia, in the government of Polotſk; 50 miles N.E. of Polotſk.

ZAURGATCH, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 80 miles E.S.E. of Tobolſk.

ZAUROS, in *Ichthyology*, a name given by the ancient Greeks to that fiſh which we call ſaurus and lacertus, and which is called at Rome the tarantula.

It is diſtinguiſhed by Artedi by the name of the oſmerus, with eleven rays in the pinna ani; and in the Linnæan ſyſtem it is the ſalmo ſaurus, with ten rays in the pinna ani.

ZAUZAN, in *Geography*, a town of Perſia, in the province of Choraſan; 70 miles N.W. of Herat.

ZAWAJA, a lake of Abyſſinia, in the ſouthern extremity of the kingdom, which is the chief ſource of the river Hawaſh.

ZAWEH, a diſtrict or province of Perſia, bounded on the N. by Karaſm, on the E. by Choraſan, on the S. by Mazanderan, and on the W. by the Caſpian ſea.—Alſo, a town of Perſia, and capital of a diſtrict, on the river Tedjen, about 24 miles from the Caſpian ſea; 81 miles N. of Meſchid.

ZAWICHOST, a town of Poland, in the palatinate of Sandomirz; 8 miles N. of Sandomirz.

ZAWIEH, a town of Aſiatic Turkey, in the government of Diarbekir, on the Euphrates; 24 miles E. of Anah.

ZAWILA. See ZUEELA.

ZAWOLOW, a town of Auſtrian Poland, in Galicia; 20 miles N.E. of Halicz.

ZAXO SULTAN, a town of Aſiatic Turkey, in the government of Diarbekir; 5 miles S. of Rahabeh.

ZAYRE. See ZAIRE.

ZAYTE, a river on the W. ſide of the iſland of Celebes, which runs into the ſea, N. lat. 30′. E. long. 120° 15′.

ZAZIMOWICZE, a town of Lithuania, in the palatinate of Brzeſk; 32 miles N.E. of Brzeſk.

ZAZIVNOI, a fort of Ruſſia, in the government of Upha, on the Ural; 68 miles W. of Orenburg.

ZBANITZ, a town of Bohemia, in the circle of Chrudim; 5 miles E. of Hohenmant.

ZBARAS, a town of Poland, in the palatinate of Braclaw; 36 miles N. of Braclaw.

ZBIROW, a town of Bohemia, in the circle of Beraun; 12 miles S.W. of Beraun.

ZBORRI, a town of Hungary; 16 miles N.N.E. of Szeben.

ZBORROW, a town of Auſtrian Poland, in the new kingdom of Galicia, near which an obſtinate battle was fought between the Poles on one ſide, commanded by their king John Caſimir, and the combined army of the Coſſacks and Tartars on the other. In this engagement the latter were defeated, and left 10,000 men dead on the ſpot; but the day after, a treaty of peace was concluded on terms diſadvantageous to Poland; 63 miles E. of Lemberg.

ZBRASLAWIZ, a town of Bohemia, in the circle of Czaſlau; 10 miles S.W. of Czaſlau.

ZDANICHA, a river of Ruſſia, which runs into the Chatanga, N. lat. 70° 40′. E. long. 98° 14′.

ZDAUNSKY, a town of Moravia, in the circle of Hradiſch; 15 miles N. of Hradiſch.

ZDIAR, a town of Bohemia, in the circle of Prachatitz; 8 miles N.W. of Horaſdiowiz.

ZDISLAWITZ, a town of Bohemia, in the circle of Kaurzim; 10 miles S.E. of Beneſchow.

ZDZIECOL, a town of Lithuania, in the palatinate of Novogrodeck; 12 miles W. of Novogrodeck.

ZEA, in *Botany*, a name borrowed from the ancient Greeks, whoſe ζεια, however, appears to have been ſome kind of *Triticum* or *Hordeum*, agreeing with our preſent American genus, the Maize, only as being a grain cultivated for the food of man.—Linn. Gen. 480. Schreb. 621. Willd. Sp. Pl. v. 4. 200. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 235. Purſh 46. Juſſ. 33. Lamarck Illuſtr. t. 749. (Mays; Tourn. t. 303—305. Gærtn. t. 1.)—Claſs and order, *Monoecia Triandria*. Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. corrected by Schreber. Male flowers diſpoſed in diſtinct lax ſpikes. *Cal.* Glume two-flowered, of two ovate-oblong, ſwelling, pointed, beardleſs valves, the outermoſt rather the longeſt. *Cor.* Glume of two oblong beardleſs valves, about the length of the calyx; the outermoſt ſwelling, obtuſe; the innermoſt terminating in two teeth. Nectary of two very ſhort fleſhy ſcales, dilated upwards, abrupt, furrowed at the ſummit. *Stam.* Filaments three, capillary; anthers ſomewhat priſmatic, cloven, burſting at the top.

Female flowers in a very denſe ſpike, below the male, on the ſame plant, concealed by the leaves. *Cor.* Glume ſingle-flowered, of two permanent, roundiſh, thick valves, membranous and fringed at the margin; the outer one thickeſt. *Cor.* Glume of four unequal, membranous, tranſparent, broad, ſhort, permanent valves. *Piſt.* Germen very ſmall; ſtyle thread-ſhaped, extremely long, pendulous; ſtigma ſimple, downy towards the ſummit. *Peric.* none. *Common Receptacle* very large and long, with five or more angles, and as many rows of cells, tranſverſely excavated, in each of which are imbedded the fruits of two flowers, ſurrounded with their own calyx and corolla. *Seed* ſolitary, roundiſh, ſtalked, longer than the glumes; angular and compreſſed at the baſe.

Obſ. Two out of the four valves of the female corolla appear to belong to an abortive flower. *Schreber.*

Eſſ. Ch. Male flowers in diſtinct ſpikes. Calyx a two-flowered beardleſs glume. Corolla beardleſs.

Female, Calyx a glume of two valves. Corolla of four valves. Style one, thread-ſhaped, pendulous. Seeds ſolitary, imbedded in an oblong receptacle.

1. Z. *mays*. Common Maize, or Indian Corn. Linn. Sp. Pl. 1378. Willd. n. 1. Ait. n. 1. Purſh n. 1. (Frumentum indicum; Camer. Epit. 186. F. aſiaticum, turcicum et indicum; Ger. Em. 81, 82. Moriſ. ſect. 8. t. 13. f. 1, 2, 3.)—Leaves entire.—Native of America. Cultivated there, as well as in the ſouthern countries of Europe. One of the largeſt of the family of corn or graſſes. *Root* annual, of innumerable fibres. *Stem* erect, ſomewhat branched, round, ſtout, jointed, leafy, from five to ten feet high. *Leaves* ſheathing, lanceolate, concave, acute, ribbed, two or three feet long, and three or four inches broad. *Male flowers* in numerous, aggregate, terminal *ſpikes*, each three or four inches long, greyiſh, downy, with purple *anthers*. *Female ones* below, in a generally ſimple, cylindrical ſpike, covered by the large ſheaths of the upper leaves. *Styles* ſix or eight inches long, very numerous, of a ſhining yellowiſh or reddiſh hue, hanging down like a long ſilken taſſel. *Seeds* white, yellow, red, or purpliſh, forming a heavy, teſſellated, cone-like, naked *ſpike*, from ſix to ten inches long. There are innumerable varieties, in the ſize, figure, colour, and qualities of the grain, which, though valuable for many purpoſes, and yielding an abundant crop, is far inferior to wheat as a bread corn. It requires a richly manured ſoil. Mr. Purſh mentions a variety, brought lately by governor Lewis from the Mandan nation, on the Miſſouri, which promiſes to be particularly valuable, as ripening earlier than any other ſort, and yielding an excellent produce. See MAIZE.

2. Z. *Curagua*. Chili Maize. "Molina Chil. German edition, 107." Willd. n. 2.—Leaves ſerrated.—Native of Chili. Annual. Smaller in all its parts than the foregoing. *Molina*. Of the qualities or hiſtory of this ſpecies, we have no further account.

ZEA, in *Gardening*, contains a plant of the hardy herbaceous annual kind, of which the ſpecies cultivated is the maize, or Indian corn (Z. mays).

It has a large ſtrong, herbaceous ſtalk, which ſometimes riſes to the height of ten or twelve feet; and there are varieties; with yellowiſh-white ſeeds, with deep yellow ſeeds, and with purple-blue ſeeds. This plant is moſtly cultivated in the garden and pleaſure ground for the ſake of its ſingular tall growth.

Method of Culture.—Theſe plants may be raiſed by ſowing ſeed in the ſpring, as March or April, in a dry warm ſituation, where the plants are intended to remain, in patches of two or three ſeeds or more in each, about an inch and a half deep: when the plants are come up, they ſhould be thinned out to one or two of the ſtrongeſt. But to have the plants more forward, ſo as to produce ripe ſeed-ſpikes more effectually, ſome ſhould be ſown in a hot-bed at the ſame time, and when the plants are three or four inches high, be forwarded by pricking them out upon another hot-bed, either under a deep frame, or an awning of hoop arches, to be covered with mats occaſionally, allowing them plenty of free air; and when they have ſufficient growth, as in May, they may be tranſplanted, with balls of earth about their roots, into the full ground in the borders or ſhrubbery clumps, in warm ſunny ſituations, being well watered; and when the ſummer proves warm and dry, they often produce perfect heads, and the ſeeds ripen in a good manner.

As the plants moſtly run up in tall ſtalks, it is proper to ſupport each with a tall neat ſtake, eſpecially where much expoſed to wind and rain.

Theſe plants in the different varieties have a fine effect in the back parts of borders, clumps, and other places, in warm ſheltered ſituations.

It is obſerved by a late writer, that he has planted a ſmall quantity of this ſort of grain in his garden, and it turned out ſuperior to his expectations; and he is of opinion, that this crop may be raiſed to advantage in the field on ſome light ſoils, particularly the poor ſands of Norfolk and Suffolk, or on any hot burning lands; as the countries where it grows naturally are light hot ſoils. And he adds, that he prefers the drill method of culture for it in this country; as the ſmall hillocks in planting the ſeeds ſeparately make the land unſightly and improper for other crops. But to raiſe the greateſt produce in corn, the hills are, he conceives, the beſt way; however if the crop is intended chiefly for fodder, then drills are beſt. The ſeed is to be put about an inch deep in the ground. And that when the corn firſt appears above the ſurface, the hillocks or drills muſt be examined, to ſee whether it all comes up properly; and if it has not, there muſt be freſh ſeeds put into the vacant places to prevent a loſs in the crop. And as ſoon as the plants take root in the ground, the crop ſhould be examined again to ſee whether any have died away, or the birds have taken the ſeed. The plants muſt alſo be thinned to two on a hill, and good plants ſubſtituted for weak ones.

In the cultivation while growing in the hill-way, the hoe muſt be uſed at every operation to the plants, and earth be given to them, as the land cannot be made too light for this crop; but when in drills, the corn muſt be hoed in the ſame manner as garden peas.

He alſo further obſerves, that when the corn gets out of the milk, the blades below muſt be all pulled off while green: tie them up in ſmall bunches, about the ſize of a birch-broom, and hang them on the top of the ſtalks of the corn; for at the ſame time that the blades are pulled, the tops muſt be cut off, and ſet up in round bunches to dry, and tied round the topmoſt part to keep them from falling: when theſe are dry, they muſt be harveſted. The blades are generally ready in four or five days, but the tops take longer; when theſe blades and tops are properly harveſted, they are excellent food. And it is ſuggeſted, that as theſe proceſſes will be finiſhed about the end of Auguſt, the land might be ploughed and then ſown with rye. If ſeeds were required, he is of opinion that it would be very proper to ſow the ſeeds at that time on this poor hot land; as the warm ſeaſon would be over, and the ſeeds would have ſufficient time to take root before winter. If only rye was wanted, he would eat it with ſheep in the ſpring or during the winter. But the ſtalks muſt, he ſays, ſtand, for the corn to ripen after the rye is ſown; and the corn ought to hang on the ſtalk till it is hard. In America, it is often December before the white corn can be pulled, or September for the yellow corn: if it is pulled before it is hard, and the cob is perfectly dry, it will mould and ſpoil, and the corn will be apt to rot, therefore great care ſhould be taken not to pull it too ſoon.

This ſort of corn is, it is ſaid, given to horſes, cattle, and hogs, without ſhelling, and only huſked in the ear; but when given to fowls, or intended for ſale, it is rubbed off by burning a cob in the fire till hard, and then rubbing the corn with it. It is a ſort of grain which is ſometimes given to pigs, but more frequently when ground to fowls. Count Rumford has ſhewn in his Eſſay on Food, that this is perhaps the moſt nutritious grain, except wheat, either as human ſuſtenance, or as provender for brute animals. See Maize.

Zea, in *Geography*. See Zia.

ZEAGONG, a town of Birmah; 12 miles N.N.W. of Raynangong.

ZEAL, Zelus, Ζηλος, the exerciſe of a warm animated affection, or paſſion, for any thing.

Some will have jealous *zeal* to be properly a mixed or compound ſenſation, where one affection is raiſed or inflamed by another. On theſe principles, jealouſy may be defined an affection ariſing from love and indignation, which cannot bear a thing to be given to another, that a perſon deſires for himſelf, or one whom he loves and favours. Others make it conſiſt in an eager ſtudy, or deſire, to keep any thing inviolate; or a fervour of mind, ariſing from an indignation againſt thoſe who abuſe or do evil to a perſon beloved.

The Greek philoſophers make three ſpecies of *zeal*. The firſt, of *envy;* the ſecond, of *emulation*, or imitation; the third, of *piety*, or devotion; which laſt makes what the divines call *religious zeal*.

Joſephus ſpeaks much of a party, or faction, called the *Zealous*, or *Zealots*, which aroſe among the Jews during the war with Veſpaſian and Titus. Lib. xiv. cap. 6. Antiq. and lib. iv. cap. 12. de Bello Judaico.

ZEALAND, or Zeeland, or *Seeland*, (in Daniſh *Siæland*,) in *Geography*, the largeſt iſland belonging to the kingdom of Denmark, bounded on the north by the Scaggerac, on the eaſt by the Sound, on the ſouth by the Baltic, and on the weſt by the Great Belt; about 65 miles in length from north to ſouth, and where wideſt 60 from eaſt to weſt, though in ſome parts ſcarcely 30, and in no part above 20 miles from the ſea: reckoned about 700 miles in circumference. The coaſt is much interſected with large bays; and within the country are ſeveral lakes, which, as well as the rivers, abound in fiſh. The country is pleaſant; the ſoil is generally fertile, and produces corn, chiefly barley and oats, more than ſufficient for the inhabitants, with excellent paſtures; and in moſt parts is plenty of wood, except towards the centre of the iſland, where the inhabitants generally uſe turf for fuel. The fields are ſeparated by mud-walls; the cottages are of brick or white-waſhed: ſand-hills are ſometimes deſtructive on the coaſt; and the beſt protection from their ravages, ſays Catteau, is the elymus anemaria. Copenhagen is the capital. N. lat. 55° 2′ to 56° 6′. E. long. 10° 58′ to 12° 40′. See Denmark.

Zealand, *State of*, one of the former United Dutch States, and now part of the recently eſtabliſhed kingdom. It conſiſts of iſlands which are formed by thoſe branches and outlets of the Scheldt, called Zeeuwſche Stromen, or Sea Streams; on the north it is bounded by Holland, eaſtward by Brabant, ſouthward by Flanders, and weſtward by the North ſea: its name ſufficiently indicates its natural poſition and ſituation. The iſlands of Walcheren and Schouwen, on the weſtern coaſt, are defended againſt the violence of the ſea, by downs or ſand-hills, and on the other ſides, like the reſt of the iſlands of Zealand, by vaſt dykes, which, at the bottom, have a breadth of 25 German ells, and at the top are ſo wide, that two carriages may paſs abreaſt: the height is alſo proportioned to their thickneſs; notwithſtanding which, in high tides and ſtormy weather, the waves in many places force a paſſage, or even flow over them: the firſt formation of theſe dykes muſt have been attended with immenſe expence, the very repair and maintenance of them requiring large ſums. Emanuel van Meteren, in the ſixteenth book of his Commentaries, ſays, and confirms it by the atteſtations of the workmen employed in them, that the dykes in this province alone, if placed in one direction, would form a length of 40 miles, each mile to be reckoned at 1400 rods, and that the expence of one rod with another was a pound Flemiſh, or ſix Dutch guilders. Thus the charge of the outward dykes taken together amounts to 340,000*l*. ſterling. Though the inhabitants of the other provinces, and foreigners in general, complain of the air being heavy, diſagreeable, and unhealthy, yet no people look better, or enjoy a more confirmed ſtate of health, than the natives who are born and bred up in it. The ſoil too is very fruitful, and famed for its excellent wheat, as likewiſe for madder, the cultivation of which furniſhes out great employment for the inhabitants of Zealand: it abounds alſo in good fruits, and its rich paſtures are covered with flocks of fine ſheep. The waters around the iſlands ſupply them with plenty of fiſh, particularly with oyſters, lobſters, and muſcles, of an uncommon ſize and goodneſs. Zealand enjoys likewiſe an affluence of all kinds of proviſions, but fuel is very ſcarce there, eſpecially turf, which, being brought from other provinces, bears a high price; great quantities of Engliſh coals are uſed here. In the whole province are 121 towns and villages, ſome of which are very large. The inhabitants are reckoned the moſt wealthy in all the Netherlands, which is, in a great meaſure, owing to their traffic by ſea, and for this, indeed, they have every conveniency that can be deſired. (See Holland.) The right bank of the Scheldt, called the Eaſt Scheldt, divides this province into two quarters, *viz.* into that on the eaſt and that on the weſt of the ſaid river. The quarter on the Weſt Scheldt is compoſed of five iſlands, *viz.* Walcheren, South Beveland, North Beveland, Wolferſdyk, and St. Jooſtland. The quarter of the Eaſt Scheldt contains four iſlands, *viz.* Schouwen, Duiveland, Tholen, and St. Philip's Land.

Zealand, *New*, two iſlands in the South Pacific ocean, firſt diſcovered by Taſman, a Dutch navigator. In the year 1642, he traverſed the eaſtern coaſt from lat. 34° to 43°, and entered the ſtrait called Cook's Strait; he was attacked by the natives ſoon after he came to an anchor in the place, to which he gave the name of Murderer's Bay, and never went on ſhore: he gave the country the name of Staaten Land, in honour of the ſtates-general, and it is now generally diſtinguiſhed in our maps and charts by the name of New Zealand. As the whole of this country, except that part of the coaſt which was ſeen by Taſman from on board his ſhip, had from his time to the voyage of the Endeavour, in the year 1770, remained altogether unknown, it was by many ſuppoſed to be part of a ſouthern continent. It is, however, now known to conſiſt of two large iſlands, divided from each other by a ſtrait or paſſage, which is about four or five leagues broad. The northernmoſt of theſe iſlands is called by the natives Eaheinomauwe; and the ſouthernmoſt Tovy, or Tavai Poenammoo. The latter is the name of a lake, and ſignifies the water of green talc. This lake is ſituated in the northern part of the iſland, and the country adjoining it only is known to the natives under this name. From my obſervation, ſays captain Cook, and from other information, it appears to me, that the New Zealanders muſt live under perpetual apprehenſions of being deſtroyed by each other; there being few of their tribes that have not, as they think, ſuſtained wrongs from ſome other tribe, which they are continually upon the watch to revenge; and perhaps the deſire of a good meal may be no ſmall incitement. They will even preſerve their enmity from father to ſon, and the ſon never loſes ſight of an injury done to his father. The method of executing their horrible deſigns is by ſtealing upon their enemies in the night; and if they find them unguarded, (which however is but ſeldom the caſe,) they kill every one indiſcriminately, not even ſparing the women and children: the dead bodies they either devour on the ſpot, or carry them home for that purpoſe. If they are diſcovered before they can execute their bloody purpoſe, they generally ſteal off; and ſometimes are purſued and attacked by the other party in their turn. They never give quarter, or take priſoners. This perpetual ſtate of warfare renders them ſo circumſpect, that they are never off their guard either by night or day. According to their ſyſtem of belief, the ſoul of the man whoſe fleſh is devoured by the enemy is doomed to perpetual fire; while the ſoul of him whoſe body has been reſcued, as well as thoſe who die a natural death, aſcend to the habitation of the gods. They do not eat the bodies of their friends who have been reſcued. Their common method of diſpoſing of the dead is by burying in the earth; but if they have more of their ſlaughtered enemies than they can eat, they throw them into the ſea. They have no ſuch things as morais, or other places of public worſhip; nor do they ever aſſemble together with this view. But they have prieſts who alone addreſs the gods in prayers for the proſperity of their temporal affairs. Whatever the principles of their religion may be, they are ſtrongly inculcated from their infancy: of this I had a remarkable inſtance in the youth who was firſt deſtined to accompany Taweiharooa. He refrained from eating the greateſt part of the day on account of his hair being cut; though every method was tried to induce him to break his reſolution; and he was tempted with the offer of ſuch victuals as he was known to like beſt. He ſaid, that if he ate any thing that day, the Eatooa would kill him: however, towards evening the cravings of nature got the better of the precepts of religion, and he ate, though but ſparingly. Notwithſtanding the divided and hoſtile ſtate in which the New Zealanders live, travelling ſtrangers who come with no ill deſign are well received, and entertained during their ſtay; which, however, it is expected will be no longer than is requiſite to tranſact the buſineſs that they come upon. Polygamy is allowed amongſt the people: the women are marriageable at a very early age; and one who is unmarried is but in a forlorn ſtate: ſhe can with difficulty get a ſubſiſtence, and is in a great meaſure without a protector, though in continual want of a powerful one. The New Zealanders ſeem to be perfectly ſatisfied with the little knowledge they are maſters of without attempting in the leaſt to improve it; nor are they remarkably curious either in their obſervations or inquiries. Tovy Poenammoo is for the moſt part a mountainous, and to all appearances a barren country, and thinly peopled. Eaheinomauwe has a much better appearance; it is indeed not only hilly, but mountainous, yet even the hills and mountains are covered with wood, and every valley has a rivulet of water; the ſoil in theſe valleys and in the plains, of which there are many that are not overgrown with wood, is in general light, but fertile, and fit for every kind of European grain, plants, and fruit. From the vegetables that were found here, there is reaſon to conclude the winters are milder than in England, and the ſummer not hotter, though it was more equally warm: dogs and rats are the only quadrupeds that were ſeen, and of the latter only a few. The inhabitants breed the dogs for the ſole purpoſe of eating them. There are ſeals and whales on the coaſt, and a ſea-lion was once ſeen. The birds are, hawks, owls, quails; and there are ſong-birds, whoſe note is wonderfully melodious. There are ducks and ſhags of ſeveral ſorts, not unlike thoſe of Europe; and the gannet, which is exactly the ſame. The ſea-coaſt is viſited by albatroſſes, ſheer-waters, pintados, and penguins. The inſects are, fleſh-flies, beetles, butter-flies, ſand-flies, and muſquitoes; and the neighbouring ſea abounds with fiſh, which are equally delicious and wholeſome food. Captain Cook ſeldom came to anchor but they caught enough, with hook and line only, to ſupply the whole ſhip's crew; and when they fiſhed with nets, every meſs in the ſhip, except thoſe who were too indolent, ſalted as much as ſupplied them when at ſea ſome time after. The fiſh was not leſs various in kind than plentiful in quantity; there were many ſorts they had never before ſeen, but the ſailors readily gave names to all of them. The higheſt luxury which the ſea afforded was the lobſter, or ſea cray-fiſh. Here were alſo ſeveral ſpecies of the ſkate, or ſtingray: ſoles, flounders, and ſhell-fiſh, were abundant. This country abounds with foreſts filled with very large, ſtraight, and clean timber. There is one tree about the ſize of an oak, which was diſtinguiſhed by a ſcarlet flower, that appeared to be compoſed of ſeveral fibres; the wood of which was hard and heavy, excellently adapted to the uſe of the mill-wright: and another which grows in ſwampy ground, very ſtraight and tall, bearing ſmall bunches of berries, and a leaf reſembling that of a yew-tree; the wood of which is very tough, and thick enough to make maſts of any ſize: about 400 ſpecies of plants were found, all of which are unknown in England, except garden night-ſhade, ſow-thiſtle, two or three kinds of fern, and one or two ſorts of graſs. They found wild celery, and a kind of creſſes, in great abundance on the ſea ſhore, and of eatable plants raiſed by cultivation, only cocoas, yams, and ſweet potatoes. There are plantations of many acres of theſe yams and potatoes. The inhabitants likewiſe cultivate the ground; and the Chineſe paper mulberry-tree is to be found, but in no abundance. There is only one ſhrub or tree in this country which produces fruit, and that is a kind of a berry almoſt taſteleſs; but they have a plant which anſwers all the uſes of hemp and flax. There are two kinds of this plant, the leaves of one of which are yellow, and the other deep-red, and both of them reſemble the leaves of flags; of theſe leaves they make lines and cordage, and much ſtronger than any thing of the kind in Europe. Theſe leaves they likewiſe ſplit into breadths, and tying the ſlips together form their fiſhing-nets. Their common apparel by a ſimple proceſs is made from leaves, and their finer by another preparation is made from the fibres. This plant is found both on high and low ground, in dry mould, and deep bogs; but as it grows largeſt in the latter, that ſeems to be its proper ſoil.

The men of this country are as large as the largeſt Europeans. Their complexion is brown, but little more ſo than that of a Spaniard. They are full of fleſh, but not lazy or luxurious, and are ſtout and well ſhaped. The women poſſeſs not that delicacy which diſtinguiſhes the European ladies, but their voice is ſingularly ſoft, which, as the dreſs of both ſexes is ſimilar, chiefly diſtinguiſhes them from the men. The men are active in a high degree; their hair is black, and teeth are white and even. The features in both ſexes are regular; they enjoy perfect health, and live to a very advanced age; they are of the gentleſt diſpoſitions, and treat each other with the utmoſt kindneſs, but they are perpetually at war, every little diſtrict being at enmity with all the reſt, and towards their enemies they are implacable, never giving quarter. They have neither black cattle, ſheep, hogs, nor goats; ſo that their chief food being fiſh, and that not at all times to be obtained, they are in danger of dying through hunger: they have a few, and but a very few dogs; and when no fiſh is to be got they have only vegetables ſuch as fern-root, clams, yams, and potatoes to feed on; and if by any accident theſe fail them, their ſituation muſt be deplorable. This will account for their ſhocking cuſtom of eating the bodies which are ſlain in battle, for he who fights through mere hunger will not ſcruple to eat the adverſary he has killed. The inhabitants of New Zealand are modeſt and reſerved in their behaviour and converſation. The women, indeed, were not dead to the ſofter impreſſions; but their mode of conſent was, in their idea, as harmleſs as the conſent to marriage with us, and equally binding for the ſtipulated time. If any of the Engliſh addreſſed one of their women, he was informed, that the conſent of her friends muſt be obtained, which uſually followed on his making a preſent. This done, he was obliged to treat his temporary wife at leaſt as delicately as we do in England. They anoint their hair with oil, melted from the fat of fiſh or birds. The poorer people uſe that which is rancid, ſo that their ſmell is very diſagreeable: but thoſe of ſuperior rank make uſe of that which is freſh. They wear combs, both of bone and wood, which are conſidered as an ornament when ſtuck upright in the hair. The men tie their hair in a bunch on the crown of their head, and adorn it with the feathers of birds, which they likewiſe ſometimes place on each ſide of the temples. They commonly wear ſhort beards; the hair of the women ſometimes flows over the ſhoulders, and ſometimes is cut ſhort. Both ſexes, but the men more than the women, mark their bodies with black ſtains called *Amoco;* in general the women ſtain only the lips, but ſometimes mark other parts with black patches; the men, on the contrary, put on additional marks from year to year, ſo that thoſe who are very ancient are almoſt covered. Excluſive of the Amoco, they mark themſelves with furrows: theſe furrows make a hideous appearance, the edges being indented, and the whole quite black. The ornaments of the face are drawn in the ſpiral form, with equal elegance and correctneſs, both cheeks being marked exactly alike, while the painting on their bodies reſembles fillagree work, and the foliage in old chaſed ornaments, but no two faces or bodies are painted exactly after the ſame model. Theſe Indians likewiſe paint their bodies, by rubbing them with red ochre, either dry, or mixed with oil. Their dreſs is formed of the leaves of the flag, ſplit into ſlips, which are interwoven, and made into a kind of matting, the ends which are ſeven or eight inches in length hanging out on the upper ſide. One piece of this matting, being tied over the ſhoulders, reaches to the knees; the other piece, being wrapped round the waiſt, falls almoſt to the ground. Theſe two pieces are faſtened to a ſtring, which, by means of a bodkin of bone, is paſſed through, and tacks them together. The men wear the lower garment only at particular times. What they conſider as the moſt ornamental part of their dreſs is the fur of dogs, which they cut into ſtripes, and ſew on different parts of their apparel. As dogs are not in plenty, they diſpoſe theſe ſtripes with great economy. They have a few dreſſes ornamented with feathers; and one man was ſeen covered wholly with the red feathers of the parrot. The women never tie their hair on the top of their head, nor adorn it with feathers; and are leſs anxious about dreſs than the men. Their lower garment is bound tight round them, except when they go a-fiſhing, and then they are careful that the men ſhall not ſee them. The ears of both ſexes are bored, and the holes ſtretched ſo as to admit a man's finger. The ornaments of their ears are, feathers, cloth, bones, and ſometimes bits of wood: a great many of them uſe nails, which were given them by the Engliſh for this purpoſe; and the women ſometimes adorn their ears with the white down of the albatroſs, which they ſpread before and behind the hole, in a large bunch. They likewiſe hang to their ears by ſtrings, chiſels, bodkins, the teeth of dogs, and the teeth and nails of their deceaſed friends. The arms and ancles of the women are adorned with ſhells and bones, or any thing elſe through which they can paſs a ſtring. The men wear a piece of green talc, or whalebone, with the reſemblance of a man carved on it, hanging to a ſtring round the neck.

The houſes are from ſixteen to twenty-four feet long, ten or twelve wide, and ſix or eight in height. The frame is of ſlight ſticks of wood, and the walls and roof are made of dry graſs, pretty firmly compacted. Some of them are lined with bark of trees, and the ridge of the houſe is formed by a pole, which runs from one end to the other. The door is only high enough to admit a perſon crawling on hands and knees; and the roof is ſloping. There is a ſquare hole near the door, ſerving both for window and chimney, near which is the fire-place. A plank is placed near the door, adorned with a ſort of carving, and this they conſider as an ornamental piece of furniture. The ſide walls, and roof, projecting two or three feet beyond the walls at each end, form a ſort of portico, where benches are placed to ſit on. The fire is made in the middle of a hollow ſquare in the floor, which is incloſed with wood or ſtone. They ſleep near the walls, where the ground is covered with ſtraw for their beds. Beſides the fern-root, which ſerves them for bread, they feed on albatroſſes, penguins, and ſome other birds. Whatever they eat is either roaſted or baked, as they have no veſſels in which water can be boiled. No plantations of cocoas, potatoes, and yams, were ſeen to the ſouthward, though there were many in the northern parts. The natives drink no other liquor than water, and enjoy perfect and uninterrupted health. When wounded in battle, the wound heals in a very ſhort time, without the application of medicine; and the very old people carry no other marks of decay about them than the loſs of their hair and teeth, and a failure of their muſcular ſtrength, but enjoy an equal ſhare of health and cheerfulneſs with the youngeſt.

The canoes of this country are not unlike the whale-boats of New England, being long and narrow. Thoſe of the larger ſort ſeem to be built for war, and will hold from 30 to 100 men; one of theſe meaſured near ſeventy feet in length, ſix in width, and four in depth. It was ſharp at the bottom, and conſiſted of three lengths, about two or three inches thick, and tied firmly together with ſtrong plaiting: each ſide was formed of one entire plank, about twelve inches broad, and about an inch and a half thick, which were fitted to the bottom part with equal ſtrength and ingenuity. Several thwarts were laid from one ſide to the other, to which they were ſecurely faſtened, in order to ſtrengthen the canoes. Theſe veſſels are rowed with a kind of paddles, between five and ſix feet in length, the blade of which is a long oval, gradually decreaſing till it reaches the handle; and the velocity with which they row with theſe paddles is ſurpriſing: their ſails are compoſed of a kind of mat or netting, which is extended between two upright poles, one of which is fixed on each ſide. Two ropes faſtened to the top of each pole ſerve inſtead of ſheets. The veſſels are ſteered by two men, having each a paddle, and ſitting in the ſtern; but they can only ſail before the wind, in which direction they move with conſiderable ſwiftneſs.

Theſe Indians uſe axes, adzes, and chiſels, with which laſt they likewiſe bore holes. The chiſels are made of jaſper, or of the bone of a man's arm; and their axes and adzes of a hard black ſtone. Their tillage of the ground is excellent, owing to the neceſſity they are under of cultivating, or running the riſk of ſtarving. A long narrow ſtake, ſharpened to an edge at bottom, with a piece fixed acroſs, a little above it, for the convenience of driving it into the ground with the foot, ſupplies the place both of plough and ſpade. The ſoil being light, their work is not very laborious, and with this inſtrument alone they will turn up ground of ſix or ſeven acres in extent. Their fiſh-hooks are of ſhell or bone; and they have baſkets of wicker-work to hold the fiſh. Their warlike weapons are, ſpears, darts, battle-axes, and the patoo-patoo, in which they chiefly confide. This is faſtened to their wriſts by a ſtrong ſtrap, leſt it ſhould be wrenched from them, and the principal people generally wear it ſticking in their girdles, conſidering it as a military ornament and part of their dreſs, like the poinard of the Aſiatic and the ſword of the Europeans. The ſpear, which is pointed at each end, is about twenty-ſix feet in length, and they hold it in the middle, ſo that it is difficult to parry a puſh from it. Whether they fight in boats or on ſhore, the battle is hand to hand; their conteſts muſt be bloody. The war-dance conſiſts of a great variety of violent motions and hideous contortions of the limbs, during which the countenance and tongue perform their parts. This horrid dance is always accompanied by a ſong, every ſtrain of which terminates with a deep and loud ſigh.

The employment of the men is ſuppoſed to conſiſt in cultivating the ground, making nets, catching birds, and fiſhing; while the women are engaged in weaving cloth, procuring fern-roots and ſhell-fiſh, and dreſſing food. With regard to religion, they acknowledge one ſuperior being, and ſeveral ſubordinate. Their mode of worſhip could not be learned, nor was any place proper for that purpoſe ſeen. There was indeed a ſmall ſquare area, encompaſſed with ſtones, in the middle of which hung a baſket of fern-roots on one of their ſpades. This they ſaid was offered to the gods, in the hope of a plentiful crop of proviſion. The inhabitants of the ſouthern diſtrict ſaid they diſpoſed of their dead by throwing them into the ſea; but thoſe of the north ſaid they buried them in the ground: captain Cook's crew, however, ſaw not the leaſt ſign of any grave, or monument; but the body of almoſt every inhabitant bore the marks of wounds which they had given themſelves, in token of grief for the loſs of their friends and relations. Some of theſe ſcars were newly made, which is a proof that their friends had died while the ſhip's crew were there, yet no one ſaw any thing like a funeral, as the iſlanders conceal every thing reſpecting the dead with the utmoſt caution. A great ſimilitude was obſerved between the dreſs, furniture, boats, and nets of the New Zealanders, and thoſe of the inhabitants of the South ſea iſlands, which furniſh a ſtrong proof that the anceſtors of both were natives of the ſame country. The language of New Zealand and Otaheite is radically the ſame; and that of the northern and ſouthern parts differs chiefly in the pronunciation. S. lat 34° to 48°. W. long. 181° to 194°. Cook's Voyages by Hawkſworth, vol. iii.

ZEAMAH, a river of Algiers, which runs into the Mediterranean, 6 miles S.S.E. of Cull.

ZEAN, a town of Hindooſtan, in Dooab; 20 miles S. of Canoge.

ZEB, or Zib, a town of Syria, near the ſea-coaſt, anciently called Achſaph, Achzib, and Ecdippa; 9 mile from Acre.

ZEBAIDE, a town of Perſia, in the province of Farſiſtan; 80 miles E. of Schiras.

ZEBDAINEH, a village of Syria, built on the ſpot where it is ſaid by ſome that Cain ſlew his brother Abel; 14 miles N.W. of Damaſcus.

ZEBE, or Zaab, in *Ancient Geography*, a town which once formed a part of Mauritania Sitifenſis; it was ſituated at the foot of the chain of mount Atlas.

ZEBEE, in *Geography*, a river of Abyſſinia, which runs into the Indian ſea.

ZEBEER, a town of Arabian Irak; 12 miles W. of Baſſorah.

ZEBEN. See Szeben.

ZEBET, a word uſed by ſome of the chemical writers to expreſs dung.

ZEBID, in *Geography*, a city of Arabia, in the province of Yemen. Zebid was once the place of a ſovereign's reſidence, and the moſt commercial city in all Tehama; but ſince the harbour of Ghaleſka was choked up, its trade has been transferred to Beit el Fakih and Mocha, and this city now retains nothing but the ſhadow of its former ſplendour. Viewed from a diſtance, it appears to ſome advantage, by means of the moſques and kubbets, of which it is full. Several of thoſe moſques were erected by different pachas, who reſided here during the ſhort period while this part of Arabia was in the poſſeſſion of the Ottoman Porte. Zebid had once eight gates; of theſe only five are now ſtanding, and the river is gradually breaking down a part of them. The walls of the old city are demoliſhed, and the very ruins are ſold by poor people, who gather out the ſtones, and ſell them for building new houſes. The preſent buildings occupy about one half of the ancient extent of the city. Zebid is ſtill diſtinguiſhed for an academy, or univerſity, for the Sunais, as that of Damar is for the Seidites, in which the youth of Tehama, and a part of Yemen, ſtudy ſuch ſciences as are cultivated among the Muſſulmen. This is beſides the ſeat of a dola, a mufti, and three cadis; 52 miles N. of Mocha. N. lat. 14° 12′. E. long. 43° 15′.

ZEBIO, a mountain of Italy, which ſometimes emits flames; 6 miles S. of Modena.

ZEBLICIUM Marmor, in *Natural Hiſtory*, a name given by ſeveral authors to a ſoft green marble, variegated with black and white; and though the authors who have deſcribed it have not obſerved it, yet it no way differs from the white ophites of the ancients. See Ophites.

ZEBOIM, in *Ancient Geography*. See Seboim.

ZEBRA, in *Zoology*. See Equus *Zebra*.

ZEBU, a name given by M. de Buffon to a variety of the bos taurus of Linnæus, or biſon of other writers, or the camel. This variety reſembles the Indian ox, or bos Indicus, but is extremely ſmall, being found in ſome parts of India of a ſize ſcarcely larger than a great dog. In colour it differs like the common cattle, being either grey, brown, white, &c., or variouſly ſpotted. The Indian ox, which is found in many parts of India, as well as in the Indian and African iſlands, and particularly in Madagaſcar, is of a reddiſh colour, of a very large ſize, and is diſtinguiſhed by a very large protuberance over the ſhoulders.

Zebu, in *Geography*. See Sibu.

ZEBULUN, or Zabulon, in *Scripture Geography*, one of the Jewiſh tribes in Lower Galilee, on the S. of the tribes of Aſher and Naphtali, having the Mediterranean on the W., the ſea of Galilee on the E.; ſeparated on the N. from Aſher by the river Jepthael, and on the S. from Iſſachar by that of Kiſhon. Its ports, on account of its vicinity to the ſea, were numerous, and its commerce extenſive. Its cities were, Zebulun the capital, Bethſaida, Magdalen, Joppa, Jotapa, Cinnereth, (ſince Tiberias, on the lake of that name,) Cartha, Bethulia, Rimmon, Dothaire, Damna, Sommerom, Tabor, both the city and mount, Sopha, Saffa or Siporis, Nazareth, Cana the leſſer, commonly called Cana of Galilee, Iconium, and Sicaminum or Porphyrem, anciently Hiepha, or Ceipha, ſituated northwards at the foot of mount Carmel.

ZEBULUN, or *Zabulon*, the capital of the fore-mentioned tribe, ſituated on the Mediterranean, near the mouth of the Jepthael, and once ſtyled Zabulon Andron, or of men, on account of its extraordinary populouſneſs. It was adorned with fine buildings, after the manner of Tyre, Sidon, and Berytus, and much admired on that account by Ceſtius, the Roman general, who nevertheleſs took, plundered, and burnt it to the ground. In the early ages of Chriſtianity it was the ſee of a biſhop, but now it is a poor place, in ruins.

ZECHARIAH, or the *Prophecy of Zechariah*, in *Biblical Hiſtory*, a canonical book of the Old Teſtament.

Zechariah was contemporary with Haggai, and propheſied in the ſecond year of Darius Hyſtaſpes. The deſign of the firſt part of this prophecy is the ſame with that of Haggai, *viz.* to encourage the Jews to go on with rebuilding of the temple, by giving them aſſurance of God's aſſiſtance and protection: from whence the author proceeds to foretel the glory of the Chriſtian church, the true temple of God, under its great high prieſt and governor, Jeſus Chriſt, of whom Zerubbabel and Joſhua the high prieſt were figures. The latter part of the prophecy, from chap. ix., probably relates to the ſtate of the Jews under the Maccabees, and then foretels the rejection of the Meſſiah, and ſome remarkable incidents that ſhould happen to them in the latter ages of the world.

Mr. Mede, and ſome other learned men, think, that the 9th and following chapters of Zechariah are parts of the prophecy of Jeremiah.

ZECHIN, or ZECCHINO, in *Commerce*. See SEQUIN.

ZECHINI, in *Geography*, a ſmall iſland in the Grecian Archipelago; 2 miles S.E. of Stanchio. N. lat. 36° 48′. E. long. 26° 51′.

ZECHLIN, a town of Brandenburg, in the mark of Pregnitz; 9 miles E. of Witſtock.

ZEDIC, a town of Africa, capital of a diſtrict in Tripoli, ſituated in a bay of the Mediterranean, called the bay of Zedic; 150 miles E.S.E. of Tripoli.

ZEDLISCHT, a town of Bohemia, in the circle of Pilſen; 5 miles N.W. of Hayd.

ZEDOARY, ZEDOARIA, or *Kæmpferia Rotunda* of Woodville, or *Curcuma Zerumbet* of Dr. Roxburgh, in the *Materia Medica*, a medicinal root, belonging to a plant growing in the Eaſt Indies (the *amomum ſcapo nudo, ſpica laxa truncata*, of Berg. Mat. Med.), whoſe leaves are like thoſe of ginger, only longer and broader.

The *Curcuma Zedoaria* of Dr. Roxburgh, with ſmall bulbs, and with the long palmate tubers inwardly yellow, leaves broad lanceolar, ſubſeſſile on their ſheaths, ſericeous underneath, and the whole plant green, is the AMOMUM *Zedoaria* of Linnæus and Willdenow; which ſee. It is a native of various parts of India; flowers during the hot ſeaſon, April and May, when the plant is deſtitute of leaves: ſoon after they appear. The dry root, it is ſaid, agrees pretty well with the drug known in England by the name of zedoaria rotunda. The Sanſkrit name implies that the drug is uſed as an antidote to poiſon.

The *Curcuma Zerumbet* of Roxburgh, with ſmall bulbs, and palmate tubers pale ſtraw-colour; leaves green-petioled, broad-lanceolar, with a purple cloud down the middle; and flowers ſhorter than their bracteas, is the AMOMUM *Zerumbeth* of Retzius; which ſee. This is a native of various parts of India, and its flowering-time the hot ſeaſon, before the leaves appear. The pale colour of the roots, crimſon coma, and ferruginous mark down the centre of the leaves, which is a conſtant mark in this elegant ſpecies, readily point it out from every other. The dry root appears to be the zedoaria of the ſhops in England. See Aſiatic Reſearches, vol. ii. p. 332—334.

The root is brought over in oblong pieces, about the thickneſs of the little finger, and two or three inches in length; or in roundiſh ones (the *zerumbeth* of the Paris Pharmacopœia), about an inch in diameter; it is of an aſh colour on the outſide, and white within. The difference of theſe, in ſtrength, if any, is very inconſiderable, and therefore the college allows both to be uſed indiſcriminately.

This root has an agreeable camphoraceous ſmell, and a bitteriſh aromatic taſte. It impregnates water with its ſmell, a ſlight bitterneſs, a conſiderable warmth and pungency, and a yellowiſh-brown colour: the reddiſh-yellow ſpirituous tincture is in taſte ſtronger, and in ſmell weaker, than the watery. In diſtillation with water, it yields a thick, ponderous eſſential oil, ſmelling ſtrongly of the zedoary, in taſte very hot and pungent: the decoction, thus deprived of the aromatic matter, and concentrated by inſpiſſation, proves weakly and diſagreeably bitter and ſubacrid. A part of its odorous matter riſes alſo in the inſpiſſation of the ſpirituous tincture; the remaining extract is a very warm, not fiery, moderately bitter aromatic, in flavour more grateful than the zedoary in ſubſtance.

Zedoary-root is a very uſeful warm ſtomachic; and has been commended in colics and hyſteric affections, for promoting the menſes, &c. It has been employed by ſome as a ſuccedaneum to gentian root; but from the above analyſis it appears to be not entirely ſimilar to that ſimple bitter; its warm aromatic part being the prevailing principle, in virtue of which its ſpirituous extract (the moſt elegant preparation of it), has been made an ingredient in the cordial confection of the London Pharmacopœia. Lewis's Mat. Med.

Carthenſer, who aſcribes its virtues to a camphoraceous volatile oil, conſiders it as a general remedy for moſt of the chronic diſeaſes with which human nature is affected; but as the camphor contained in it can avail but little, and its effects as a bitter or aromatic are ſo very inconſiderable, this root is now deemed to poſſeſs very little medicinal power, and might be ſafely expunged from the materia medica. Cullen. Woodville.

The zedoary waſh, which is a cooler yellow than ſaffron, though full as bright, and valuable for many purpoſes in painting with water-colours, may be prepared by boiling an ounce of the root in a quart of water, till the water is ſufficiently tinged to make a ſtain on paper, of a full yellow colour; and ſtraining the liquor through a linen filtre. This waſh may be dried in ſhells, and will again diſſolve and ſpread kindly with the addition of water.

ZEEDLITZ, in *Geography*, a town of Sileſia, in the principality of Neiſſe; 3 miles N. of Ottmuchau.

ZEFERDEN. See SUFFERDAM.

ZEFR, a word by which ſome of the chemical authors expreſs pitch.

ZEFRIO, in *Geography*, a mountain of Naples, in Calabria Ultra; 10 miles N.N.E. of Bova.

ZEGEDIN, or SZEGED, a town of Hungary, near the conflux of the rivers Maros and Theiſſe. It is ſtrong, and a place a place of ſome trade, particularly in cattle. In the year 1503, all its defence was a moat and rampart; but falling ſome time after into the hands of the Turks, they erected a brick fort. In 1686, the Imperialiſts diſpoſſeſſed the Turks of it; 68 miles N. of Belgrade. N. lat. 46° 15′. E. long. 19° 56′.

ZEGGO, a town of Africa, in the country of Melli, in the road from Kong to Caſhna; 100 miles N.N.W. of Malel. N. lat. 14°. E. long. 8°.

ZEGHAMA, a town of Dar-Fur; 60 miles N. of Cobbé.

ZEGHEN, a town of Fezzan; 65 miles N. of Mourzouk.

ZEGI, Zagi, a word uſed by Avicenna and others to expreſs all the ſeveral vitriolic minerals. See Chalcitis, and Colcothar.

ZEGMA, in *Geography*, a town of Aſiatic Turkey, in the province of Diarbekir, on the Euphrates, oppoſite to Romkala.

ZEGUTI, a town of Imiretia; 20 miles S.W. of Cotatis.

ZEGZEG, a city of Africa, and capital of a country of the ſame name, ſituated to the eaſt of Agades; 370 miles N.N.E. of Caſhna. N. lat. 20° 45′. E. long. 16°.

ZEHDENICK, a town of Brandenburg, in the Ucker Mark, on the Havel. In it is a convent for ladies of noble deſcent, conſiſting of a domina and ſix ſiſters. It carries on a large trade in wood and corn: in the paſtures, near the town, iron-ore is met with in great abundance, and accordingly there is a mill here for that purpoſe, which is driven by the Havel. At this place likewiſe is a foundery, where bombs, grenadoes, bullets, mortars, pots, weights, and even ſmall cannon are caſt; 28 miles S.S.W. of Prenzlow. N. lat. 52° 58′. E. long. 13° 22′.

ZEHDIN, a town of Brandenburg, in the New Mark; 40 miles E. of Oderberg.

ZEHERECH, a word uſed by ſome of the chemical writers to expreſs flowers of braſs.

ZEHISTA, in *Geography*, a town of Saxony, in the margravate of Meiſſen; 3 miles S. of Pirna.

ZEHRENDORF, a town of Brandenburg, in the Middle Mark; 3 miles S. of Zoſſen.

ZEIDOURE, a diſtrict of Algiers, between Tremecen and Oran.

ZEIL, a town of Bavaria, in the biſhopric of Bamberg; 12 miles W.N.W. of Bamberg. N. lat. 50° 1′. E. long. 10° 40′.—Alſo, a town and caſtle of Germany, which gives name to a county; 4 miles N. of Leutkirch.

ZEILA, or Zella, or *Sejla*, a ſea-port town of Africa, in the kingdom of Adel, ſituated on the coaſt of the Arabian ſea, at the mouth of the Hanazo, or Hawaſh, which forms a bay, called the Bay or Gulf of Zeila. It receives a governor from the dola of Mocha. N. lat. 10° 45′. E. long. 44° 20′.

ZEILSHEIM, a town of the duchy of Wurzburg; 4 miles N. of Volckach.—Alſo, a town of the duchy of Wurzburg; 4 miles E.N.E. of Arnſtein.

ZEINDEROOD, or Zenderoud, a river of Perſia, in the province of Irak, which has its ſource in the Kohizard, or Yellow mountain, where an aqueduct may yet be ſeen, by which Abbas the Great attempted to unite its waters with thoſe of the Karoon. The Zeinderood paſſes through the city of Iſpahan, and is ſaid to be abſorbed in the irrigation of the neighbouring territory, or to loſe itſelf in a lake, 15 miles S.W. of Lauriſtan. On this river are three bridges, two of which are in good repair; particularly that of the Char Baug (four gardens), ſo called from its connecting the upper and lower Chaur Baug, the name given to a ſpacious avenue, which runs from the royal ſquare to the foot of the mountains E. of Iſpahan.

ZEISELMAN, a town of Auſtria; 3 miles E. of Tulln.

ZEISPERG, a town of Auſtria; 3 miles E.N.E. of Crems.

ZEITHAYN, a town of Saxony, in the margravate of Meiſſen, famous for a pleaſure-camp which king Auguſtus II. made there, in 1730, at the expence of five millions of rix-dollars. On the ſpot which was uſed for this camp, and the exerciſing of the army, are erected ſix large pyramids; and medals have likewiſe been ſtruck upon it, and a grand repreſentation thereof engraved on copper; 8 miles W.N.W. of Groſſenhayn.

ZEITLOSS, a town of the duchy of Wurzburg, on the river Sinn; 10 miles N. of Gmunden.

ZEITON, a town of European Turkey, in Theſſaly, on a gulf to which it gives name. Here are about 400 Chriſtian families, but the greater part of the inhabitants conſiſts of Turks; 48 miles S.S.E. of Lariſſa. N. lat. 39° 6′. E. long. 22° 58′.

Zeiton, a gulf or bay of the Egæan ſea, on the E. coaſt of Theſſaly, N.W. of the iſland of Negroponte.

ZEITOON, a town of Perſia, in the province of Fars or Farſiſtan, containing about 2000 inhabitants, and ſituated in a pleaſant valley, fertilized by both the branches of the river Tab, which here form a junction. Zeitoon is about fifteen miles diſtant from Behaban, the capital of the mountainous diſtrict of Khogilſea, which extends from the valley of Ram Hormuz to the vicinity of Kazeroon.

ZEITOUN, a town of Aſiatic Turkey, in the government of Sivas, on the Kizilermak; 33 miles W. of Samſoun.

ZEITRABRA, a term uſed by ſome of the chemiſts to expreſs any thing that is fluxile.

ZEITZ, in *Geography*, a town of Saxony, in the biſhopric of Naumburg, anciently the ſee of a biſhop, founded by the emperor Otho I. afterwards transferred to Naumburg, after this town had been ſacked and almoſt deſtroyed by the Vandals in the year 982; 15 miles E.S.E. of Naumburg. N. lat. 51° 3′. E. long. 12° 2′.

ZEKELHEIB, a town of Hungary; 8 miles N.N.W. of St. Job.

ZELA, a town of Perſia, in the province of Segeſtan; 25 miles S.W. of Ferah.

Zela, Ziela, or *Zeleja*, in *Ancient Geography*, a town of Thrace, afterwards called Flaviopolis.—Alſo, a town of Aſia, in Cappadocia Pontus, near the Lycus. It was celebrated by the defeat of Triarius, the Roman general, and afterwards by that of Pharnaces. Here was a famous temple, repreſented upon ſome medals, conſecrated to the goddeſs Anaitis, a Perſian divinity, whoſe pontiff was very powerful under ancient kings; but in proceſs of time his authority and revenues were diminiſhed. The town and the miniſters of the temple were dependent on Pithodiris, who poſſeſſed a part of the territory; other parts were ceded to the pontiffs of Zela and Comanes, and the reſt was annexed to the Roman province. According to Strabo, Zela and its territory were ſituated to the left of the river; the ſacred lands of the temple, and the domains of the pontiff, were in the environs of the town. He adds that it was fortified and built in the retrenchment of Semiramis; and in the firſt times it had only ſome houſes near the temple; but Pompey made it a town.

ZELAH, or Sela, a city of Benjamin (Joſh. xviii. 28.), where Saul was buried in the tomb of his father, Kiſh. 2 Sam. xxi. 14.

ZELAN, in *Geography*, a mountain in the county of Tyrol; 20 miles N.E. of Trent.

ZELANDY, a ſmall iſland in the Eaſt Indian ſea, near the W. coaſt of Sumatra. N. lat. 0° 53′. E. long. 98° 14′.

ZELANICA, a cape on the N. coaſt of Nova Zembla. N. lat. 78°. E. long. 77° 24′.

ZELATE, a town of the country of Candahar; 30 miles N.E. of Candahar.

ZELEBI. See SCHELEBY.

ZELEEFA, a town of Africa, in the country of Tunis; 10 miles S.E. of Cairoan.

ZELEH, a town of Aſiatic Turkey, in the government of Sivas, anciently a town of Pontus, and called Zela. Near this place the Romans, under Triarius, were defeated by Mithridates; and Pharnaces, ſon of Mithridates, was afterwards defeated by Julius Cæſar; 21 miles W.S.W. of Tocat. See ZELA.

ZELEIA, in *Ancient Geography*, a town built, according to Homer, at the foot of mount Ida. It was watered by the Tarſius, and had to the S. the lake Aphnitis. According to Strabo, it had alſo in ancient times an oracle, but in his time it was not conſulted.

ZELEM, in the *Materia Medica of the Ancients*, a name given by Avicenna and others to a fruit common in Africa in their time, and much eſteemed by the people of that country, and called there by ſome *piper nigrorum*, the black people's pepper, or negro-pepper.

Avicenna tells us, that the zelem was a fattiſh ſeed, of the ſize of a chich, and of a high flavour, in colour yellow on the outſide, and white within, and that it was brought from Barbary.

He adds, that there was another plant, properly called *fulful alſuaden*, that is, *piper nigrorum*. This, he ſays, was a ſeed contained in pods like kidney-beans, and was black, and of a pungent and acrid taſte.

ZELENIN, in *Geography*, a ſmall iſland in the Frozen ocean, near the S.W. coaſt of Nova Zembla. N. lat. 70° 50′. E. long. 56° 24′.

ZELENOIKOLOK, a fort of Ruſſia, in the government of Caucaſus, on the Ural; 44 miles N. of Guriev.

ZELES, in *Ancient Geography*, a town of Hiſpania, in Bœtica, upon a ſtrait which ſeparated Hiſpania from Africa, according to Strabo. This author reports, that the Romans tranſported the inhabitants into Mauritania, together with others drawn away from Tingis, eſtabliſhed the town of Julia Joga.

ZELETAWA, in *Geography*. See SCHELETA.

ZELEZENSKAIA, a fort of Ruſſia, in the government of Kolivan, on the E. ſide of the Irtiſch. N. lat. 53° 25′. E. long. 75° 40′.

ZELITO, or ZILITO, a fort of South America, in the harbour of Carthagena.

ZELL, a town of Auſtria; 14 miles N.N.W. of St. Wolfgang.—Alſo, a town of Bavaria, in the biſhopric of Bamberg; 10 miles W. of Bamberg.—Alſo, a town of Germany, in the principality of Culmbach; 12 miles S.S.W. of Hof.—Alſo, a town of the duchy of Wurzburg; 3 miles N. of Schweinſurt.

ZELL. See LIEBENZELL.

ZELL *im Ham*, a town of Germany, on the Moſelle; 25 miles N.E. of Treves. N. lat. 50° 4′. E. long. 7° 7′.

ZELL *in the Pizgau*, a town of the archbiſhopric of Salzburg, on the Zeller See; 30 miles S.S.W. of Salzburg.

ZELL *in Zillerthal*, a town of the archbiſhopric of Salzburg, on the Ziller; 50 miles S.W. of Salzburg.

ZELL *am Hammerſbach*, a town of Germany, ſituated in the vale of Hammerſbach. The town was imperial, and aſſeſſed twenty-one florins till 1802, when it was given to the margrave of Baden; 9 miles W. of Freudenſtadt. N. lat. 48° 23′. E. long. 8° 7′.

ZELLA, in *Ancient Geography*, a town of Africa, which was ruined during the war of Cæſar againſt Scipio. Strabo.

ZELLANG, in *Geography*, a town on the W. coaſt of the iſland of Celebes. S. lat. 4° 20′. E. long. 120° 3′.

ZELLE, or ALTENZELLE, a town of Saxony, in the circle of Erzgebirg; 2 miles W. of Noſſen.

ZELLE, a city of Weſtphalia, in the principality of Luneburg. This is a fortified and well-built town, ſituated on the Aller, which is here navigable, and behind the New Town is joined by the Fuhſee. The town itſelf, in conjunction with the ſuburb of Fritzenweiſe, conſiſts of 564 houſes; but including the other ſuburbs, ſummer-houſes, and buildings without the gates, the number of them amounts to about 1400. At this place was held the high court of appeals for the ſeveral territories of the electoral houſe of Brunſwick-Luneburg, together with the chancery and chief tribunal of the principality of Luneburg. Here alſo ſtands the provincial houſe for the diets of the principality, together with one of its ſuperintendencies, and a ſpecial ſuperintendency which is adminiſtered by the general ſuperintendant, who is always firſt miniſter of the town church. The other public edifices in it are, the Guildhall, the riding-houſe, the mews, and the armoury. The magiſtracy is poſſeſſed of the lower juriſdiction in the town, and likewiſe in ſome parts of the ſuburbs. At this place, too, are manufacturers and artificers in various branches, particularly in gold and ſilver. The prince's ſeat, near the town, is walled and moated in, and was the reſidence of the Zelle line of Brunſwick-Luneburg, which failed in 1705. It was built by duke Henry, in the year 1485, and afterwards improved; 40 miles S. of Luneburg. N. lat. 53° 42′. E. long. 10° 14′.

ZELLENBERG, a town of France, in the department of the Upper Rhine; 9 miles N. of Colmar.

ZELLER SEE, a lake of Germany, in the archbiſhopric of Salzburg; 28 miles S.S.W. of Salzburg.

ZELLERFELD, a town of Weſtphalia, in the Harz Foreſt; ſilver to the value of 20,000 imperial crowns is annually coined in this town; 6 miles S.S.W. of Goſlar.

ZELLERNDORFF, a town of Auſtria; 3 miles S.E. of Schrattentaal.

ZELLHOFEN, a town of Auſtria; 10 miles N.W. of Grein.

ZELLIA, in *Ancient Geography*, a country of Upper Pannonia, inhabited by the Slavi.

ZELLIN, in *Geography*, a town of the New Mark of Brandenburg; 13 miles N.W. of Cuſtrin.

ZELLINGEN, a town of the duchy of Wurzburg; 8 miles N. of Wurzburg.

ZELLITZ, a town of the duchy of Stiria; 8 miles W. of Marburg.

ZELON, a town of Thibet; 27 miles S.W. of Laſſa.

ZELOTTI, BATTISTA, in *Biography*, was born at Verona in 1532. He was a pupil of Titian, according to Vaſari, and a fellow-ſtudent with Paolo Veroneſe, with whom he co-operated in ſeveral important works at Venice. He particularly excelled in freſco, and that induced Paolo to court his aſſiſtance in many of the great works in which he was engaged. In conſequence many of his works are given to Veroneſe, and thoſe in the hall of the Council of Ten, in the palazzo S. Marco, have been engraved by Le Febre as the works of that maſter. His picture of the Holy Family, in the Carara collection, is painted with the ſtrength and warmth of Titian, and others of his works in oil are deſervedly eſteemed and admired, particularly the Converſion of S. Paul, and Chriſt with his Diſciples in the Fiſhing-boat, in the cathedral at Vicenza. He fell ſhort of the grace and taſte of Veroneſe, yet his invention was not lacking in energy; his touch is free and animated, and his compoſitions managed with ſkill and judgment. He died in 1592, aged 60.

ZELPHI. See ZENDA.

ZELPITSCH, in *Geography*, a town of Iſtria; 10 miles N.E. of Mitterburg.

ZELTURINSKOI, a fort of Ruſſia, in the government of Irkutſk; 72 miles S.S.E. of Tunginſkoi.

ZELUIA, a town of Lithuania, in the palatinate of Novogrodek; 25 miles N.W. of Slonim.

ZEM, a river of Albania, which runs into the Moraca, 12 miles W. of Cattaro.

ZEMA, a word uſed by many of the old writers for a decoction or apozem.

ZEMARAIM, or SEMARAIM, in *Ancient Geography*, a city of Benjamin near Bethel. Joſh. xviii. 22.

ZEMARITES, an ancient people of Syria, mentioned by Strabo, who places them on a plain, two leagues to the N. of mount Libanus, and gives them the term of Simyra.

ZEMASARUM, a word uſed by ſome of the chemical writers as a name for cinnabar.

ZEMBLA, NOVA, *Novaya Zemlia*, or *New Land*, in *Geography*, a Ruſſian iſland, or rather a group of five iſlands, with the intervening channels always filled with ice, ſituated in the Frozen or Northern ocean. Of the numerous iſlands in this ocean, Novaya Zemlia and Kalgeva are the moſt conſiderable; but both are uninhabited, and frequented only by fiſhermen and hunters. The former is indeed well ſupplied with water; but is rocky, unfertile, and deſtitute of wood, furniſhing vegetation only for a few ſtunted buſhes and polar plants. It abounds, however, with rein-deer, white bears, white and blue foxes; and the ſhores ſwarm with morſes, walruſes, and various kinds of fiſh. Its magnitude is eſtimated at 950 verſts in length, 520 in breadth, and 3090 in circumference, without following the ſinuoſities, and 425,509 German miles of ſuperficies, according to Mr. Storch. On the northern ſide it is entirely encompaſſed with ice mountains; and to the ſouth is the ſea of Cara, Kara, or Karſkoge, in which the tide flows about two feet nine inches. Among the lakes of this iſland there is one of ſalt water. From the middle of October till February the ſun is not at all viſible; but they have the advantage of numerous and ſtrong north-lights and of much moon-light. In ſummer they have no thunder-ſtorms. The ſnow falls in many places to the depth of four arſhines. For two months, *viz.* June and July, the ſun never ſets. Between this iſland and the main land is the famous paſſage known by the name of Vaggat's or Waygat's ſtraits.

ZEMECH, a word uſed by ſome writers as a name for *lapis lazuli*.

ZEMENIE, in *Geography*, a town of European Turkey, in Romania; 16 miles S.W. of Gallipoli.

ZEMIA, Ζημια, among the *Athenians*, is ſometimes taken in a large and general ſenſe for any kind of puniſhment; but more frequently for a pecuniary mulct or fine laid upon the criminal, according to the degree of his offence.

ZEMLIANSK, in *Geography*, a town of Ruſſia, in the government of Voronez; 44 miles N.N.W. of Voronez. N. lat. 52° 12′. E. long. 38° 42′.

ZEMLIN, or SEMLIN, a fortreſs of Sclavonia, at the union of the Save and the Danube, oppoſite Belgrade. Here is a lazaretto, where travellers and merchandiſe from the Levant are detained to prevent infection. The number of inhabitants is about 1200 Raſcians, Greeks, Jews, Armenians, and Turks: during a fire at Zemlin, Joſeph II. emperor of Auſtria, aſſiſted in perſon to ſuppreſs it.

ZEMME, a town of Grand Bucharia, on the Gihon; 60 miles S. of Bucharia.

ZEMOKARTLI, a town of Turkiſh Armenia, in the government of Cars; 50 miles N. of Ardanoudji.

ZEMORGET, or ZERMOGETE, a ſmall iſland in the Red ſea, 30 miles from the coaſt of Egypt. This iſland was called by the ancients "Ophiodes," from the abundance of ſerpents, and the iſland of topazes from the number of thoſe precious ſtones found there. N. lat. 23° 25′. E. long. 53° 5′.

ZEMOVAH, a town of Pegu; 50 miles S. of Prone.

ZEMPHYRUS, in the *Materia Medica of the Ancients*, a name give to a precious ſtone, the fragments of which they uſe as a cordial and ſudorific.

It appears by their accounts, that this ſtone was blue; and hence many have too haſtily judged, that it was the lapis lazuli; but in truth it was the ſapphire.

The word *zemphyrus* is no where uſed but in the writings of the later Greeks, and it is plainly formed, as moſt of their names of things are, on the Arabian word expreſſing the ſame thing. This Arabian word is *ſemphir*; and this, in Avicenna and Serapio, is always uſed as the name of a ſapphire, never as that of any other gem. We find alſo by their accounts, that this ſapphire was not the ſapphire of the ancient Greeks, but the fine blue pellucid gem we now know by that name; for the ſapphire of Theophraſtus, and the other old writers, was only a kind of lapis lazuli.

ZEMPLIN, in *Geography*, a town of Hungary; 16 miles N.E. of Patak.

ZEMPOALA. See ZAMPALA.

ZEMZEM, the holy well of *Mecca*, which ſee.

ZENANICH. See SELANIEH.

ZENATI, a river of Algiers, formed by the union of two ſtreams, which ſoon after changes its name to Seibouſe.

ZENDA, a general term coined by Paracelſus, by which he and his followers expreſs extraneous or equivocal generation, or the production of bodies without a ſeminal principle. The word *zerunda* is uſed to expreſs this particular ſort of generation of men, and *zelphi* in regard to other animals.

ZENDAVESTA, by contraction *Zend*, and, as it is vulgarly pronounced, *Zundaveſtow* and *Zund*, in *Antiquity*, denotes the book aſcribed to ZOROASTER, (ſee his article,) and containing his pretended revelations; and which the ancient Magians and modern Perſees, called alſo Gaurs, obſerve and reverence in the ſame manner as the Chriſtians do the Bible, and the Mahometans the Koran, making it the ſole rule of both their faith and manners. See MAGI, PERSEES, GEBRES, &c. See alſo GENTOOS.

The word, it is ſaid, originally ſignifies any inſtrument for kindling fire, and is applied to this book to denote its aptitude for kindling the flame of religion in the hearts of thoſe who read it.

Zendaveſta is compounded of *Zend*, denoting the letters of the book, and *Aveſta*, ſignifying the language in which it was written. See PERSIA, *Language of.*

M. Anquetil du Perron, to whoſe account we ſhall refer more at large in the ſequel of this article, has taken pains, in the 37th volume of the work cited below, to prove that Zoroaſter lived under Hyſtaſpes, the father of Darius, in the ſixth century before Chriſt.

The Zendaveſta, or Zend, contains the ſyſtem of doctrine and duty, which is ſaid to have been ſupernaturally communicated to Zoroaſter, and which his followers hold in very extraordinary veneration. A copy of this book is kept, ſays Dr. Prideaux, to this day in every oratory and fire-temple, and portions of it are read at ſtated times by the prieſts to the people: and to this they appeal as the ſtandard of the good and evil of their actions. This work, aſcribed among other numerous writings to Zerduſht, or the Perſian Zoroaſter, and eſteemed by his followers as of ſacred authority, is ſaid to have been written in the Perſian language, and to have conſiſted of two parts; one of which contains their forms of devotion and order of ceremonies, the other the precepts of religion and morality. A compendium of it, called the Sadda or Sadder, is read to the people on every ſacred day by their prieſts. There is, however, much reaſon to queſtion, whether this book be of ſuch ancient date as the time of Zoroaſter; and it has been ſuggeſted as probable, that it was written about the time when many Jews and Chriſtians reſided among the Perſians; that is, about the 4th or 5th century. In proof of its being later than the time of Zoroaſter, but written ſince the days of Mahomet, it is alleged, that the word *ſhaitam* occurs in it, which is peculiar to the Arabs; for in other oriental languages it is written *ſatam*, or *ſaton*.

Dr. Hyde gives us the following account of it. The Zend is the general name of the book, which is alſo called the book of Abraham; and it conſiſts of twenty-one or twenty-two ſeparate parts, with diſtinct names. Its contents were originally written on twelve hundred ſkins; and the ancient copies of it, like the original, are in the pure old Perſian language; but the later copies are in the ſame language, mixed with modern Perſic or Arabic words, ſerving to explain ſuch as were becoming obſolete. Some parts of the Zend contain the original text, and others contain Zerduſht's ſecond thoughts ſubjoined, for more fully explaining his doctrine. Some writers ſuggeſt, that Zerduſht firſt intended to compriſe his book in four parts, *viz.* the *Zend*, containing the liturgy and chief doctrine of his religion, and the *Pazend*, or commentary upon the former; and that the farther additions were occaſioned by the oppoſition of adverſaries, and unforeſeen circumſtances that occurred. The character in which the Zend is written is that of the old Perſian, called Pehlavi; and the Pazend character differs in a ſmall degree from this.

Dr. Hyde has given a catalogue of the ſeveral parts of the Zend, each of which is called *noſh* or *nuſh*.

In proceſs of time, when the old Perſian language became antiquated, and little underſtood, one of their deſtours or biſhops (about A.D. 1500) compoſed the *Sadda*, which is a compendium, in the vulgar or modern Perſic tongue, of thoſe parts of the Zend that relate to religion, or a kind of code of canons and precepts, drawn from the theological writings of Zoroaſter, ſerving as an authoritative rule of faith and practice for his followers. This Sadda is written in a low kind of Perſic verſe, and, as Dr. Hyde informs us, it is *bonorum et malorum farrago*, having many good and pious things, and others very ſuperſtitious and trifling.

The Zend contains a reformed ſyſtem of Magianiſm; teaching that there is a Supreme Being, eternal, ſelf-exiſtent, and independent, who created both light and darkneſs, out of which he made all other things; that theſe are in a ſtate of conflict, which will continue till the end of the world; that then there ſhall be a general reſurrection and judgment; and that juſt retribution ſhall be rendered unto men according to their works; and that the angel of darkneſs with his followers ſhall be conſigned to a ſtate of everlaſting darkneſs and puniſhment, and the angel of light with his diſciples introduced into a ſtate of everlaſting light and happineſs; after which light and darkneſs ſhall no more interfere with each other. The Zend alſo enjoins the conſtant maintenance of ſacred fires and fire-temples for religious worſhip, the diſtinction of clean and unclean beaſts, the payment of tithes to prieſts, which are to be of one family or tribe, a multitude of waſhings and purifications, reſembling thoſe of the Jewiſh law, and a variety of rules and exhortations for the exerciſe of benevolence and charity.

Dr. Prideaux charges the Zend with allowing the worſt kind of inceſt; and Dr. Hyde alſo intimates that it was allowed by Zoroaſter, till it was at length aboliſhed; but no authority has been cited to juſtify this charge.

The above-mentioned doctrines of the Zend are accommodated to the eaſtern taſte by a great intermixture of fable.

In this book there are many paſſages evidently taken out of the Scriptures of the Old Teſtament, particularly out of the Pſalms of David: the author repreſents Adam and Eve as the firſt parents of all mankind, gives in ſubſtance the ſame account of the Creation and Deluge with Moſes, differing indeed with regard to the former by converting the ſix days of the Moſaic account into ſix times, comprehending in the whole three hundred and ſixty-five days; and ſpeaks alſo of Abraham, Joſeph, Moſes, and Solomon. Moreover, Dr. Baumgarten (Univ. Hiſt. Suppl. vol. ii. p. 367, &c.) aſſerts, that this work contains doctrines, opinions, and facts, actually borrowed from the Jews, Chriſtians, and Mahometans; whence, and from other circumſtances, he concludes, that both the hiſtory and writings of this prophet were probably invented in the later ages, when the fire-worſhippers under the Mahometan government thought fit to vindicate their religion from the ſuſpicion of idolatry.

The Zoroaſter, ſays the abbé Foucher, (ſee ZOROASTER,) who was the author of the Zend, is repreſented by him as an apoſtate Jew, a ſubtle philoſopher, and an obſequious artful courtier, who inſinuated himſelf into the favour of Darius Hyſtaſpes; and he ſays that his great deſign was to reconcile the Hebrew with the Perſian religion by a mixture of the leading and eſſential doctrines of each, to revive the credit of the Magi, and to accommodate, by a proper colouring, the Jewiſh religion to the weakneſs and prejudices of the Medes and Perſians, by taking from it that excluſive character that rendered it offenſive to other nations, and mixing with it the reveries and viſions of the ancient Zoroaſter. See Hyde's Religio Veterum Perſarum. Prideaux's Conn. of the Old and New Teſtament, vol. i. p. 317, &c. edit. 9. Univ. Hiſt. vol. ii. p. 206, &c. fol.

The account more lately given both of the Perſees and Zend, by M. Anquetil du Perron, differs in ſeveral particulars from that of Dr. Hyde. This gentleman made a voyage to India, and employed himſelf between the years 1755 and 1761 in ſtudying the Perſic and Sanſkrit languages, and in collecting and tranſlating manuſcripts, many of which he brought with him, and depoſited in the king of France's library. His account was read to the Royal Academy of Sciences at Paris, and a tranſlation of it was publiſhed in the Gentleman's Magazine for 1762, and alſo in Dodſley's Annual Regiſter for 1762, part ii. p. 101—127. Of the Perſees or Parſſes, the diſciples of Zoroaſter, he ſays, a very numerous body has been eſtabliſhed more than nine hundred years in Guzerat, to which place they came fugitives from Kerman, A.D. 767, on account of the Mahometan perſecutions, where their genius for commerce and induſtry, which are their known characteriſtics, procured for them very conſiderable ſettlements. Concerning the hierarchy of the Parſſes, this writer obſerves, that their miniſters of religion are divided into five claſſes, *viz.* erbeds, mobeds, deſtours, deſtour mobeds, and deſtouran deſtours, or deſtours of deſtours. An erbed is a perſon who has ſubmitted to the purification directed by the law, who has read, during four days without interval, the Izeſchne and the Vendidad, and who is inſtructed in the ceremonies of the worſhip eſtabliſhed by Zoroaſter. If the erbed afterwards continues to read publicly the Zend works, which conſtitute the liturgy, and to perform the miniſterial functions, he becomes a mobed, though he does not underſtand the Zendaveſta; but if he contents himſelf with ſtudying the law, the Zend, and the Pehlvi, or Pehlavi, without exerciſing the miniſterial functions, he is called a deſtour.

The deſtour mobed is he who unites the qualifications of the mobed and deſtour; and the deſtouran deſtour is the principal deſtour of a city or province, who decides caſes of conſcience, and determines points of law, and to whom the Parſſes pay a tithe of their revenues.

As for thoſe Zend writings, which the Parſſes attribute to their legiſlator, and for which they have the ſame veneration as the Jews have for their Hebrew text, M. du Perron inclines to think, though he does not affirm, that they are really the works of Zoroaſter, whoſe reputation has been acquired by laws that have ſubſiſted two thouſand five hundred years.

The law, which was either framed or regulated by Zoroaſter, was divided, as we are told by modern authors, into twenty-one noſhs, or parts: ſeven treat of the creation and hiſtory of the world; ſeven of morality, and civil and religious duties; and ſeven of phyſic and aſtronomy. Among the Parſſes it is an univerſally received tradition, that Alexander the Great condemned theſe twenty-one volumes to the flames, after having cauſed them to be tranſlated into Greek. Thoſe which eſcaped are, the Vendidad, the Izeſchne, the Viſſpered, the Jeſchts, and the Neaeſchs, in Zend, and ſome other Pehlvic tranſlations of Zend originals. The Parſſes have alſo a great number of prayers, which they call nerengs, and which in general are written in modern Perſic, with Zend characters, which they affect to uſe in all writings that treat of religion, though compoſed in modern Perſic. The writings of Zoroaſter, which ſtill remain, ſpeak of the creation of the univerſe, of the terreſtrial paradiſe, and the diſperſion of mankind; of the cauſe of the reſpect paid to fire, of the origin of evil, natural and moral; of the angels appointed to the government of the univerſe; of ſeveral particulars relating to the end of the world, and the reſurrection, &c. &c. They alſo contain predictions with reſpect to the latter times, ſome excellent moral precepts, and a very extenſive ceremonial code.

The Zend, according to Du Perron, is not the name of Zoroaſter's writings, but merely of the characters, though generally uſed to ſignify the language itſelf, in which they were written: the language of the original text is called Aveſta, and is a dead language, and was entirely unknown to the Parſies before the time of Zoroaſter, who, he apprehends, brought it from the mountains; and is totally different from the Pehlvi or ancient Perſic, ſpoken in the time of Zoroaſter. He farther ſuppoſes, that the works of Zoroaſter, ſtill extant in the Pehlvi, were tranſlations made into that language during the life of this legiſlator, or ſoon after his death.

The Pazend, which Dr. Hyde makes to be the name of a work, is, according to Du Perron, the name of a language, which is a dialect or corruption of the Aveſta, and almoſt extinct, except that a few words of it are preſerved in the Pehlvic tranſlation. The characters of the Aveſta and Pehlvi are different; the former, which are properly the Zend letters, being much the neateſt; the Pazend has no peculiar alphabet, but adopts that of the Zend or Pehlvic indifferently. (On this ſubject, ſee *Language of* PERSIA.) For M. du Perron's account of the eighteen MSS. of which he brought duplicate copies with him, and an abſtract of their contents, we muſt refer to the Ann. Reg. &c. *ubi ſupra.*

This writer has publiſhed a tranſlation of the Zendaveſta, with remarks and illuſtrations, &c. in 3 vols. 4to. at Paris, in 1771.

The Zend, as ſir W. Jones ſuggeſts (Works, vol. iii. p. 115, 8vo.), bore a ſtrong reſemblance to Sanſkrit, and the Pehlvi to Arabic, being a dialect of the Chaldaic. Sir W. Jones, from a peruſal of two vocabularies, exhibited in this work, one in Zend, and another in Pehlvi, and derived from a collection of traditional pieces in modern Perſian, was confirmed in his opinion concerning the Chaldaic origin of the Pehlvic; and in peruſing the Zend gloſſary, he was ſurpriſed to find, that ſix or ſeven words in ten were pure Sanſkrit. M. Anquetil, he ſays, moſt certainly, and the Perſian compiler moſt probably, had no knowledge of Sanſkrit, and could not therefore have invented a liſt of Sanſkrit words: it muſt therefore be an authentic liſt of Zend words, which had been preſerved in books or by tradition; and hence it follows that the language of the Zend was at leaſt a dialect of the Sanſkrit, approaching perhaps as nearly to it as the Pracrit, or other popular idioms which are known to have been ſpoken in India 2000 years ago. As ſoon as M. Anquetil publiſhed the above-mentioned work, ſir W. Jones immediately diſcovered that the work was ſpurious, and by no means to be attributed to Zoroaſter; in conſequence of which he publiſhed in the ſame year, "Lettre à M. A—— du P—— dans laquelle eſt compris l'Examen de ſa Traduction des Livres attribués à Zoroaſtre." This letter is contained in the 10th volume of his works, ed. 8vo. In Germany this verſion of M. Anquetil has met with more ſucceſs, and has not only been tranſlated into German, but applied to the purpoſes of explaining the New Teſtament. This uſe of it has been ſuggeſted by Michaelis, and exemplified in the illuſtration of the introduction to St. John's goſpel, and particularly of the term "word," which is uſed in the Zendaveſta in the ſame ſenſe as by St. John and the Gnoſtics for the name of a perſon, and determines the proper tranſlation of λογος. (Michaelis by Marſh, vol. i. p. 161.) Several other perſons, beſides ſir W. Jones, have queſtioned the authenticity of the work which M. Anquetil has tranſlated, or its being a genuine remain of Zoroaſter.

Mr. Richardſon, in his "Diſſertation on the Language, Literature, and Manners of the Eaſtern Nations," originally prefixed to his Perſian, Arabic, and Engliſh Dictionary, 1778 (chap. i. ſect. 2.), is very ſevere, both on Dr. Hyde and M. du Perron. Thoſe fragments of the ſuppoſed works of Zoroaſter, which Dr. Hyde has given us under the title of *Sadder*, are, he ſays, the wretched rhymes of a modern Parſi deſtour or prieſt, who lived about three centuries ago; whilſt the publications of M. Anquetil du Perron carry palpable marks of the total or partial fabrication of modern times. The Zend language, he ſays, is not genuine; and M. du Perron has produced no diſcovery which can ſtamp his publication with authority.

He adds, the ſpecimens of old Perſian in Hyde's Religio

Veterum Perſarum are ſimply modern language in ancient characters.

In the "Memoirs of the Royal Society of Gottingen for 1799," *i. e.* "Commentationes Societatis Regiæ Scientiarum Gottingenſis, &c." we have a memoir by M. Chriſtopher Meiners, who enters into a critical examination of the authenticity and antiquity of the books publiſhed by M. Anquetil du Perron, as genuine writings of Zoroaſter; and alleges many plauſible arguments to prove them recent and ſpurious. He ſhews, that they contain a multitude of fables, totally unknown to the ancient Perſians, and contrary to the ſpirit of their laws and religion; and alſo many opinions and ceremonies, which had their firſt riſe many ages after Zoroaſter. The diſſertations of profeſſor Meiners, relating to the Zendaveſta, are printed in the 8th volume of the Novi Commentarii Soc. Reg. Gotting.; and in the 1ſt and 3d volumes of the Commentationes.

Some have thought that the truths which are obſervable in Zendaveſta, Vendidad Sadi, and other writings of the eaſtern nations, were derived from the diſciples of Neſtorius, who were found very early on the coaſt of Malabar. But this, Mr. Bryant thinks, is a groundleſs ſurmiſe; becauſe the religious ſects, among which theſe writings have been preſerved, are widely ſeparated, and moſt of them have no connection with Malabar or the Chriſtians of that quarter. And beſides, the Brahmins and Banians adhere cloſely to their own rites, and abhor all other perſuaſions; and they are influenced by cuſtoms and ſcruples, which prevent their intercourſe with other people. In their writings there occurs no trace of Chriſtianity, or of its founder; and thence Mr. Bryant infers, that whatever truths may be found in the writings of theſe people, they were derived from a higher ſource, and by a different channel. See Anal. of Anc. Mythology, vol. iii. p. 599, &c.

We ſhall terminate this article with adding, that Dr. Hyde preſented the copy of part of the Zend writings in his poſſeſſion to the univerſity of Oxford; and that the whole Zend was afterwards brought from India by Mr. Frazer, and is lodged with his other oriental MSS. in the Radcliff library at Oxford.

ZENDERO, in *Geography*. See Gingiro.

ZENDEROUD. See Zeinderood.

ZENDGIN Serai, a town of Grand Bucharia; 30 miles S. of Samarcand.

ZENDORFF, a town of the duchy of Stiria; 12 miles E. of Landſperg.

ZENECHDON, a term uſed by the Arabian phyſicians for a preparation of arſenic, for external uſe; *zeech* being their name for arſenic.

ZENEXTOR, one of the many names by which the chemiſts have called mercury.

ZENGAN, Zenigan, or *Zinjan*, in *Geography*, a town of Perſia, in the province of Irak, ſaid to have been fortified many years before the Chriſtian era, and at one time to have contained 20,000 houſes. It was entirely deſtroyed by Timur Bec when he firſt paſſed through that part of Perſia; but being informed that it had long been the ſeat of learning and ſcience, on his return from Turkey he in part rebuilt it. Since that time it has been frequently ſacked and deſtroyed by the Tartars and the Turks. It contained in the 17th century about 2000 houſes. It is a large, and now apparently a proſperous town, capital of the extenſive diſtrict of Khumſeh, which is 71 miles down an uneven country, full of deep ravines, from hence to the banks of the Kizilozien, or golden ſtream, the natural boundaries of Irak and Azerbijan; 21 miles N.W. by W. of Sultania.

ZENGH. See Segna.

ZENGHI, a river of Armenia, which runs into the Aras, 10 miles S. of Erivan.

ZENGIFUR, a word by which ſome of the chemical writers have expreſſed cinnabar.

ZENGITZA, in *Ancient Geography*, a promontory of Africa, in Ethiopia, upon the gulf of Barbary. Ptolemy.

ZENGUIA, in *Geography*, a town of Syria, in the pachalic of Aleppo, on the Euphrates; 55 miles N.N.E. of Aleppo.

ZENHAGA. See Zanhaga.

ZENI, a word uſed by many of the chemical writers as a name for vitriol.

ZENIC, or Zenik, in *Zoology*, a ſpecies of weaſel. See Viverra.

ZENICON, the name of a poiſon, compoſed of ſeveral ingredients, and uſed to poiſon the tips of the arrows with which the Celtic hunters ſhot at the beaſts they purſued for food. The poiſon was known to be of that quick ſpreading nature, that as ſoon as the beaſt was fallen, the huntſman ran up to it, and cut out a large piece of the fleſh about the wound immediately, to hinder the venom from ſpreading farther. The antidote to this poiſon was ſuppoſed to be the leaves of oak, beech, and other trees.

ZENIEH, in *Geography*, a town of Aſiatic Turkey, in Caramania; 15 miles of Selefkeh.

ZENITH, in *Aſtronomy*, is derived from an Arabic word ſignifying *point*, and is that peculiar point in the viſible celeſtial hemiſphere, which, at a given time, is vertical to a ſpectator, ſituated on any part of the earth's ſurface, and from which, if a perpendicular line were demitted through the place of the ſpectator, it would proceed to the centre of the earth. Of all the points in the apparent concavity of the viſible hemiſphere, the *zenith point* is the moſt intereſting; it is not only the pole of the local horizon of every place, and of all parallels of altitude, but is the point to which all the grand circles of the ſphere are referred, and through which not only the great circles connecting the cardinal points, but all the circles of azimuth paſs and interſect one another; and further, it is the only point in the celeſtial expanſe that is not affected by atmoſpheric *refraction*. If the earth had no annual or diurnal motion, nor any nutation of its axis, the zenith of each place on the earth's ſurface would be ſo many fixed points in the heavens; but as none of theſe is the caſe, the actual zenith of every place, except over the two poles of the earth, is continually changing. The annual orbit of the earth is indeed ſo ſmall in compariſon of the diſtance of a ſtar from it, that the parallax ariſing therefrom is too ſmall to be appreciable with certainty even by the beſt inſtruments; but the effect of *nutation* of the earth's axis is very perceptible, as is alſo the *aberration* of light occaſioned by the earth's progreſs in its annual orbit; and theſe will both conſpire to render the *apparent* a little different from the *true* zenith. It is, however, the earth's diurnal motion that produces the principal change in the celeſtial ſituation of the zenith; for as this planet revolves on its axis, any given place on its ſurface has a correſponding ſucceſſion of zeniths, which deſcribe a circle, at the diſtance of its co-latitude from the neareſt pole; and hence a ſucceſſion of ſtars ſituated in this circle will appear to tranſit the zenith in a direction contrary to that of the earth's diurnal motion in every ſidereal day, or time of one entire rotation. Hence, though the zenith of any place may be conſidered as a fixed point in the heavens, as to its *direction*, when viewed by a ſpectator ; yet as it has reference to the apparent place of a heavenly body, it is not fixed, becauſe the earth's motion is continually carrying the ſpectator's eye in a circle that produces the optical effect of an apparent circumpolar revolution of the celeſtial bodies. Whatever point of the hemiſphere is at any moment vertical to an obſerver on any part of the globe, *that point* is the *zenith* for the time *then paſſing*, and will again be the zenith, or very nearly ſo, after an interval of one complete rotation of the earth ; and, therefore, ſtrictly ſpeaking, in every place there are as many ſucceſſive zeniths in this period, as there are appreciable points in the circle generated in the heavens by the ſuperior end of the vertical line carried round by the globe in rotation.

Becauſe every point of the horizon is juſt 90° diſtant from the exiſting zenith, in every place, and at all times, it will be readily apprehended, that the complement of the altitude of any heavenly body will, at any inſtant, be the angular diſtance of that body from the zenith of the place of obſervation ; but as this diſtance varies inverſely with the altitude, it is more properly called the *co-altitude* than the *zenith-diſtance*, the former being a variable, and the latter a limited quantity. The *zenith-diſtance* of any ſtar is properly the complement of its *meridian* or *greateſt* altitude in any given place, and as the latitude of the place varies, ſo will the zenith-diſtance of the ſame body, but inverſely ; the diſtance of the zenith to the pole being always the complement of the latitude. Hence it is obvious, that when the zenith-diſtance of a ſtar is obſerved by any inſtrument that meaſures it accurately, the latitude of the place may be inferred from the tabular polar diſtance of that ſtar, as well as from the declination, which is its complement ; and, therefore, it is a matter of no importance in theory, whether the altitude or zenith-diſtance of a body tranſiting the meridian be taken, for the purpoſe of aſcertaining its place in the heavens, when the latitude of the obſerver is known, or for the purpoſe of determining the latitude of the place, when the declination, or polar diſtance of the body, is known. Accordingly, in the circular inſtruments that have been recently introduced into obſervatories, and that will reverſe in poſition, it is uſual to number the diviſions and ſubdiviſions ſo, that when they read altitudes with the graduated plane facing the eaſt, they read zenith-diſtances (on the meridian) when the ſame is made to face the weſt, and *vice verſâ ;* ſo that not only are the oppoſite errors of collimation of the teleſcope and of the bubble or plumb-line thus corrected, but when atmoſpheric refraction is allowed for, the ſum of the two readings, or of the averages of ſeveral, will be exactly 90°, or otherwiſe 180°, if the obſervations be truly taken, and the inſtrument duly adjuſted for zero and collimation ; which check is of great practical importance in the delicate operations of the aſtronomer.

ZENITH-*Sector* is an *aſtronomical* inſtrument, by means of which the angular diſtance of a ſtar is accurately meaſured from the zenith point of any given place towards the north or ſouth. The firſt inſtrument made uſe of for this purpoſe was contrived by Dr. Hooke, with a view of determining the annual parallax of a fixed ſtar, agreeably to the ſuggeſtion of Galileo. The teleſcope, which Dr. Hooke, in the year 1669, made the eſſential part of his inſtrument, was thirty-ſix feet long, the principle of achromatiſm not being at that time practically applied, ſo as to allow of conſiderable power with a ſhort focal diſtance of the object-glaſs ; but the length of the radius of his arc of meaſurement promiſed advantages over every other inſtrument, which juſtified the conception and execution of the plan, though its accompliſhment failed of correſponding ſucceſs. Indeed, the nice arts of conſtructing achromatic teleſcopes, and of dividing the arc of a circle with extreme preciſion, had neither of them yet been perfected. From the Cutlerian Lectures we learn, that the firſt obſervation with this inſtrument was made on the 6th of July of the above-mentioned year, on the ſtar denominated γ Draconis, which, on that evening, was found to paſs at the diſtance of 2′ 12″ to the north of the zenith of Greſham college ; which was alſo found to be the caſe on the 9th of the ſame month : but on the 6th of Auguſt next following, the diſtance was only 2′ 6″ ; and on the 21ſt of October after only 1′ 48″, or 1′ 50″ ; whence it was concluded, that the meaſurement of a zenith-diſtance taken by this inſtrument was liable to an error of 24″, or perhaps more ; and it was conſidered, therefore, that the inſtrument was quite incompetent to the purpoſe for which it was intended. But an original idea once ſuggeſted, as the baſis of uſeful ſpeculation, is not readily abandoned, even under an apparent want of ſucceſsful application. The Hon. Samuel Molyneux afterwards availed himſelf of the manual ſkill of the ingenious Graham, and by the aſſiſtance of Dr. Bradley put up a zenith-ſector at Kew, in the year 1725, which turned out to be much more accurate than its predeceſſor, though the focal length of the object-glaſs of its teleſcope was only 24¼ feet. With this inſtrument, and with one of about one-half its focal length, were made two of the moſt important diſcoveries in aſtronomy that have graced the annals of this ſcience ; *viz.* the *nutation* of the earth's axis, and the *aberration of light* in its paſſage from the heavenly bodies. As the hiſtory of aſtronomical diſcoveries, and that of aſtronomical inſtruments, are mutually illuſtrative of each other, and as a detail of the *minutiæ* is always intereſting, that connect great reſults with primary meaſures, that might otherwiſe be conſidered as inſignificant, we will make no apology for introducing here Dr. Bradley's own account of his proceedings, as inſerted in the Philoſophical Tranſactions of London, N° 406. p. 149 of the Abridg.

"The following obſervations," ſays the author, "were begun by the honourable Samuel Molyneux at Kew, continued and repeated by myſelf at Kew and Wanſtead, in hopes of verifying thoſe that Dr. Hooke formerly communicated to the public, concerning the *parallax of the fixed ſtars.* (London, 1674.) Therefore the ſame ſtar was made choice of by Mr. Molyneux, almoſt the ſame method followed, and his inſtrument conſtructed upon principles nearly the ſame, but greatly exceeding the doctor's in exactneſs, which was chiefly owing to our curious member (of the Royal Society) Mr. George Graham, to whom the lovers of aſtronomy are alſo indebted for ſeveral other exact and well-conſtructed inſtruments. Mr. Molyneux's apparatus was completed and fitted for obſerving about the end of November, 1725 ; and on the 3d day of December following, the bright ſtar in the head of Draco (marked γ by Bayer) was for the firſt time obſerved, as it paſſed near the zenith, and its ſituation carefully taken with the inſtrument. The like obſervations were made on the 5th, 11th, and 12th days of the ſame month ; and there appearing no material difference in the place of the ſtar, a farther repetition of them at this ſeaſon ſeemed needleſs, it being a part of the year wherein no ſenſible alteration of parallax in this ſtar could ſoon be expected. It was chiefly, therefore, curioſity that tempted me (being then at Kew, where the inſtrument was fixed) to prepare for obſerving the ſtar on Dec. 17th, when, having adjuſted the inſtrument as uſual, I perceived that it paſſed a little more ſoutherly this day than when it was obſerved before. Not ſuſpecting any other cauſe of this appearance, we firſt concluded, that it was owing to the uncertainty of the obſervations, and that either this or the foregoing were not ſo exact as we had before ſuppoſed; for which reaſon we propoſed to repeat the obſervation again, in order to determine from whence this difference proceeded; and upon doing it on Dec. 20th, I found that the ſtar paſſed ſtill more ſoutherly than in the former obſervations. This ſenſible alteration the more ſurpriſed us, in that it was the *contrary way* from what it would have been had it proceeded from an annual parallax of the ſtar; but being now pretty well ſatisfied that it could not be entirely owing to the want of exactneſs in the obſervations, and having no notion of any thing elſe that could cauſe ſuch an apparent motion as this in the ſtar, we began to think that ſome change in the materials, &c. of the inſtrument itſelf might have occaſioned it. Under theſe apprehenſions we remained ſome time; but being at length fully convinced, by ſeveral trials, of the great exactneſs of the inſtrument, and finding by the gradual increaſe of the ſtar's diſtance from the pole, that there muſt be ſome regular cauſe that produced it, we took care to examine nicely, at the time of each obſervation, how much it was: and about the beginning of March, 1726, the ſtar was found to be $20''$ more ſoutherly than at the time of the firſt obſervation. It now, indeed, ſeemed to have arrived at its utmoſt limit ſouthward, becauſe in ſeveral trials made about this time, no ſenſible difference was obſerved in its ſituation. By the middle of April, it appeared to be returning back again towards the north; and about the beginning of June, it paſſed at the ſame diſtance from the zenith as it had done in December, when it was firſt obſerved.

"From the quick alteration of this ſtar's declination about this time, (it increaſing a ſecond in three days,) it was concluded, that it would now proceed northward, as it before had gone ſouthward of its preſent ſituation; and it happened as was conjectured; for the ſtar continued to move northward till September following, when it again became ſtationary, being then near $20''$ more northerly than in June, and no leſs than $39''$ more northerly than it was in March. From September the ſtar returned towards the ſouth, till it arrived in December to the ſame ſituation it was in at that time twelve months, allowing for the difference of declination on account of the preceſſion of the equinox.

"This was a ſufficient proof that the inſtrument had not been the cauſe of this apparent motion of the ſtar; and to find one adequate to ſuch an effect ſeemed a difficulty. A *nutation of the earth's axis* was one of the firſt things that offered itſelf upon this occaſion; but it was ſoon found inſufficient; for though it might have accounted for the change of declination in γ Draconis, yet it would not at the ſame time agree with the phenomena in other ſtars; particularly in a ſmall one almoſt oppoſite in right aſcenſion to γ Draconis, at about the ſame diſtance from the north pole of the equator; for, though this ſtar ſeemed to move the ſame way as a nutation of the earth's axis would have made it, yet in changing its declination but about as much as γ Draconis in the ſame time, (as appeared upon comparing the obſervations of both made upon the ſame days, at different ſeaſons of the year,) this plainly proved that the apparent motion of the ſtars was not occaſioned by a real nutation, ſince, if that had been the cauſe, the alteration in both ſtars would have been near equal.

"The great regularity of the obſervations left no room to doubt, but that there was ſome regular cauſe that produced this unexpected motion, which did not depend on the uncertainty or variety of the ſeaſons of the year. Upon comparing the obſervations with each other, it was diſcovered, that in both the fore-mentioned ſtars, the apparent difference of declination from the *maxima* was always nearly proportional to the verſed ſine of the ſun's diſtance from the equinoctial points. This was an inducement to think, that the cauſe, whatever it was, had ſome relation to the ſun's ſituation with reſpect to thoſe points. But not being able to frame any hypotheſis at that time, ſufficient to ſolve all the phenomena, and being very deſirous to ſearch a little farther into this matter, I began to think of erecting an inſtrument for myſelf at Wanſtead, that, having it always at hand, I might with the more eaſe and certainty inquire into the laws of this new motion. The conſideration, likewiſe, of being able by another inſtrument to confirm the truth of the obſervations hitherto made with Mr. Molyneux's was no ſmall inducement to me; but the chief of all was the opportunity I ſhould thereby have of trying in what manner other ſtars were affected by the ſame cauſe, whatever it was. For Mr. Molyneux's inſtrument being originally deſigned for obſerving γ Draconis, (in order, as I ſaid before, to try whether it had any ſenſible parallax,) was ſo contrived, as to be capable of but little alteration in its direction, not above ſeven or eight minutes of a degree; and there being few ſtars within half that diſtance from the zenith of Kew bright enough to be well obſerved, he could not, with his inſtrument, thoroughly examine how this cauſe affected ſtars differently ſituated with reſpect to the equinoctial and ſolſtitial points of the ecliptic.

"Theſe conſiderations determined me; and by the contrivance and direction of the ſame ingenious perſon, Mr. Graham, my inſtrument was fixed up, Auguſt 19, 1727. As I had no convenient place where I could make uſe of ſo long a teleſcope as Mr. Molyneux's, I contented myſelf with one of but little more than half the length of his, (*viz.* of about $12\frac{1}{2}$ feet, his being $24\frac{1}{4}$,) judging from the experience which I had already had, that this radius would be long enough to adjuſt the inſtrument to a ſufficient degree of exactneſs; and I have had no reaſon ſince to change my opinion: for from all the trials I have yet made, I am very well ſatisfied that when it is carefully rectified, its ſituation may be ſecurely depended upon to half a ſecond. As the place where my inſtrument was to be hung in ſome meaſure determined its radius, ſo did it alſo the length of the arc, or limb, on which the diviſions were made to adjuſt it; for the arc could not conveniently be extended farther than to reach to about $6\frac{1}{4}°$ on each ſide my zenith. This indeed was ſufficient, ſince it gave me an opportunity of making choice of ſeveral ſtars, very different both in magnitude and ſituation; there being more than two hundred inſerted in the Britiſh Catalogue, that may be obſerved with it. I needed not to have extended the limb ſo far, but that I was willing to take in *Capella*, the only ſtar of the firſt magnitude that comes ſo near my zenith.

"My inſtrument being fixed, I immediately began to obſerve ſuch ſtars as I judged moſt proper to give me light into the cauſe of the motion already mentioned. There was variety enough of ſmall ones, and not leſs than twelve that I could obſerve through all the ſeaſons of the year; they being bright enough to be ſeen in the day-time, when neareſt the ſun. I had not been long obſerving, before I perceived that the notion we had before entertained of the ſtars being fartheſt north and ſouth, when the ſun was about the equinoxes, was only true of thoſe that were near the ſolſtitial colure; and after I had continued my obſervations a few months, I diſcovered what I then apprehended to be a general law obſerved by all the ſtars, *viz.* that each of them became ſtationary, or was fartheſt north or ſouth, when they paſſed over my zenith at ſix of the clock, either in the morning or evening. I perceived likewiſe, that whatever ſituation the ſtars were in with reſpect to the cardinal points of the ecliptic, the apparent motion of every one tended the ſame way, when they paſſed my inſtrument about the ſame hour of the day or night; for they all moved ſouthward while they paſſed in the day, and northward in the night; ſo that each was fartheſt north, when it came about ſix of the clock in the evening, and fartheſt ſouth, when it came about ſix in the morning.

" Though I have ſince diſcovered, that the *maxima* in moſt of theſe ſtars do not happen exactly when they come to my inſtrument at thoſe hours; yet not being able at that time to prove the contrary, and ſuppoſing that they did, I endeavoured to find out what proportion the greateſt alterations of declination in different ſtars bore to each other, it being very evident that they did not all change their declination equally. I have before taken notice, that it appeared from Mr. Molyneux's obſervations, that γ Draconis altered its declination about twice as much as the fore-mentioned ſmall ſtar almoſt oppoſite to it; but examining the matter more particularly, I found that the greateſt alteration of declination in theſe ſtars was as the ſine of the latitude of each reſpectively. This made me ſuſpect that there might be the like proportion between the *maxima* of other ſtars; but finding that the obſervations of ſome of them would not perfectly correſpond with ſuch an hypotheſis, and not knowing whether the ſmall difference I met with might not be owing to the uncertainty and error of the obſervations, I deferred the farther examination into the truth of this hypotheſis, till I ſhould be furniſhed with a ſeries of obſervations made in all parts of the year, which might enable me not only to determine what errors the obſervations are liable to, or how far they may ſafely be depended upon, but alſo to judge whether there had been any ſenſible change in the parts of the inſtrument itſelf.

" Upon theſe conſiderations, I laid aſide all thoughts at that time about the *cauſe* of the fore-mentioned phenomena, hoping that I ſhould the more eaſily diſcover it, when I was better provided with proper means to determine more preciſely what they were.

" When one year was completed, I began to examine and compare my obſervations; and having pretty well ſatisfied myſelf as to the general laws of the phenomena, I then endeavoured to find out the cauſe of them. I was already convinced that the apparent motion of the ſtars was not owing to a *nutation* of the earth's axis. The next thing that offered itſelf was an *alteration* in the *direction* of the *plumb-line*, with which the inſtrument was conſtantly rectified; but this, upon trial, proved inſufficient. Then I conſidered what *refraction* might do, but here alſo nothing ſatisfactory occurred. At laſt I conjectured that all the phenomena hitherto mentioned proceeded from the *progreſſive motion of light*, and the *earth's annual motion in its orbit*. For I perceived that if light was propagated in time, the apparent place of a fixed object would not be the ſame when the eye is at reſt, as when it is moving in any other direction than that of the line paſſing through the eye and object; and that when the eye is moving in different directions, the apparent place of the object would be different."

The author then proceeds to deduce from his obſervations the relative velocities of light, and of the earth in its annual orbit; ſhews what variation in the right aſcenſion and declination of ſtars differently placed may ariſe out of the *aberration* of light; and concludes that light, agreeably to ſuch deductions, muſt travel from the ſun to the earth in about $8'\ 7''.5$ of time. (See ABERRATION, LIGHT, and STARS.) The diſcovery of the earth's *nutation* was not, however, publiſhed until the year 1737. See NUTATION.

After our readers have ſeen what important diſcoveries and deductions have been derived from Graham's zenith-ſector in the hands of a ſkilful aſtronomer, they will be naturally diſpoſed to become acquainted with its conſtruction, which we will now proceed to deſcribe.

Zenith-Sector by Graham.—The zenith-ſector that we have ſaid Graham made for Mr. Bradley, afterwards Dr. Bradley, was removed to Greenwich, when the proprietor became aſtronomer royal, and is the ſame inſtrument which Dr. Maſkelyne uſed with great ſucceſs in adjuſting, by compariſon, the zero of the large quadrants. It ſtill remains at Greenwich, and is yet capable of meaſuring zenith-diſtances to the accuracy of half a ſecond, according to Bradley's original report, or even leſs. *Fig.* 1. of *Plate* XXXIII. of *Aſtronomical Inſtruments*, is a repreſentation of the eſſential parts of this inſtrument: A B repreſents the iron tube of the vertical teleſcope, which is ſuſpended by two ſmall metallic cylinders projecting at right angles from the ſuperior end, one of which is ſeen at *a*, and the other is hidden by the tube. Theſe cylinders, which conſtitute the axis of motion, reſt in a pair of Ys, attached to the ſolid wall facing the north, and alſo occaſionally to another pair fixed to a wall facing the ſouth; which additional pair allows the ends of the cylinders, or axis of motion, to be reverſed in poſition. The braſs bar C D is fixed to the ſame wall to which the pair of Ys are attached, at oppoſite ſides of the room, and bears a cock to which the micrometer-ſcrew E is fixed, which meaſures the fractional portion of a minute on its head *b*; and the ſecond ſcrew *c* is made to relieve it. The ends of theſe ſcrews preſs againſt ſtuds inſerted into the tube of the teleſcope, while the weight F pulls a ſtring round the fixed pulleys G and H, by means of a pliable cord, attached to the tube at the point *d*, and keeps the teleſcope home. The graduated arc I K contains $12\frac{1}{2}^{\circ}$, each ſubdivided into twelve parts, or five minute ſpaces, and is fixed exactly at right angles to the tube, over the point where the wires interſect the field of view. This arc was originally of braſs, but Siſſon put on an arc of ſteel, containing gold pins to receive the dots of diviſion. A plumb-line ſuſpended from the ſuperior end of the tube, over the centre of one of the cylinders *a*, and having an adjuſting ſcrew *e*, to bring the point of ſuſpenſion to the upper dot, falls near the face of the arc, and indicates the diſtance from zero at the middle of the arc; if the plumb-line covers one of the dividing dots of the ſcale, when a ſtar near the zenith is cut by the horizontal wire, then the quantity is read by the plumb-line and arc alone; but otherwiſe the fractional portion is aſcertained by means of the micrometer-ſcrew, which is made to preſs againſt the tube until the ſuſpended line coincides with the next neareſt dividing dot of the ſcale. The value of the micrometer-head, which is divided into thirty-four equal parts, was aſcertained by trying how many revolutions of the ſcrew would meaſure a degree, or other portion of the arc, exactly; and on an average of ſeveral trials made in different parts of the arc, it was aſcertained, that one revolution was not preciſely $34''$, but $33''.6328$, and one of its diviſions on the head, therefore, only $0''.9892$, inſtead of $1''$, as was intended by the maker. The inſtrument had originally a ſingle lens for its object-glaſs; but at the requeſt of the late Dr. Maſkelyne, Mr. Dollond ſubſtituted an achromatic object-glaſs, which has modernized the inſtrument, and put it nearly on a level with the new inſtruments which have lately been conſtructed and erected in the Royal Obſervatory by Troughton, on the beſt principles. If the zenith-ſector had been made to reverſe in poſition in the ſame ſituation, *i. e.* without being carried acroſs the room, its uſe would have been more convenient, and the obſervations more certain, inaſmuch as the ſame diſtance would have been preſerved between the axis of motion of the teleſcope, and the point acted upon by the micrometer-ſcrew, without any reſulting allowance. Beſides, the inſtrument would have been leſs liable to accidents; and reverſed obſervations might probably have been made on the ſame evening. When Bird afterwards made a zenith-ſector for the Oxford Obſervatory, he noticed theſe inconveniences, and obviated them by making the tube of the teleſcope turn round in its own place, ſo that the poſitions of the axis can be reverſed by an azimuthal motion that carries the plumb-line round at the ſame time; and when the plumb-line will cover the dot at zero during this whole motion, the teleſcope is truly vertical.

The adjuſtment for collimation is effected by an apparatus that moves the wires in the eye-piece, as in the tranſit-inſtrument, and may be thus effected: Let the graduated arc face the eaſt, and view a ſtar paſſing in or near the zenith, the proper time for doing which may be known from the ſtar's right aſcenſion, by means of a ſidereal clock, or by converſion of ſolar into ſidereal time, and note the diſtance from zero when the plumb-line is quiet, which it will ſoon be if the plummet is immerſed in a goblet of water, and mark down this quantity as read partly by the diviſions on the ſcale, and partly by the micrometer-head; which call the *eaſtern* meaſure with N. or S. annexed, accordingly as the ſtar paſſes to the north or ſouth ſide of the zenith point: then reverſe the poſition, and on a ſucceeding night, which will be 3′ 56″ ſooner on every ſucceſſive night, meaſure the zenith-diſtance of the ſame ſtar in like manner with the graduated ſcale facing the weſt; and call it the *weſtern* meaſure: then if the two quantities thus meaſured be ſimilar, the collimation for zenith-diſtance will be true; but if otherwiſe, one half of the difference of the two readings will be the *error* of collimation, which may be either corrected by the proper apparatus at ſucceſſive trials, or, which is perhaps better, may be allowed for in each obſervation. When the inſtrument has been uſed for ſeveral obſervations, it will be ſtill better to take an average of all the obſerved errors, as aſcertained by different ſtars, and to apply it with its proper ſign in future ſingle obſervations, ſo long as the inſtrument remains in all reſpects unaltered. It is hardly neceſſary to obſerve, that in uſing this inſtrument, when a ſtar is very near the zenith of any place, the micrometer alone, without reference to the graduated ſcale or arc, will give the due meaſure. How the latitude of any place may be very accurately determined from the meaſured zenith-diſtance of a ſtar, of known declination, will be ſeen preſently.

Zenith-Sector by Ramſden.—While the trigonometrical ſurvey of England was carrying on, it was found deſirable to have a portable zenith-ſector to aſſiſt in meaſuring an arc of the meridian, and as Ramſden had one in an half-finiſhed ſtate, that had been ordered by the duke of Richmond, the parties were prevailed on to have this finiſhed for the purpoſe, which was nearly done in Ramſden's life-time, in the year 1801, and completed in April 1802 by his ſucceſſor Berge. It was firſt tried at Greenwich, and then removed to the Iſle of Wight, where the operations began, and from whence they were continued northward from ſtation to ſtation, as deſcribed in the "Trigonometrical Survey," by captain William Mudge, and publiſhed from time to time by Mr. Faden, of Charing-Croſs. The original account of this complex inſtrument has reference to ſix large plates, and is too long for us to copy. (See vol. ii. p. 6. & *ſeq.* of part ii.) *Fig.* 2. of our *Plate* XXXIII. of *Aſtronomical Inſtruments*, gives a reduced perſpective view of this inſtrument, from an examination of which a better idea will be formed of its general conſtruction than by any detailed account we can give of its parts without the additional plates.

Captain Mudge ſays, "that Mr. Ramſden has here obviated the inconveniences attendant on the uſe of former ſectors; and has alſo diminiſhed, in a very conſiderable degree, the errors unavoidably reſulting from their imperfect conſtruction. The principles, he adds, on which he has founded the ſeveral improvements, conſiſt in the means of uniting the ſectorial tube to its axis, ſo as to enſure the permanency of the length of its radius, when erected for obſervations; more accurate methods of adjuſting the inſtrument vertically; and an eaſy way of placing the face of its arc in the plane of the meridian." The frame exhibited in our figure conſiſts of two parts; the external ſtand of mahogany, which ſupports the apparatus to which the ſectorial tube is attached; and an inner frame, containing that apparatus with the tube itſelf. The ſtand, or outer frame, is in the ſhape of an obtruncated pyramid, having a baſe ſix feet ſquare, and its vertex three. It unites ſtrength with ſimplicity of conſtruction. The inner frame, within which the ſector is ſuſpended, is ſupported at top in every lateral direction, while its lower extremity is terminated by a cone reſting in a metallic concavity, on which it turns in azimuth; and it can be kept in any poſition by a clamping apparatus acting with an azimuth circle, made faſt to the bottom of the external frame. The teleſcope of the ſector has an object-glaſs nearly eight feet long, with an aperture of four inches, near which is made faſt the tranſverſe axis of motion, ſimilar to that of a tranſit-inſtrument. The wires of the eye-piece of the teleſcope are illuminated by reflected light, entering the axis in the uſual way; and a plumb-line, with the ghoſt apparatus for adjuſtment to zero, is made a leading feature in the conſtruction. The arc is divided into 15°, which was the concluding work done by Berge, and each degree is ſubdivided into 5′ ſpaces, as in Graham's inſtrument. A ſecond teleſcope, of 29 inches focal length, is attached to the long tube, and moves in the plane of the divided arc to any given elevation, but partakes of the azimuthal motion when the long vertical teleſcope is turned round: with this 29-inch teleſcope horizontal angles are meaſured, by the help of the azimuth circle, which therefore is divided for this purpoſe. Beſides theſe eſſential parts, there are various appendages and bracing parts, rendered neceſſary by the ſize of the inſtrument, particularly a microſcopic tube reaching up to the upper dot of the plumb-line, and bent at both ends into a horizontal poſition for convenience of the obſerver. This contrivance required reflectors, both of the light, and of the image of the piece of mother-of-pearl that is biſected by the wire, conſtituting the plumb-line. The micrometer meaſures minutes and ſeconds in the uſual way, and the plummet is immerſed in a ſmall veſſel of water to prevent vibration. We mention theſe particulars *generally*, not only becauſe their particular uſes and modes of application have been previouſly deſcribed, when we explained other inſtruments, ſuch as Circles, Equatorials, Tranſit-*Inſtruments*, &c.; but becauſe this inſtrument has furniſhed hints to others who have copied in part, or wholly, ſeveral of Ramſden's contrivances. It was moreover neceſſary to introduce various weights, pulleys, cords, ſprings, &c. to facilitate and keep ſteady the motions of the different acting parts, which, together with the reading microſcopes, lamps, rods, and adjuſting ſcrews, give the inſtrument the appearance of great complexity.

The manner of adjuſting the inſtrument for obſervation is thus performed, according to Mr. Mudge's own words: *viz.* "The feet of the external ſtand ſhould be firſt carefully brought into a horizontal plane; and when they are ſo, the azimuth circle will be neceſſarily parallel to it, having its centre under the middle of the opening in the mahogany frame ſcrewed on the top of the ſtand. This being done, and the inſtrument ſet up, the plane of the arc ſhould be brought parallel to one of the ſides of the ſtand, in which ſituation the internal frame is to be clamped to the azimuth circle, and the wire brought to its proper diſtance from the limb, by means of the adjuſting ſcrew attached to one of the ſliders, which carries the concave receptacle and conical point. The dot at zero ſhould then be brought exactly under the plumb-line, as ſeen through the magnifier, and the point on the micrometer-head, at which its index ſtands, noted. The inſtrument is then to be turned half round; and if the ſame dot on the arc ſtill continues biſected, it will afford a proof of the internal ſtand being upright in one direction. But if the dot ſhould not continue biſected by the plumb-line, it muſt be made to do ſo, and the revolutions, or parts of a revolution, counted; half of which is to be turned back on the micrometer-head. The ſame dot, zero, is then to be brought under the plumb-line (wire), by means of the other adjuſting ſcrew, beneath the azimuth circle. If the ſtand is pretty accurately ſet up, one operation is ſufficient for bringing the interior frame upright in one direction, *viz.* either in that of the meridian, or the one at right angles to it. The arc is then to be turned round 90°, and the ſame operation gone through. This being properly done, the interior frame is made perfectly upright. The next ſtep to be taken is that of placing the long level on its axis above, and rectifying that axis by means of the Y plate ſcrews. If this be done carefully, the bubble will remain between the pointers of the level, whatever poſition the ſector may be placed in. Having thus rectified the inſtrument, by making the internal frame upright, and the axis horizontal, the only remaining point to engage attention is, placing the plumb-line at a proper diſtance from the arc: this is done by means of the ſcrew acting on the ſpring juſt under its point of ſuſpenſion. If great care be uſed in going through theſe ſeveral adjuſtments, the inſtrument may, at any future time, be accurately adjuſted for obſervation by turning the proper ſcrew belonging to the azimuth circle, and bringing the arc to its uſual diſtance from the wire."

In order to ſhew the accurate reſults that may be obtained from an inſtrument of this deſcription, and alſo the care that is neceſſary in uſing it, and in clearing the obſervations of errors ariſing from natural cauſes, we will ſubjoin a few Tables that were found uſeful in the grand trigonometrical operations, by means of which, in the years 1802 and 1806, the meridian arcs were compared with the correſponding terreſtrial meaſurements.

TABLE ſhewing the Runs of the Micrometer-Screw over every Five Minutes in the Firſt Degree on each Side of Zero.

Right-Hand Arc.					Left-Hand Arc.				
At	Rev.	Div.	Rev.	Div.	At	Rev.	Div.	Rev.	Div.
0° 0′	8	55.43	5	4.45	0° 0′	9	16.31	5	4.54
0 5	14	0.88			0 5	4	11.77		
0 5	9	32.55	5	4.55	0 5	9	8.73	5	4.56
0 10	14	37.10			0 10	4	4.17		
0 10	9	40.03	5	4.34	0 10	8	53.67	5	4.50
0 15	14	44.37			0 15	3	49.17		
0 15	9	19.13	5	4.45	0 15	9	16.13	5	4.44
0 20	14	23.58			0 20	4	11.69		
0 20	9	54.07	5	4.40	0 20	9	17.50	5	4.53
0 25	14	58.47			0 25	4	12.97		
0 25	9	39.23	5	4.41	0 25	10	4.30	5	4.50
0 30	14	43.64			0 30	4	58.80		
0 30	9	25.77	5	4.44	0 30	8	52.0	5	4.47
0 35	14	30.21			0 35	3	47.53		
0 35	9	58.53	5	4.54	0 35	9	7.83	5	4.53
0 40	15	4.07			0 40	4	3.30		
0 40	9	0.53	5	4.54	0 40	9	3.31	5	4.41
0 45	14	5.07			0 45	3	57.90		
0 45	9	12.47	5	4.55	0 45	9	12.63	5	4.40
0 50	14	17.02			0 50	4	8.23		
0 50	9	43.07	5	4.43	0 50	9	4.50	5	4.47
0 55	14	47.50			0 55	4	0.03		
0 55	8	41.27	5	4.50	0 55	8	35.0	5	4.57
1 0	13	45.77			1 0	3	30.43		

Table for converting the Diviſions ſhewn on the Micrometer Head into Seconds, the Space ſubtended by Five Minutes on the Limb being found equal to Five Revolutions and Forty-five Diviſions, as deduced from the Meaſurement of the total Arcs.

Div.	″	Div.	″
1	1.002	31	31.052
2	2.003	32	32.053
3	3.005	33	33.055
4	4.007	34	34.057
5	5.008	35	35.058
6	6.010	36	36.060
7	7.012	37	37.062
8	8.013	38	38.063
9	9.015	39	39.065
10	10.016	40	40.067
11	11.018	41	41.068
12	12.020	42	42.070
13	13.022	43	43.072
14	14.023	44	44.073
15	15.025	45	45.075
16	16.027	46	46.077
17	17.028	47	47.078
18	18.030	48	48.080
19	19.032	49	49.082
20	20.033	50	50.083
21	21.035	51	51.085
22	22.037	52	52.087
23	23.038	53	53.088
24	24.040	54	54.090
25	25.042	55	55.092
26	26.043	56	56.093
27	27.045	57	57.095
28	28.047	58	58.097
29	29.048	59	59.098
30	30.050	60	60.100

Table for ſupplying the neceſſary Correction to the obſerved Zenith-Diſtance of a Star, on account of the Expanſion or Contraction of the Sectorial Tube by One Degree of Heat.

Zenith Diſtance obſerved.		Correction for One Degree of Heat.
°	′	″
1	0	0.018
1	30	0.028
2	0	0.037
2	30	0.046
3	0	0.056
3	30	0.065
4	0	0.074
4	30	0.084
5	0	0.093
5	30	0.102
6	0	0.111
6	30	0.121
7	0	0.130
7	30	0.139

Observations made by Captain William Mudge on the Zenith-Diſtances of γ Draconis, with Ramſden's Zenith-Sector, at different Places.

Table I.—Greenwich Obſervatory, 1802. Point on the Limb 0° 0′ N.

Day of the Month.	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	°	
Apr. 16	W.	10	21.73	8	18.5	0	0	2	3.23	0	2	1.43	29.9	45.0	
19	W.	9	9.40	7	4.1				5.30			3.50	31.1	53.0	
22	E.	8	14.48	10	9.5			1	54.02		1	53.21	29.9	55.0	
23	E.	9	21.79	10	18.5				55.71			54.90	30.1	38.0	
25	W.	9	39.52	7	34.4			2	5.12		2	3.32	29.0	44.0	

TABLE II.—Dunnoſe, 1802. Point on the Limb 0° 50′ N.

Day of the Month.	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	°	°
May 10	E.	10	15.52	13	48.1	0	50	3	32.75	0	53	30.10	29.0	—	45.0
11	W.	9	38.66	5	56.4				41.26			38.62	28.85	43.9	43.5
13	E.	8	47.30	12	81.4				34.10			31.45	28.85	36.5	38.0
14	W.	7	32.38	3	49.2				42.18			39.54	28.92	34.5	34.5
16	E.	9	40.0	13	15.2				34.20			31.55	28.82	35.5	36.5
June 11	W.	7	20.70	3	29.5				50.20			47.58	28.34	53.5	52.5
13	E.	9	36.35	13	20.3				42.95			40.31	28.79	52.5	52.3
14	W.	8	25.26	4	33.4				50.86			48.24	28.26	54.3	53.0
16	E.	9	48.33	14	37.4				45.07			43.44	28.75	59.5	60.0
17	W.	8	32.66	4	39.4				52.26			49.64	28.82	56.0	58.0
18	E.	11	32.77	15	17.9				44.13			41.50	28.8	52.0	51.0
20	W.	8	9.48	4	17.0				51.48			48.86	29.97	58.6	57.0
21	E.	11	52.92	15	40.0				47.08			44.45	28.83	56.0	55.5

TABLE III.—Clifton, 1802. Point on the limb 1° 55′ S.

Day of the Month	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div	°	′	″	Inches.	°	°
July 20	W.	11	49.24	13	12.8	1	55	1	22.56	1	56	21.69	28.9	56.5	55.0
21	E.	7	23.81	5	53.7				29.11			28.26	28.5	53.0	52.2
22	W.	7	54.31	9	17.1				21.79			20.92	28.7	54.5	54.5
23	E.	3	46.15	2	18.9				27.25			26.39	29.0	56.1	56.1
26	W.	9	8.47	10	29.5				21.03			20.16	28.8	64.0	64.0
28	E.	9	35.56	8	9.6				25.96			25.11	28.8	56.2	57.3
29	W.	8	44.41	10	4.5				19.09			19.03	29.0	56.5	56.5
Aug. 1	W.	8	41.22	10	3.0				20.78			19.91	29.2	59.5	57.0
3	E.	9	7.59	7	40.3				26.29			25.43	29.1	68.0	64.5
5	E.	7	50.50	6	25.0				25.50			24.64	29.0	73.0	71.0
7	W.	9	7.55	10	24.6				17.05			16.18	28.9	64.2	65.2
12	E.	11	7.56	9	42.7				23.86			23.0	29.1	57.5	57.5
13	W.	8	12.48	9	29.4				16.92			16.04	29.3	63.0	61.2
17	E.	8	10.32	6	46.0				23.32			22.46	29.0	69.5	70.5
18	W.	8	32.97	9	48.5				15.53			14.65	28.8	70.0	70.1

TABLE IV.—Arbury-Hill, near Daventry, 1802. Point on the Limb 0° 40′ S.

Day of the Month.	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance. Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	°	°
Sept. 10	W.	8	53.85	11	6.4	0	40	2	11.55	0	42	9.76	28.2	51.5	54.0
11	E.	8	47.75	6	31.9				15.85			14.07	28.53	48.2	55.0
18	E.	9	46.65	7	28.7				17.95			16.17	28.8	70.3	72.3
19	W.	9	18.90	11	31.5				12.60			10.82	28.8	67.5	73.5
20	E.	9	1.78	6	42.8				17.98			16.20	28.8	68.3	71.4
22	E.	9	16.52	6	58.2				17.32			15.54	28.8	79.8	75.8
23	W.	8	9.97	10	20.5				10.53			8.74	28.8	67.5	65.3
24	E.	9	16.97	7	0.8				16.17			14.39	28.9	70.5	70.2
25	W.	9	16.0	11	27.6				11.60			9.81	29.1	74.0	75.2
26	W.	9	10.47	11	23.0				12.53			10.75	29.0	59.5	64.2
29	E.	9	17.50	7	0.8				16.70			14.92	29.1	64.0	69.5
30	W.	9	21.63	11	33.5				11.87			10.08	29.9	64.0	69.5
Oct. 1	E.	9	34.95	7	15.5				19.45			17.87	28.9	72.5	71.9
2	E.	9	25.33	7	7.0				18.33			16.57	28.8	71.0	75.0
3	W.	8	54.30	11	7.1				11.80			10.01	28.6	74.0	73.0

TABLE V.—Delamere Foreſt, 1806. Point on the Limb 1° 40′ S.

Day of the Month.	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance. Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	°	°
May 30	W.	10	14.2	7	49.82	1	40	2	23.38	1	42	21.61	29.37	49.5	50.0
June 2	E.	4	45.3	7	14.10				27.80			26.04	29.67	51.0	51.5
4	W.	9	49.1	7	29.0				20.10			18.33	28.96	48.0	49.0
5	E.	4	39.4	7	5.0				24.60			22.84	29.17	51.5	51.0
7	W.	13	6.6	10	44.73				20.87			19.01	29.55	51.5	54.5
9	E.	5	20.9	7	44.68				23.78			22.01	29.67	62.0	63.0

TABLE VI.—Burleigh-Moor, 1806. Point on the Limb 3° 5′ S.

Day of the Month.	Face.	Plumb-line.		Obſervation of the Star.		Zenith-Diſtance in Revolutions.				Zenith-Diſtance Reduced.			Barometer.	Thermometer.	
														Above.	Below.
		Rev.	Div.	Rev.	Div.	°	′	Rev.	Div.	°	′	″	Inches.	°	°
July 6	W.	9	11.5	11	14.9	3	5	2	3.40	3	2	46.4	29.25	51.0	51.0
7	E.	11	19.9	10	32.47			1	46.43		3	14.47	28.95	54.5	54.5
10	E.	10	16.0	8	25.8				49.20			11.22	29.59	65.0	62.5
11	W.	5	47.3	7	43.92				55.62			5.18	29.29	56.5	55.0
16	W.	5	7.5	7	4.24				55.74			5.07	29.1	51.5	51.5
18	W.	6	1.5	7	55.13				53.63			6.18	29.25	59.0	56.0
19	E.	9	36.6	7	46.61				48.99			11.83	29.36	56.5	55.0

Beſides theſe obſervations, various others were taken of different ſtars in Draco, Cygnus, Urſa Major, Hercules, Perſeus, and Auriga, from an average of all which the final reſults were obtained; but before the true or *mean* zenith-diſtances can be exactly known, the *apparent* meaſures muſt be corrected by certain equations for *aberration*, *nutation*, *ſemi-annual ſolar equation*, *preceſſion*, and *refraction;* the Tables proper for which are chiefly given under our article DECLINATION. It was deemed ſufficient for our purpoſe in this place to confine ourſelves to the conſideration of the obſervations made on γ Draconis alone, which being a ſtar of the ſecond magnitude, and very near the zenith of London, and of the ſouthern parts of England, was conſidered as the beſt object. We will therefore ſubjoin the reduction of the obſervations made on this ſtar by way of illuſtrating their application in practical aſtronomy.

Reduction of the Obſervations contained in Table I.

	Face of Limb Weſt.				Face of Limb Eaſt.			
		°	′	″		°	′	″
Greenwich Obſervatory, 1802.	April 16.	0	2	28.37	April 22.	0	2	19.05
	19.	0	0	29.92	23.	0	0	20.54
	25.	0	0	28.55				
					Mean E.	0	2	19.79
	Mean	0	2	28.94	Mean W.	0	2	28.94
					2)	0	4	48.73
Apparent Mean of both poſitions					=	0	2	24.36
And alſo, half the difference, or collimation					=			4.57
Then in Bode's Catalogue Dec. N. of γ Draconis, 1801					=	51	31	5.
Subtract for annual diminution .7 + .3					—			1.
True declination						51	31	4.
And 2′ 24″.36 + 0.03″ (ſum of Equations) true zenith-diſtance							2	24.39
The true latitude of Greenwich Obſervatory, as deduced from γ Draconis					=	51	28	39.61

When the reductions are thus made for the obſervations taken at the other places, the zenith-diſtances and correſponding latitudes will ſtand thus, *viz.*

	Zenith Diſtance.				North Latitude.		
Dunnoſe	1°	50′	5.24″	N.	50°	37′	7″.36
Clifton	1°	56	26.64	S.	53	27	30.64
Arbury-Hill	0	42	22.75	S.	51	15	26.75
Delamere For.	1	42	18.09	S.	53	13	19.09
Burleigh Moor	3	3	19.09	S.	54	34	20.09

In obtaining the latitudes of the two laſt places, the declination of γ Draconis is diminiſhed 3″ to bring it to the year 1806, and in all the caſes where S is annexed to the zenith-diſtance, it is *added* to the declination. The reductions are made to the firſt of January of the reſpective years, and the latitudes come out very nearly the ſame as thoſe determined from terreſtrial meaſurement, and alſo from an average of all the obſerved ſtars.

"From the obſervations made at the ſtation in Delamere foreſt with the zenith-ſector in 1806, combined with thoſe at Dunnoſe, 1802, taken with the ſame inſtrument," ſays the author of the Survey, "it is found, that the difference in latitude of thoſe is 2° 36′ 12″.2 (by γ Draconis alone in our examples 2° 36′ 11″.73), making a difference of 1″ between the calculated and obſerved amplitudes, which, ſetting aſide the conſideration of the ſpherical figure of the earth, is at the rate of $\frac{4}{10}$ths of a ſecond in one degree. Perhaps, under the conſideration of each meridianal line being obtained independently of the other, and admitting that neither of them can be meaſured with perfect accuracy, together with the chances of the amplitudes being in ſome ſmall degree either in exceſs or defect, we may conſider the reſult as ſufficiently conſiſtent and ſatisfactory, and may take 60823 fathoms, in latitude 52° 34′, or the centre of England, as the length of 1°." Trigonometrical Survey, vol. iii. p. 332, &c.

ZENITH-*Micrometer* is an inſtrument of very recent date, and is ſcarcely yet known to the generality of aſtronomers. It differs from the zenith-ſector in this reſpect; that the meaſures taken with it are all taken within the tube of the teleſcope, whereas thoſe taken by the zenith-ſector are all external: conſequently the range of the zenith-micrometer's ſcale is confined to the extent compriſed within the field of view, which will always be inverſely as the magnifying power of the glaſſes uſed; hence the greater the power of the teleſcope, the ſmaller the number of ſtars that will paſs within the range of the micrometer-ſcrew; but then correſponding accuracy may be expected from the great powers and delicate conſtruction of modern micrometers; and what is wanting in the extent of the ſcale will be made up by ſuperior preciſion. The teleſcope, which conſtitutes the baſis of the zenith-micrometer, may be either of the reflecting or refracting conſtruction; and within a ſhort ſpace of time one of each deſcription has been conſtructed; the former by Troughton, for the Greenwich obſervatory, and the latter by Dollond, for the uſe of thoſe geodæſic commiſſioners, who are employed by the Engliſh government to aſcertain the proper line of demarcation acroſs the American lakes. We will give a ſhort account of each of theſe inſtruments, ſuch as will enable our readers to form an opinion of their reſpective merits, as prototypes for future imitation.

Zenith-Micrometer by Troughton.—It is probable that the firſt idea of a zenith-micrometer occurred to Mr. Troughton, and certain that he was the firſt who executed one, and gave it its name. It was in 1806 that he propoſed it to Dr. Maſkelyne, and in 1812 that he erected it at the Royal Obſervatory, as an appendage to the mural circle.

The teleſcope of this inſtrument is a Newtonian reflector, the tube of which forms the vertical axis, through which axis a plumb-line paſſes centrically from end to end; and, therefore, is not made to vibrate by turning. The tube or axis, 10 feet long, and 5 inches diameter, at the lower end terminates in a pivot, while the upper end is received by a right angle, againſt the ſides of which it is gently preſſed by two ſprings; contrivances which produce free and ſteady azimuthal motion.

All the zenith inſtruments require for collimation two poſitions, which in the ſectors are called *face eaſt* and *face weſt*; two at 180° diſtance from each other are equally neceſſary for the micrometer, and in that under conſideration are indicated by the contact of ſtops, without regarding any diviſions.

The large mirror at the lower end, as well as the pivot, are perforated, in order that the plumb-line may paſs freely through them, the latter ſuſtaining the plummet in a water veſſel ſeveral inches below. The axis of the mirror is ſomewhat inclined to that of the tube, for the purpoſe of placing the plane mirror out of the way of the plumb-line, which latter, as before obſerved, occupies the centre. The rays of light, thus rather obliquely reflected up the tube, are turned into a horizontal direction by the plane mirror, and come to a focus a little beyond the ſide of the tube, where, with appropriate adjuſtments, is fixed a double micrometer for meaſuring zenith-diſtances.

When the inſtrument is ſtopped with the micrometer toward the ſouth, one of the moveable wires is made to biſect a ſtar a little before it comes to the centre of the field of view; then the inſtrument is turned to the oppoſite ſtop with the micrometer towards the north, which may be done in three ſeconds, and then the other moveable wire is made to biſect the ſtar. It is evident now, that the opening between the wires is double the zenith-diſtance of the ſtar, and if the axis was truly vertical, the middle between them is the point zenith. The revolutions of the ſcrews are counted in the field of view, and the parts to the third decimal figure read off upon the micrometer heads, which revolutions and parts are to be reduced to angular meaſure.

The plumb-line is ſuſpended from a fixed point at the upper end, and near the lower end is a rectangular arrangement of microſcopes with adjuſtments, which, together with the adjuſtments of the pivot, accompliſh the means of bringing the axis and plumb-line coincident with each other, and of aſſuring the vertical poſition of the former.

The conception of this inſtrument was not confined to a reflecting teleſcope, it was ſeen that a refracting one would ſucceed equally well: in the latter caſe, the pivot at the lower end muſt be perforated to receive the eye-glaſs, and the plumb-line ſhould be exterior to the main tube, but incloſed in a ſmaller one to protect it from the action of the wind. In the caſe of the Greenwich inſtrument, of which the foregoing is a deſcription, the reflector was preferred on account of its allowing the central poſition of the plumb-line, which, being free from vibration, ſhortens the time required for adjuſtment; a conſideration indeed of very little value; for it is now known (but was not then) that inſtruments properly conſtructed, and uſed with care, which they now are at our national eſtabliſhments, ſeldom or never want re-adjuſtment. A better cauſe for adopting the reflector was, that the horizontal view is more eaſy than the vertical one, eſpecially as in the former the hands and whole body are unembarraſſed, and fit for action. But whichever conſtruction of the teleſcope is employed, we know that Troughton conſiders the zenith-micrometer as one of the moſt elegant of his inventions.

Zenith-Micrometer by Dollond. — The zenith-micrometer which is repreſented in *Plate* XXXIII. by *figs.* 3, 4, 5, and 6, has great advantages in the ſimplicity of the conſtruction and uſe, that former inſtruments for the ſame purpoſe do not poſſeſs, and is portable: the plan was propoſed by Mr. Pond, the aſtronomer royal, and the inſtrument executed by Mr. Dollond for tranſatlantic meaſurements. It is drawn from a ſcale of two inches to the foot, and is repreſented without a ſtand or ſupport. It can be applied to either, as occaſion may require. The component parts are theſe; *viz.* an achromatic refracting teleſcope A A, (*figs.* 3, 4.) of 42 inches focal length, with an aperture of 2¾ inches; a micrometer B, with two ſcrews, each moving a ſeparate wire through the field of view, which is extended to two degrees. The tranſverſe axis C is 18 inches long, and glazed for a teleſcope, with croſs wires that adjuſt, ſo that when the principal teleſcope A is taken out, (and for which there is a proviſion,) the line of collimation may be truly adjuſted to the pivots, and when replaced will be correctly at right angles to the principal teleſcope. The uſe of the axis being formed into a teleſcope, is, for the purpoſe of placing the inſtrument correctly in the meridian, by a mark that muſt be found to the eaſt, and alſo by another to the weſt, ſo that when the ſtar has been obſerved with one of the micrometer wires, and the inſtrument is changed for the purpoſe of obſerving the ſame ſtar with the other micrometer wire, it may be correctly replaced, the mean of the two obſervations being the correct zenith-diſtance. The inſtrument is alſo furniſhed with a plumb-line D, and with a dot at E, the image of which is brought to the place of the plumb-line by a lens; this is known by the name of the *ghoſt* adjuſtment. The plumb-line is ſuſpended from a piece at F. The two ſcrews G G are uſed for bringing the dot carried by the teleſcope, to coincide with the plumb-line; and is obſerved to be ſo by the lens at H. This contrivance affords one of the greateſt advantages of the inſtrument, as it enables the obſerver, at the moment before he obſerves the conjunction of the ſtar with the micrometer wire, to aſcertain the correct poſition of the inſtrument by the plumb-line; for the correctneſs of the obſervation will depend on the accuracy with which the plumb-line is made to coincide with the dot; and by this method the *error* of *diviſion* is *done away*. The level (*fig.* 6.) is uſed for levelling the axis, and the circular piece (*fig.* 5.) with the Ys *a a* attached, in which the pivots of the tranſverſe axis reſt, may be applied to a mahogany-framed ſtand, or on a ſtone pier, or bracket: it is repreſented as it was made for a mahogany ſtand (which had adjuſting ſcrews at the feet); it conſiſts of two ſtrong braſs plates, and is furniſhed with a circular motion for bringing the inſtrument into the meridian, which motion is given by a pinion *b*; and it is made faſt by the four ſcrews *c, c, c, c.* The two adjuſting ſcrews G G, *fig.* 3. muſt alſo be attached to a bracket or framed piece in the ſtand; and the ſupport for the water, in which the plummet is immerſed, may alſo be applied to this bracket. The wires are illuminated through the axis in the ſame manner as in the tranſit-inſtrument. The value of the micrometer-ſcrews is to be found in the uſual manner, and reduced into ſeconds.

The foregoing are the diſtinguiſhing properties of this inſtrument, and as the method of uſing it may be underſtood ſufficiently from what we have ſaid of the zenith-ſector, from which it differs only in the ſmall range of its ſcale, it will be unneceſſary to give any further explanation of either its adjuſtments or practical application.

Other Inſtruments.—Beſides the zenith-ſectors and zenith-micrometers, which we have above deſcribed, there are other inſtruments, which may be uſed as ſubſtitutes for theſe, at the ſame time that they may be uſed for their own reſpective purpoſes. Of theſe, the tranſit-circles of large dimenſions, particularly thoſe which move with their pivots ſupported by ſtone piers, claim our principal notice. As the profeſſed uſe of theſe circles is to aſcertain both right aſcenſions and declinations at the ſame time, and as zenith-diſtances are only complements of altitudes taken in any latitude, it is obvious, that thoſe inſtruments that meaſure altitudes accurately, at all elevations, will alſo meaſure zenith-diſtances, or their complements; and in fact, the diviſions are now numbered in ſuch way, that altitudes and zenith-diſtances are read alternately in the reverſed poſitions. Of this deſcription is the excellent circle of Mr. Groombridge at Blackheath; but the large circle at Greenwich, not having a plumb-line or level uſed, nor being capable of reverſion, is not of the ſame claſs; though a very ſuperior inſtrument for its own purpoſe of meaſuring polar diſtances from the exact polar point, without any reference to latitude, altitude, or zenith-diſtance.

We have alſo before us an 18-inch tranſit-circle with a 3½-feet teleſcope, very lately made by Mr. Thomas Jones, of Charing-Croſs; the axis of which is ſupported by a caſt-iron frame, that very conveniently admits of meaſures being taken in or near the zenith, as well as in any other degree of elevation. This inſtrument compriſes many new and uſeful contrivances, but they cannot be deſcribed under this head, conſiſtently with our general plan of dividing our ſubjects.

ZENITH is a word uſed by ſome writers to expreſs the firſt appearance of the menſes in young women.

ZENKABAD, in *Geography*, a town of the Arabina Irak; 22 miles S. of Sherban.

ZENKOV, a town of Ruſſia, in the government of Tchernigov; 140 miles S.E. of Tchernigov. N. lat. 50°. E. long. 34° 14′.

ZENN, a river of Franconia, which runs into the Rednitz, near Vacha, in the margravate of Anſpach.

ZENN. See LANGENZENN.

ZENNAR, the name of a myſtical thread worn by Brahmans, and by many individuals of other tribes of Hindoos. So prolix and minute are the authors of the Ordinances of the Hindoos, that rules for almoſt every occurrence of life, however trifling, have been laid down. Not that any thing connected with the zennar has been deemed trifling by thoſe who ordained it, by thoſe who wear it, or thoſe who revere it. On the contrary, the individuals to be ſo diſtinguiſhed, the mode of manufacturing the ſacred article, and its inveſtiture, with many particulars, have occupied the attention of lawgivers, and are attended to with great reſpect by their obedient followers.

Brahmans affect to conſider the zennar as of highly myſterious and ſacred import, and do not conſider an individual as fully a member of his tribe until he have aſſumed this holy emblem. A Brahman ſhould be inveſted with it at the age of eight years, by the hands of his father, who, with his Guru, or ſpiritual preceptor, twiſts that firſt put on. A Kſhetriya receives it at eleven, from a Brahman. A Vaiſya at twelve years of age. A Sudra is on no account permitted to wear it. A deſcription of theſe four grand diviſions, compriſing the whole race, will be found under SECTS *of Hindoos*.

The zennar muſt be made by a Brahman: it is compoſed of three threads, each meaſuring ninety-ſix hands, twiſted together, and folded into three; then twiſted again ſo as to conſiſt of nine threads: theſe are again folded into three without twiſting, and each end faſtened with a knot. It is put over the left ſhoulder next the ſkin, and hangs down the right thigh as low as the fingers can reach. Of theſe cords a Brahman wears four; the other privileged tribes but three. Some writers call this the Brahmanical, or prieſtly, or ſacerdotal thread; but not, it would appear, in ſtrict correctneſs; it not being confined to the prieſtly tribe, but worn, as we have ſeen, by three out of the four ſects of Hindoos.

In the Inſtitutes of Menu (ſee MENU), c. 11. v. 36. the revered legiſlator ordains, that "in the eighth year from the conception of a Brahman, in the eleventh from that of a Kſhetriya, and in the twelfth from that of a Vaiſya, let the father inveſt the child with the mark of his claſs."

The two next verſes allow, on particular occaſions, the aſſumption of the ſacrificial thread, as it is often called, in the fifth, ſixth, or eighth years reſpectively; or it may, in like manner, be delayed until the individual be double the age mentioned in verſe 36. "After that, all youths of theſe three claſſes, who have not been inveſted at the proper time, become outcaſts, degraded from the Gayatri, and contemned by the virtuous," v. 39. Of the Gayatri, ſee under our article O'M.

In ancient books, the three firſt claſſes, from being thus inveſted with this ſacrificial thread, are called *twice born;* a regeneration being effected by this myſtical ſecond birth. But it has been thought, that in later times, the Brahman only has the advantage of being thus *born again*. The term *twice born* is very common; a *third* birth is ſometimes mentioned: this, we believe, is at the deceaſe, or the burning of the body. "The firſt birth is from a natural mother; the ſecond, from the ligation of the zone; the third, from the due performance of the ſacrifice: ſuch are the births of him who is uſually called twice born, according to a text in the Veda. Among them, his divine birth is that which is diſtinguiſhed by the ligation of the zone and ſacrificial cord; and in that the Gayatri is his mother." Menu, ii. 169, 170.

This cord is never taken off; even when ſleeping and bathing, it is worn and diſpoſed of in a particular manner. When worn out, it is committed to the water with due and appropriate ceremony, and another is as duly put on. It is ſeen on the moſt ancient of Hindoo ſculptures, and on many of the figures; for inſtance, in the cavern temple at Elephanta. (See MAHAKALA.) It has ſeveral other names; among them Janwi, or Jahnuvi, Maurvi, &c. The latter is applied to the cord of the military tribe, being made from the leaves of a ſpecies of hyacinth, called murva, of which bow-ſtrings are alſo made: the Brahman's cord is made of cotton. The name Jahnuvi given to this ſacred, triple, myſtical, regenerating thread, has been derived from Jahnu, an aſcetic, who, in a very extravagant way, gave a ſecond birth to the equally ſacred, triple, myſtical, regenerating river Ganga (the Ganges), which is hence called Jahnuvi. Of this we have taken ſome notice under JAHNU; and of the triple union of the Ganga, and other ſacred rivers, under TRIVENI.

Brahmans, and their enthuſiaſtic followers, are very myſtical concerning regeneration, and have divers modes of effecting the ſecond birth, in caſes where the purity derived from the ligation of the zone, or inveſtiture with the ſacrificial thread, hath been loſt by the contaminations of unlawful acts, as from accidental defilements. Of this, ſee under our article Yoni.

ZENO, in *Biography*, called the *Eleatic*, in order to diſtinguiſh him from Zeno the Stoic, was a native of Elea, in Magna Græcia, and ſaid to have been the adopted ſon of Parmenides, whoſe diſciple he was, flouriſhed about the year 463, B.C. and choſe to live in his native city rather than at Athens, for the ſake of maintaining his independence. He is repreſented as a zealous friend of civil liberty, and as having loſt his life in his oppoſition to a tyrant. It is ſaid, that having been detected in a conſpiracy againſt the petty tyrant of the place of his nativity, he endured the moſt cruel torments, becauſe he would not betray his accomplices; and that at length his countrymen, rouſed by his fortitude, fell upon the uſurper and ſtoned him to death. To him the invention of the dialectical art has been erroneouſly aſcribed.

According to Ariſtotle, Zeno taught that nothing can be produced either from that which is ſimilar or diſſimilar; that there is only one being, and that is God; that this being is eternal, homogeneous, and ſpherical, neither finite nor infinite, neither quieſcent nor moveable; that there are many worlds; that there is in nature no vacuum; that all bodies are compoſed of four elements, heat and moiſture, cold and dryneſs; and that the body of man is from the earth, and his ſoul an equal mixture of theſe four elements. He argued with great ſubtlety againſt the poſſibility of motion. If Seneca's account of this philoſopher deſerves credit, he reached the higheſt point of ſcepticiſm, and denied the real exiſtence of external objects.

Upon the whole, his ſentiments ſeem to have been ſo fluctuating and unſtable, and his method of arguing ſo verſatile, that it is not certain whether he allowed or denied a properly divine nature. Moſheim, not improperly, applied to the doctrine of Zeno the words of Terence:

> " —— Incerta hæc, ſi tu poſtules
> Ratione certa facere, nihilo plus agas,
> Quàm ſi des operam, ut cum ratione inſanias."

> " Things thus uncertain, if by reaſon's rules
> You'd certain make; it were as wiſe a taſk
> To try with reaſon to run mad." Colman.

Bayle depreciates the practical philoſophy of Zeno, on account of his vindication of the warmth with which he reſented reproach, by ſaying, " If I were indifferent to cenſure, I ſhould alſo be indifferent to praiſe." His works, though unknown to the moderns, were held in high eſtimation among the ancients. Diog. Laert. Bayle. Brucker by Enfield, vol. i.

Zeno, the founder of the *Stoic* ſect, was born about the year 366, before Chriſt, and died, as it is ſaid, in the 1ſt year of the 129th Olympiad, or 264 B.C. For an account of him, ſee the article Stoics.

Zeno, Roman emperor of the Eaſt, was a deſcendant of an Iſaurian family of diſtinction, and at firſt bore the name of " Traſcaliſſæus." Being a commander of the Iſaurian troops in the ſervice of Leo I., he married Ariadne, a daughter of the emperor, who created him a patrician, and raiſed him to the chief command of all the armies in the Eaſt. Upon the death of Leo in the year 474, the empire was tranſmitted to his grandſon by Zeno and Ariadne, and Zeno, by the influence of the dowager-empreſs Verina, was appointed his colleague, and when the young emperor died, Zeno poſſeſſed the whole imperial power. But Verina, being incenſed by his ſcandalous conduct, formed a conſpiracy againſt him, ſo that Zeno was obliged to ſeek refuge, firſt at Chalcedon, and afterwards in Iſauria, his native country. Baſiliſcus, the empreſs's brother, who had aſſumed the empire, became ſo unpopular, that Zeno was reſtored, and the degraded emperor periſhed in priſon. About this time the weſtern empire terminated; and Zeno, receiving deputies from the Roman ſenate, who recognized Conſtantinople as the ſeat of univerſal empire, and requeſted the title of patrician for Odoacer, proclaimed king of Italy, was flattered with the title of ſole Roman emperor, and commenced an amicable correſpondence with Odoacer. The remaining period of his reign was both turbulent and inglorious. The inſurrections againſt his government were numerous, and his temper, which was naturally ſevere, was thus rendered more hoſtile and cruel towards thoſe whom he conſidered as his enemies. The irritability of his diſpoſition proved eventually a collateral cauſe of his death, by aggravating a diſorder in his bowels, which proved fatal in the year 491, at the age of 65, after a reign of ſeventeen years and three months. His widow Ariadne married very ſoon after his death. His reign was famous for the confeſſion of faith, called the Henoticon, or *Henoticun*, (which ſee.) Gibbon's Hiſt. Rom. Emp. vols. vi. vii. viii.

Zeno, in *Geography*, a river of Italy, which runs into the Taro, oppoſite Fornovo, in the duchy of Parma.

ZENOBIA, *Queen*, in *Biography*, was a native of Syria, in the third century, who claimed deſcent from the Macedonian kings of Egypt. This female was celebrated for the beauty of her perſon, the harmoniouſneſs of her voice, her mental talents and literary acquirements, and her diſtinguiſhed heroiſm and valour, as well as her modeſty and chaſtity. " Her manly underſtanding," ſays Gibbon, after recounting her perſonal beauties and excellencies, " was ſtrengthened and adorned by ſtudy. She was not ignorant of the Latin tongue, but poſſeſſed in equal perfection, the Greek, the Syriac, and the Egyptian languages: ſhe had drawn up for her own uſe an epitome of oriental hiſtory, and familiarly compared the beauties of Homer and Plato, under the tuition of the ſublime Longinus." She was allied by marriage to Odonatus, king of Palmyra, and delighted in thoſe exerciſes of war and the chace to which he was devoted. Many of his victories have been aſcribed to her military ſkill and valour. After the death of her huſband, about the year 267, ſhe aſſumed the ſovereignty of the Eaſt, and governed with equal vigour and policy; ſo that by her ſucceſs in warlike expeditions, as well as by the wiſdom and firmneſs of her adminiſtration, ſhe aggrandized herſelf in Aſia, and her authority was recognized both in Cappadocia and Bithynia, when Aurelian ſucceeded to the Roman empire. Envious of her power, and determined to diſpoſſeſs her of ſome of the rich provinces that were comprehended within the extent of her dominion, he marched at the head of a powerful army to Aſia, and having defeated the queen's general Zabdas, near Antioch, ſhe retreated to Emeſa, whither ſhe was purſued by Aurelian. Under the walls of that city another engagement with Zenobia, which was commanded and animated by herſelf, took place, in which the emperor was again victorious. The queen, thus unfortunate, withdrew the relics of her vanquiſhed forces to Palmyra, her capital; and was purſued thither by Aurelian. The favourable terms that were offered to Zenobia being refuſed, the city was beſieged; which, after long reſiſtance, the queen determined not to ſurrender; but as ſhe apprehended famine within the walls, ſhe mounted a ſwift dromedary, and haſtened towards the Euphrates, with a view of ſeeking an aſylum in the Perſian territories. But being overtaken in her flight, ſhe was brought back to Aurelian, who received her with a ſtern countenance, and queſtioned her how ſhe could dare to reſiſt the emperors of Rome. She replied, "Becauſe I could not acknowledge as ſuch a Gallienus and others like him; but I recognize by that title you who know how to conquer." At Emeſa, the fate of Zenobia was ſubmitted to the judgment of a tribunal, at which Aurelian preſided; and the Roman ſoldiers demanded her death. She, in a manner unworthy of her former fame, ſaved her own life by throwing the blame of her reſiſtance on her miniſters and counſellors; Longinus was one of theſe, who, with ſeveral others, was put to death, in the year 273.

Zenobia was reſerved to grace the triumph of Aurelian; and on the appointed day ſhe preceded, on foot, a magnificent chariot, which ſhe had deſigned in the days of her proſperity for a very different kind of entry into Rome. She was encircled, it is ſaid, with chains of gold, and almoſt ſunk under the load of jewels with which ſhe was adorned. Afterward ſhe was treated with humanity by the victor; and had aſſigned to her an agreeable reſidence near the Tiber, where ſhe paſſed the remainder of her days as a Roman matron. Whether ſhe contracted a ſecond marriage with a Roman ſenator, as ſome have affirmed, is uncertain; but however this be, her ſurviving ſon Vhaballat withdrew into Armenia, and poſſeſſed a ſmall principality granted to him by the emperor, and her family was not extinct in the fifth century. Gibbon's Hiſt. of Rome, vol. ii.

ZENOBIA, *Zelebi*, in *Ancient Geography*, a town of Aſia, in the Euphratenſis, upon the banks of the Euphrates, five miles from fort Mambri, and on this ſide of the ſmall town of Sura. According to Procopius, it was founded by Zenobia, wife of Odonatus, prince of Palmyra. After it had been ruined, Juſtinian re-eſtabliſhed it, and re-peopled it, and made it one of the bulwarks of the empire. After having rebuilt the town and fortified it, he embelliſhed it, conſtructing magnificent churches, public baths, galleries, and lodgments for the ſoldiers. It was ſituated S.E. of Nicephorium.

ZENOBIA, a place of Italy, near the palace of Adrian, aſſigned to queen Zenobia for her reſidence.

ZENOBII INSULÆ, the name of ſeven iſlands in the Indian ocean, upon the coaſt of Arabia Felix, at the entrance of the Sathalite gulf. Ptolemy.

ZENODOTIUM, a town of Aſia, in Oſrhoené, in the vicinity of Nicephorium, according to Appian. Steph. Byz. This town, ſays Plutarch, was forcibly taken by Craſſus, who ruined it, and ſold the inhabitants by auction.

ZENONIS CHERSONESUS, a town mentioned only by Ptolemy, and placed by him in the Tauric Cherſoneſus, along the weſtern coaſt of the Palus Mœotis. M. Peyſonnel thinks this was not a town, but an iſthmus, called at preſent Zeniſké.

ZENSON, in *Geography*, a town of Italy, in the Treviſan; 9 miles E.N.E. of Trevigio.

ZENSUS, in *Arithmetic*, a name which ſome authors give to a ſquare number, or the ſecond power.

The higher powers they call *zenſizenſus*, *zenzicubus*, *zenſizenzenſus*, *zenſurdeſolidus*, &c. See POWER.

ZENTA, in *Geography*, a town of Hungary, on the river Theys; memorable for a ſignal victory obtained, in the year 1697, by prince Eugene, over the Turks, commanded by the emperor Muſtapha II. in perſon: 20,000 Turks were killed, 10,000 wounded, and 3000 taken priſoners; 52 miles N. of Belgrade.

ZENTA, a diſtrict of Dalmatia, on the confines of Albania.

ZENTILMANDAIK, a town of Aſiatic Turkey, in Natolia; 8 miles N. of Eregri.

ZENUPH, in the *Jewiſh Antiquities*, a kind of tiara worn by the kings of Judah. See CIDARIS.

ZEOBID, in *Geography*, a town of the Arabian Irak, on the Euphrates; 28 miles S. of Bagdad.

ZEOLITE, in *Mineralogy*, a mineral ſo named by Cronſtedt, from the Greek word ξεω, *to foam*, on account of its intumeſcing and foaming very much before the blow-pipe. Haüy makes two diſtinct ſpecies of the zeolite, which he denominates meſotype and ſtilbite. Werner makes four ſub-ſpecies of zeolite, which he calls mealy zeolite, fibrous zeolite, radiated zeolite, and foliated zeolite. Beſides this he makes zeolite a generic name, placing it at the head of what he calls the zeolite family, in which arrangement he is followed by profeſſor Jameſon, who claſſes with the zeolite family the following minerals: prenhite, (ſee PRENHITE,) zeolite, apophylite, cubicite, called by Haüy analcime, chabaſite, croſsſtone, laumonite, dipyre, natrolite, and wavellite. (See WAVELLITE.) In the claſſification of ſpecimens at the Britiſh Muſeum, theſe minerals, ſo nearly allied in chemical compoſition, and in many of their external characters, are arranged together under the appropriate denomination of zeolitic ſubſtances, by which the confuſion incident on making the ſame word repreſent both a genus and ſpecies is avoided. Theſe ſubſtances, except wavellite, are compoſed of ſilex, alumine, lime, or an alkali, and a conſiderable portion of water. To the latter, they owe the property of intumeſcing before the blow-pipe, that many of them poſſeſs. Some of theſe minerals form a jelly when diſſolved in acids. Zeolitic minerals occur principally in the cavities of volcanic and baſaltic rocks. Of the different members of the zeolite family, prenhite has been already deſcribed. (See PRENHITE.) Zeolite, compriſing mealy zeolite and fibrous and radiated zeolite, are the various meſotypes of Haüy, mealy zeolite being the *meſotype alterée aſpect terreux* of the French mineralogiſt. This mineral is white, inclining to yellowiſh, greyiſh, or reddiſh, and is ſometimes red. It occurs maſſive, and kidney-ſhaped, and corrolloidal. Sometimes it forms a cruſt over other zeolites. The luſtre is dull or feebly glimmering: it is opaque, very ſoft, and rather ſectile; it has an earthy fracture, ſometimes inclining to fibrous. It is very light, and eaſily frangible, and feels rough and meagre. It appears to be zeolite in a decompoſing ſtate. It intumeſces before the blow-pipe, and forms a jelly with acids. The conſtituent parts are,

Silex	60
Alumine	15.6
Lime	8
Oxyd of iron	1.8
Loſs by expoſure to heat	11.6
	97

Fibrous Zeolite, *Meſotype*, Haüy, is of a ſnow-white colour, paſſing to greyiſh, yellowiſh, or reddiſh-white, and ſometimes into red and yellowiſh-grey, yellowiſh-brown, or ochre-yellow. It occurs maſſive, in kidney-ſhaped balls, and in capillary cryſtals. The external ſurface of the kidney-ſhaped varieties is rough and dull; internally it is ſtrongly glimmering, paſſing into gliſtening, and the luſtre is pearly: it is faintly tranſlucent. The ſtructure of this mineral is fibrous, either diverging on one ſide or ſtellular, and paſſes from delicately fibrous to coarſe or to narrow radiated. It is brittle, breaking into ſplintery or wedge-ſhaped fragments ; it yields eaſily to the knife. The ſpecific gravity is from 2.158 to 2.197. Before the blow-pipe it intumeſces, and forms a jelly with acids. It may be diſtinguiſhed from needle zeolite by its inferior luſtre, fibrous ſtructure, and low degree of tranſparency and hardneſs, and alſo by its want of regular cryſtallization.

Needle Zeolite, *Meſotype*, Haüy ; and *priſmatic meſotype* of ſome mineralogiſts. Its colours are, greyiſh, yellowiſh, or reddiſh-white : it occurs both maſſive and cryſtallized. The cryſtals are acicular-rectangular four-ſided priſms, terminated by low four-ſided pyramids, the faces of which are ſet on the lateral planes of the priſm. Sometimes there are only two terminating planes, forming an acute bevelment, ſet on obliquely. The rectangular priſm is ſometimes truncated on the edges, forming an octahedron, with four large and four ſmall planes. The lateral planes of the cryſtals are longitudinally ſtriated, but the acuminating planes are ſmooth. Sometimes the cryſtals are diverging, and ſometimes promiſcuouſly aggregated. The cryſtals are externally ſhining or ſplendent, internally gliſtening ; the luſtre is vitreous, inclining to pearly. The ſtructure is lamellar, with joints parallel to one of the ſides of the priſm ; alſo at right angles to the axis, and parallel to the two diagonals of the priſm. Of theſe, the firſt cleavage only is generally viſible. The croſs fracture is imperfectly conchoidal ; the luſtre between vitreous and pearly. It is tranſlucent or tranſparent, with double refraction. It yields to the knife, but ſcratches calcareous ſpar, and is brittle. The ſpecific gravity varies from 2.17 to 2.27. This mineral, like the preceding, intumeſces before the blow-pipe, and gelatinizes with acids. It becomes electric by heat ; the extremity of the cryſtal, terminated by a pyramid or bevelment, ſhews poſitive the bottom of the cryſtal negative electricity. According to Vauquelin, the conſtituent parts of meſotype are,

Silex - - - - -	50.24
Alumine - - - - -	29.50
Lime - - - - -	9.46
Water - - - - -	10
	99.2

Needle zeolite, or meſotype, is diſtinguiſhed from radiated zeolite, or ſtilbite, by its vitreous luſtre, diſtinct priſmatic concretions, and greater tranſparency and brittleneſs. The latter has alſo more of a nacry luſtre.

Radiated Zeolite, *Stilbite*, Haüy, is generally of a yellowiſh or greyiſh-white colour, and rarely paſſes into reddiſh-white or red. It occurs maſſive in angular pieces, and globular, and alſo cryſtallized in broad, rectangular, four-ſided priſms, rather acutely terminated by four planes ſet on the lateral edges of the priſm. Of theſe planes two adjoining ones are more inclined to the axis of the priſm than the other two. The ſummits of the terminating planes are ſometimes more or leſs deeply truncated. Sometimes the priſm is ſo thin as to form a long ſix-ſided table, bevelled on the ſhorter terminal planes. The cryſtals are aggregated in diverging radii, and frequently ſo cloſely joined to each other, that the pyramidal terminations of each cryſtal are only viſible. The broader lateral planes of the cryſtals are ſmooth, and the ſmaller longitudinally ſtriated. The ſtructure is lamellar, with joints in one direction, parallel to the axis of the priſm. The ſurfaces of the broader lateral planes are ſplendent and pearly ; internally the luſtre is more or leſs ſhining, and is pearly. The cryſtals are tranſlucent, or ſemi-tranſparent. The diverging radii of the aggregated cryſtals are more or leſs broad, paſſing from fibrous to foliated. It is brittle, and the fragments are wedge-ſhaped and ſplintery. Stilbite ſcratches calcareous ſpar. The ſpecific gravity of this mineral is from 2.13 to 2.16. It intumeſces before the blow-pipe, yielding a phoſphoric light : it becomes white when laid on a glowing coal : it does not gelatinize with acids. The conſtituent parts are,

Silex - - - - -	40.98
Alumine - - - - -	29.09
Lime - - - - -	10.95
Water - - - - -	16.50
	97.52

Foliated Zeolite, *Stilbite*, Haüy.—The colours of this mineral are nearly the ſame as thoſe of the preceding, being chiefly yellowiſh and greyiſh-white, and rarely milk-white, ſnow-white, reddiſh-white, or red ; it ſometimes is yellowiſh-grey, and pinchbeck-brown. It occurs both maſſive, diſſeminated, globular, amygdaloidal, and cryſtallized. The form of the cryſtals is a low, very oblique, four-ſided priſm ; ſometimes truncated on the acute lateral edges, and alſo on the angles of the acute lateral edges. Sometimes all the angles are truncated. It occurs alſo in low ſix-ſided priſms, and equi-angular ſix-ſided tables ; alſo in eight-ſided priſms. The cryſtals are generally ſmall ; the lateral planes are tranſverſely ſtriated, and the terminal planes are ſmooth. It has a pearly luſtre, which is either ſhining or ſplendent. The pinchbeck-brown variety has a ſemi-metallic luſtre. It has a foliated and ſlightly curved ſtructure, with a ſingle cleavage, parallel with the terminal planes of the priſms. Sometimes a conchoidal croſs fracture may be obſerved. It is brittle, and the fragments are angular and blunt-edged, and ſometimes tabular. The maſſive varieties are ſtrongly tranſlucent ; the cryſtals are tranſlucent, ſemi-tranſparent, or tranſparent. It yields to the knife, but ſcratches calcareous ſpar. The ſpecific gravity of this mineral is 2.2 ; and, like the preceding mineral, it intumeſces and melts before the blow-pipe, giving out a phoſphoric light : it does not form a jelly with acids. According to Meyer, the conſtituent parts are,

Silex - - - - -	58.3
Alumine - - - - -	17.5
Lime - - - - -	6.6
Water - - - - -	17.6
	100

According to Vauquelin,

Silex - - - - -	52.6
Alumine - - - - -	17.5
Lime - - - - -	9
Water - - - - -	18.5
	97.6

All theſe zeolitic ſubſtances, claſſed as meſotype and ſtilbite by Haüy, paſs by imperceptible gradations into each other, and occur, as we have before obſerved, in baſaltic and volcanic rocks.

The eaſy fuſibility of zeolites was at one time regarded as rendering their occurrence in volcanic rocks a ſubject of difficult explanation ; but the experiments of ſir James Hall, referred to under Systems *of Geology*, demonſtrate the poſſibility of cryſtalline arrangements taking place under compreſſion in ſubſtances that would be diſſipated by heat under the common preſſure of the atmoſphere. It is probable, however, that many zeolitic ſubſtances which occur in baſalt or lava have been infiltrated into the cavities at a later period, and are even forming at the preſent day in ancient lavas and baſalts.

Some of the minerals claſſed with the zeolite family have been deſcribed in our preceding volumes. See APOPHYLITE, or ICTHYOPTHALMITE.

Analcime, or *Cubicite*, formerly called by Werner *cubic zeolite*, is generally white, ſometimes reddiſh-white, or red. It occurs ſometimes maſſive, but more generally cryſtallized in perfect cubes, or with the angles more or leſs deeply acuminated, or in twenty-four-ſided cryſtals, like thoſe of the leucite, having each of the ſides equal and ſimilar trapeziums. The ſtructure preſents ſlight indications of cleavage, parallel with the ſides of a cube. The fracture is compact and flatly conchoidal, paſſing into fine-grained, uneven. It is tranſlucent, ſemi-tranſparent, or tranſparent, and has a ſhining luſtre, between vitreous and pearly. It is ſufficiently hard to ſcratch glaſs, but is eaſily frangible. The ſpecific gravity of cubicite is 2.44. It becomes electric by rubbing. Before the blow-pipe it melts into a tranſparent glaſs. According to Vauquelin, the conſtituent parts of this mineral are,

Silex - - - -	58
Alumine - - - -	18
Lime - - - -	2
Soda - - - -	10
Water - - - -	8.5
	96.5

This mineral occurs moſt frequently in cavities in rocks of the trap formation, accompanied with zeolite; but it is ſometimes found in metallic veins in ſchiſtoſe rocks, accompanied with various ores, and with calcareous ſpar and quartz. The name *analcime* was given to it by Haüy, ſignifying a body with little power, on account of the feeble electricity excited in it by friction.

Chabaſite, *Chabaſie*, Haüy, is nearly allied to cubicite, and was formerly claſſed with it. The cryſtallization is different; the form is not perfectly cubical, but ſlightly rhomboidal, the angles of the rhomboid being 94° and 86°, either perfect, or with the obtuſe lateral edges truncated, and ſometimes both the ſix obtuſe lateral edges and ſix obtuſe angles are truncated. The cryſtals are tranſparent or tranſlucent. The luſtre is vitreous, and externally ſplendent, internally gliſtening; the fracture is imperfectly conchoidal, or fine-grained, uneven. It ſcratches glaſs a little. The ſpecific gravity of this mineral is 2.7. It is fuſible into a white ſpongy enamel. According to Vauquelin, the conſtituent parts are,

Silex - - - -	43.33
Alumine - - - -	22.66
Lime - - - -	3.34
Soda with potaſh - -	9.34
Water - - - -	21
	99.67

The ſituation in which this mineral occurs is nearly the ſame with that of analcime. The name was given it by Haüy, from chabazion, an unknown ſtone mentioned in the poems of Orpheus.

Laumonite, *Zeolithe efflореſcente*, Haüy.—Its colours are, yellowiſh-white, ſnow-white, and greyiſh-white. It occurs maſſive and cryſtallized in octahedral priſms, with edges apparently rounded; the ſummits of the cryſtals are dihedral. The cryſtals are ſmall, lining druſy cavities. The ſtructure is lamellar, and has a two-fold cleavage: it is tranſparent or tranſlucent when freſh; but on expoſure to the atmoſphere ſoon becomes opaque, loſing its hardneſs, and yielding to the preſſure of the finger. When freſh it ſcratches glaſs. The ſpecific gravity is 2.23. Bournon. It forms a jelly with acids. Before the blow-pipe it intumeſces, and is changed into a white enamel. According to Vogel, the conſtituent parts are,

Silex - - - -	49
Alumine - - - -	22
Lime - - - -	9
Water - - - -	17.5
Carbonic - - - -	2.5
	100

This mineral, which agrees in its principal characters with zeolite, was firſt found in Brittany, by M. Gillet Laumont, after whom it has been named by Werner. It has been found alſo at Paiſley, in Renfrewſhire, in amygdaloid, accompanying cubicite. Laumonite diſintegrates ſo rapidly, that for its preſervation it requires to be kept in well-cloſed bottles.

Croſs-Stone, *Harmotome*, Haüy, occurs in ſmall cryſtals: the form is generally a broad rectangular priſm, terminated on each extremity by four rhombic faces, with their acute angles ſet in the lateral edges of the priſm. Sometimes the edges of the rhombic faces are bevelled in one direction. But the name croſs-ſtone is derived from the frequent occurrence of two priſms interſecting each other, having one common axis. The broader planes by this interſection project, and form the figure of a croſs when the priſm is viewed at the end, or in the direction of the axis. The colour of croſs-ſtone is generally a greyiſh-white, which paſſes into ſmoke-grey: it is ſometimes a yellowiſh-white, paſſing into cream-yellow, and red. It is tranſlucent or tranſparent, with a luſtre between vitreous and pearly. The fracture is uneven, or imperfectly conchoidal. It is ſuppoſed, by profeſſor Jameſon, to have an imperfectly foliated ſtructure. It ſcratches glaſs feebly. The ſpecific gravity is 2.33. Before the blow-pipe it emits a yellowiſh phoſphoric light, and melts with intumeſcence into a colourleſs glaſs. It does not gelatinize with acids. This mineral differs from other members of the zeolite family, by containing barytes as an ingredient in its compoſition. According to Klaproth, its conſtituent parts are,

Silex - - - - -	49
Alumine - - - -	16
Barytes - - - -	18
Water - - - - -	15
	98

Dipyre, Haüy; *Schmelzſtein*, Werner.—Its colours are, light pearl-grey, greyiſh-white, or reddiſh-white. It occurs maſſive and cryſtallized, in aggregated, ſlender, octahedral, acicular priſms. The ſtructure is lamellar, with joints parallel to the ſides, and to the diagonal of a rectangular priſm. The luſtre is intermediate, between vitreous and pearly: it is tranſlucent. This mineral is ſufficiently hard to ſcratch glaſs; but is very frangible. The ſpecific gravity is 2.630. Before the blow-pipe it intumeſces, and melts with great eaſe, giving out at the ſame time a phoſphoric light from this double effect of heat upon it. Haüy gave it the name of *dipyre*, on account of its eaſy fuſibility: it was called *ſchmelzſtein* by Werner. Its conſtituent parts are,

Silex - - - - -	60
Alumine - - - -	24
Lime - - - - -	10
Water - - - - -	2
	96

It is ſaid by Brongniart to occur in ſteatite, along with iron pyrites, near Mauleon, in the Weſtern Pyrenées.

The other members of the zeolite family are deſcribed in the preceding volumes. See Natrolite and Wavellite.

ZEOPHILOS, a word uſed by Quercetan as the name of an antimonial medicine.

ZEOPHYRUM, in the *Materia Medica*, the name of the *triticum æſtivum*, or *hordeum nudum*, as it is called by ſome authors, the naked barley.

ZEPHANIAH, a canonical book of the Old Teſtament, containing the predictions of Zephaniah, the ſon of Cuſhi, and grandſon of Gedaliah; being the ninth of the twelve leſſer prophets. He propheſied in the time of king Joſiah, a little after the captivity of the ten tribes, and before that of Judah; ſo that he was contemporary with Jeremiah. He propheſies chiefly againſt Judah, who continued very corrupt, notwithſtanding the king's pious zeal for reformation, and the good example he gave to his ſubjects.

ZEPHAT, in *Ancient Geography*. See Sephaat.

ZEPHIRA, in *Geography*, a ſmall iſland in the Grecian Archipelago, near the N. coaſt of Antiparos.

ZEPHIRE, in *Ancient Geography*, an iſland ſituated on the coaſt of that of Crete, before the promontory Samonium. Mela.

ZEPHRON, or Zephronia. See Ziphron.

ZEPHYRI Fœtus, a term uſed by Hartman, and ſome other writers, to expreſs a mole, or falſe conception.

ZEPHYRINUS, *Pope*, in *Biography*, ſucceeded Victor in the Roman ſee in the year 201. A perſecution at the commencement of his papacy obliged him to conceal himſelf, and when he was at liberty to exerciſe his functions, he was engaged in the ſuppreſſion of prevalent hereſies, which diſturbed the latter years of his pontificate. He died in the year 218 or 219. Bower.

ZEPHYRIUM, in *Ancient Geography*, a promontory of Aſia, on the confines of Cilicia Propria. According to Strabo and Ptolemy, this promontory and that of Sarpedon formed the mouth of the river Calycadnus.—Alſo, a town at the extremity of this promontory.—Alſo, a promontory of the iſle of Cyprus, towards the S.W., at the extremity of a peninſula, which on the W. incloſes the gulf, at the bottom of which was Paphos.—Alſo, a promontory of Italy, on the eaſtern coaſt of Brutium, between the promontory of Hercules and the town of the Locri. Strabo.—Alſo, a promontory of Africa, in the Cyrenaica, upon the coaſt of the Pentapolis. Ptolemy. Strabo diſtinguiſhes two promontories of this name on the coaſt of Cyrenaica.—Alſo, a town of Aſia, on the coaſt of Paphlagonia.—Alſo, a town of Aſia, in the interior of Cappadocian Pontus. Arrian gives it a port, and ſtates it to be 120 ſtadia from the iſle of Arrenthias, and 90 ſtadia from the town of Tripolis.—Alſo, a promontory on the coaſt of Egypt, between Campé and Alexandria, where was a chapel of Venus Arſinoe, and hence ſhe took the name of Zephiritis.—Alſo, a promontory of Aſia Minor, on the coaſt of Caria, in the vicinity of the town of Myndus. Strabo.—Alſo, a town of the Tauric Cherſoneſus; ſituated on the ſea-coaſt, N.E. of Theodoſia. Pliny.—Alſo, a promontory on the eaſtern coaſt of the iſle of Crete.

Zephyrium *Jugum*, a ſacred mountain of Hiſpania, upon which was a fortreſs.

ZEPHYRUS, or Zephyr, Ζεφυρος, the weſt wind; a wind blowing from that cardinal point of the horizon oppoſite to the eaſt.

The poets perſonify it, and repreſent Zephyrus as the mildeſt and moſt gentle of all the deities of the woods: the character of his perſonage is youth and gentleneſs.

It is alſo called *Favonius*, and *occidens*; and, by many, has been confounded with the *Africus*. See Wind.

ZEPS, in *Geography*, a town of the duchy of Warſaw; 20 miles E. of Wladiſlaw.

ZERA, a town of Italy, in the Veroneſe; 7 miles S. of Verona.

ZERANIA Regio, in *Ancient Geography*, a country of Thrace. Steph. Byz.

ZERBITA, in *Geography*, a town of South America, in the government of New Grenada; 30 miles W.S.W. of Pamplona.

ZERBST, a town of Germany, in the principality of Anhalt Zerbſt. It is the reſidence of the prince, and the largeſt and handſomeſt town in the whole principality of Anhalt. The reſidence-houſe here is remarkably grand. In the town are two Lutheran churches, one of which is uſed by the Calviniſts, together with an univerſity, common to all the princes of Anhalt, and founded in 1582, out of a ſchool: it has a rector, with three Calviniſt and one Lutheran profeſſors. The principal trade is in beer, with manufactures of gold and ſilver; 8 miles N.N.W. of Deſſau. N. lat. 52° 3′. E. long. 12° 10′.

ZERDA, in *Zoology*, a name given by the Moors to an animal which inhabits the deſert of Sahara, extending beyond mount Atlas.

This is the *canis cerdo* of Linnæus, with a ſtraight tail, a paliſh or yellowiſh-white body, with prolonged upright ears, internally roſe-coloured. It is the fennec of Bruce, and a beautiful African and Aſiatic animal, and is principally found in Arabia.

Pennant claſſes it under the genus of dog; and deſcribes it as having a pointed viſage, long whiſkers, large bright black eyes, very large ears of a bright roſe colour, internally lined with long hairs, and orifice ſo ſmall, as not to be viſible, probably covered with a valve or membrane; legs and feet like thoſe of a dog, and taper tail; its colour is between a ſtraw and pale brown; its length from noſe to tail ten inches, its ears three inches and a half long, tail ſix, and height not five. It burrows in the ſandy ground, and is ſo exceſſively ſwift, that it is very rarely taken alive; feeds on inſects, eſpecially locuſts; ſits on its rump; is very vigilant; barking like a dog, but with a ſhriller ſound, and chiefly in the night; and is never obſerved to be ſportive.

M. Buffon ſays of this animal, that it is found to the ſouth of the Palus Tritonides, in Lybia; that it has ſomething of the nature of the hare, and ſomething of the ſquirrel; and that it lives on the palm-trees, and feeds on the fruits: hence probably it derives its name fennec from φοιξ, a palm-leaf. Bruce's Travels, vol. v.

ZERDUSHT, in *Biography*. See Zoroaster.

ZEREA, in *Geography*, a town and fortreſs of Perſia, in Farſiſtan: this town was taken by the troops of Timur Bec, with great ſlaughter; 18 miles N.N.E. of Schiras.

ZEREB, a town of Perſia, in the province of Segeſtan; 130 miles N.W. of Zarang.

ZEREWICA, a town of Lithuania; 5 miles S.W. of Slonim.

ZERIB, a town of Kurdiſtan; 25 miles W. of Gulamerik.

ZERICHUM, a name given by ſome of the chemical writers to arſenic.

ZERKI, in *Geography*, a town of Kurdiſtan; 30 miles S.W. of Betlis.

ZERKWITZ, a town of Luſatia; 2 miles W. of Lubbenau.

ZERMA. See SURMA.

ZERMAGNA, a river of Dalmatia, which runs into the Adriatic, oppoſite Pago.

ZERMONY, a town of Lithuania; 10 miles N.W. of Lida.

ZERNA, a mountain of Carinthia; 3 miles N.W. of Milſtatt.

ZERNA, a word uſed by ſome of the chemical writers to expreſs an ulcerated lepra or impetigo. The chemical authors uſe it alſo as a name for the foulneſſes which they call the *lepræ metallorum*, or leproſies of metals.

ZERNEMBL, or TSCHERNEMBL, in *Geography*, a town of the duchy of Carniola, on a ſmall river which runs into the Kulpa; 4 miles S.S.W. of Rudolfswerth. N. lat. 45° 50′. E. long. 15° 5′.

ZERNENSIUM COLONIA, in *Ancient Geography*, a colony of Dacia, founded by Trajan.

ZERNETZ, in *Geography*, a town of Switzerland, in the Upper Engadine. In the late war it was taken by the French, and ſoon after retaken by the Auſtrians; 8 miles N. of Zultz.

ZERNITZ. See CZERNETZ.

ZERO, a river of Italy, which runs into the ſea, 7 miles N. of Venice.

ZERO, denotes the point from which the ſcale of a thermometer is graduated. Thus Celſius's and Reaumur's thermometers have their zero at the freezing-point, while the thermometer of Fahrenheit has its zero at that point at which it ſtands when immerſed in a mixture of ſnow and common ſalt. In Wedgwood's pyrometer, the zero correſponds with 1077° of Fahrenheit's, each degree of which is equal to 130° of Fahrenheit. Conſequently 180° Fahr. = 100° Celſ. = 80° Reaum. = 150° De Liſle = $\frac{18}{13}$ Wedgw. See THERMOMETER.

ZEROGERE, in *Ancient Geography*, a town of India, on this ſide of the Ganges, E. of the river Namadus. Ptolemy.

ZEROWITZ, in *Geography*, a town of Bohemia, in the circle of Bechin; 3 miles W.S.W. of Potſchaken.

ZERREH, or ZURRAH, *Lake of*, a lake of Perſia, in the province of Seiſtan or Segeſtan, into which the river Heermund, or *Hindmund*, (the ancient Etymander,) navigable for boats from Boſt to Zarang, flows through the centre of it, from the mountains of Huzara, beyond Cabul. This lake is ſaid to be 30 furſungs in length, and 6 in breadth, or about 100 miles long, and 20 broad at the wideſt part. It is principally formed by the waters of the rivers Heermund and Ferrah, and in the dry ſeaſon reſembles more a marſh than a lake, being covered with ruſhes and reeds. In the middle the water is freſh; but brackiſh towards the ſhore, as the ſandy plains which ſurround it are impregnated with ſalt. The lake is full of fiſh and wild fowl; and in its centre there is a fortified town, called "Kookhozerd," built on a high iſland, where the treaſure of the principal families of Seiſtan uſed to be depoſited when the province was invaded. It is ſaid that on the borders of this lake is a town named "Naſſarabad," which is deſcribed as being four days' journey for a loaded camel, W. of the city of Dooſhak, the preſent capital of the province.

ZERTA, or SERTA, the *Zerte*, or *Serte*, in *Ichthyology*, a fiſh caught in the rivers of Italy, and ſome other places, of the figure of the chub, and called by authors *capito anadromus*, and the *blike*. It ſeldom grows to more than ten pounds weight, and at times lives in rivers, at times in the ſea; and is eſteemed a very well taſted fiſh, eſpecially a little before the ſeaſon of its ſpawning, either freſh, ſalted, or prepared in various ways by pickling, &c.

The zerte is that ſpecies of cyprinus deſcribed by Geſner and others under the name of *capito anadromus*. See CYPRINUS *Vimba*.

This is the ſilvery-blueiſh carp, olivaceous above, with the dorſal, caudal, and anal fin blueiſh, the reſt reddiſh, and the noſe protuberant. It is a native of Germany, Ruſſia, Sweden, and other parts of Europe, inhabiting rivers, and migrating into the Baltic ſea.

ZERVINKA, in *Geography*, a town of Servia, on the Danube; 10 miles N.W. of Belgrade.

ZERUIS, in *Ancient Geography*, a town of Thrace, on the route from Dyrrachium to Byſance, between Dymæ and Plotinopolis. Anton. Itin.

ZERUMBET, in *Botany*, a name firſt uſed by Serapio, and apparently either of Arabian or Indian origin. It belongs to one of the aromatic roots of the natural order of *Scitamineæ*, the produce of the Eaſt Indies, but rather to a *Kæmpferia*, than to the ſpecies of Ginger to which Linnæus has applied it. (See ZINGIBER.) Dale has very juſtly obſerved on this ſubject, *Pharmacologia*, 275, that in the preſent inſtance, as well as innumerable others, the Arabian writers are ſo brief, as well as vague, in their deſcriptions, and ſo contradictory amongſt themſelves, that we can ſcarcely tell whether they were acquainted with any particular object or not.

Wendland, Jacquin, and Poiret, (Lamarck Dict. v. 8. 857,) have moſt unaccountably made a genus of *Alpinia nutans*, and called it *Zerumbet;* but this cannot on any principle be maintained.

ZERYNTHUS, in *Ancient Geography*, a town of Thrace, which had a cavern of the ſame name, and which the ancients called Zerynthium Antrum. This cavern was conſecrated to Hecate, to whom they ſacrificed dogs. Suidas.

ZERZEN, in *Geography*, a town of Arabia, in Yemen; 36 miles S.E. of Ghezar.

ZESEMITZ, a town of Bohemia, in the circle of Chrudim; 8 miles N. of Chrudim.

ZESSEL, a town of Sileſia, in the principality of Oels; 5 miles N.E. of Oels.

ZEST, the woody thick ſkin quartering the kernel of a walnut. Some phyſicians preſcribe this zeſt, dried, and taken with white wine, as a remedy againſt the gravel.

The word is alſo uſed for a chip of orange or lemon-peel; ſuch as is uſually ſqueezed into ale, wine, &c. to give it a flavour; or for the fine thin oil that ſpurts out of that peel on ſqueezing it.

Hence, to zeſt an orange or lemon, among confectioners, is to cut the peel from top to bottom into ſmall ſlips, as thin as poſſible; or, to zeſt, is to ſqueeze the peel over the ſurface of any thing.

ZESTOLUSIA, a term uſed by ſome medical authors to expreſs bathing in warm water, by way of diſtinction from *pſuchroluſia*, or bathing in cold water.

ZETA, or ZETECULA, a little cloſet, or withdrawing chamber, with pipes running along the walls, to receive from below either the cool air, or the ſteam of warm water.

The word is formed either from ζηειν, *to be warm;* or of ζην, *vivere, to live,* on account of the uſe made hereof for love and enjoyment.

ZETA, or *Zetta,* (*Menzil,*) in *Ancient Geography,* a town of Africa Propria, ſituated near the ſea, E. of Vicus Auguſti.

ZETETÆ, Ζητηται, among the Athenians, were officers appointed upon extraordinary occaſions, to inquire after the public debts, when, through the neglect of the receivers, or by other means, they were run up to large ſums, and began to be in danger to be loſt, if not called in.

ZETETICE, Ζητετικε, formed from ζητεω, *I ſeek,* or zetetic method, in *Mathematics,* the method made uſe of to inveſtigate or find the ſolution of a problem.

The ancient Pyrrhonians were ſometimes called *Zetetici,* q. d. *ſeekers.*

ZETIN, in *Geography,* a town of Croatia; 28 miles W.N.W. of Novi.

ZETLAND, or SHETLAND, the name of a cluſter of iſlands, ſituated in the Northern ocean, between the 59th and 62d degrees of N. latitude, and a very little to the W. of the meridian of London. The moſt ſouthern part is nearly 100 miles N.N.E. from the northern county of Scotland. Theſe iſlands exceed one hundred in number, of which only thirty-four are inhabited; the others, conſiſting chiefly of rocks and ſands, are unfitted for human ſupport. By different writers, they have been named Hethland, Hialtland, Zetland, Schetland, and Shetland; which names, Dr. Edmondſton ſays, "are of Norwegian origin, and are ſuppoſed to be deſcriptive of their form or appearance." The moſt correct and approved orthography is that of Zetland. The general appearance of theſe iſlands is bleak, bare, and rocky; but ſome interior parts of the main-land are cultivated, clothed, and cheerful. In many places on the coaſts, rocks of immenſe ſize are ſeen to riſe above the foaming waves, ſome of which are at conſiderable diſtance from the ſhores. Some of theſe are alſo perforated by vaſt natural arches; in other parts there are deep caverns and ſubterranean receſſes. Two of theſe are called the Seranda, one of which extends above 300 feet in depth. Almoſt all the large iſlands are deeply interſected by tortuous bays, or voes, as they are provincially called, which afford facilities for internal communication, and excellent harbours for veſſels. Several of them are commodious, and well ſheltered from dangerous winds. Some of the iſlands have lakes, the largeſt of which is not more than two miles in length. The higheſt hill is Mons Ronaldi, in the pariſh of Northmaven; the height of which, from barometical meaſurement, is 3944 feet above the level of the ſea. Some of the headlands are lofty and grand, one of which, Noſs-head, is above 600 feet in height.

According to the population reports of 1811, the following is the enumeration of houſes and inhabitants, and the names and number of pariſhes. The total number of houſes 8230, inhabited by 9038 families, 16 houſes building, and 101 unoccupied. The whole population was 46,153, conſiſting of 20,151 males and 26,002 females. The pariſhes are, 1. Aithſting and Sandſting; 2. Breſſay, Burra, and Quarff; 3. Delting; 4. Dunroſſneſs, Sandwick, Cunniſbrough, and Faria iſle; 5. Lerwick and Gulberwick; 6. Lunnaſting, Neſting, Skerries, and Whalſay; 7. Northmavine; 8. Tingwall, Whiteneſs, and Weiſdale; 9. Unſt; 10. Walls, Sandneſs, Papa, and Fonta; 11. Yell (North) and Fellar; 12. Yell (South and Middle).

As the chief hiſtories and topographical peculiarities of the Zetland iſlands have been fully detailed under the words MAINLAND, LERWICK, and SCALLAWAY, the reader is referred to each word reſpectively.—A View of the ancient and preſent State of the Zetland Iſlands, by A. Edmondſton, M.D. 2 vols. 8vo. 1809.

ZETLAND *Iſlands, Fowla* or *Fula,* the moſt weſtern of the Shetland iſlands, and is ſuppoſed to be the "Ultima Thule" of the ancients. It is about three miles long and one and a half broad, nearly twenty miles diſtant from any land, W. of the cluſters of Orkney and Shetland, to which it is politically annexed: it affords excellent and extenſive paſture for ſheep; and is inhabited by 26 or 27 families.

ZETTERITZ, a town of the principality of Culmbach; 11 miles S.W. of Culmbach.

ZETUS, a word uſed by ſome of the chemical writers as a name for vitriol.

ZEVACO, in *Geography,* a ſmall iſland in the Pacific ocean, near the coaſt of Veragua. N. lat. 8°. W. long. 81° 46′.

ZEVEN. See CLOSTER *Seven.*

ZEVENAER. See SEVENAER.

ZEUF, or GAER, a town of the kingdom of Balk; 100 miles S.E. of Balk.

ZEUGITÆ, Ζευγιται, among the Athenians, the third claſs of the people, or thoſe who had an eſtate of two hundred medimni.

ZEUGITES, in *Botany,* an ancient name, adopted by Browne, but no otherwiſe applicable to the preſent genus, than as far as concerns its reedy habit. The *Zeugites* of Pliny was a large Bœotian reed, ſo called from ζυγος, *a yoke,* becauſe it was bound together, in portions of different lengths, to make the paſtoral pipes; as wheaten ſtraws are, by our ſhepherd's boys, to this day; but the Weſt Indian graſs, of which we are now to give an account, has not even this coincidence with the original.—Browne Jam. 341. Schreb. Gen. 810. Willd. Sp. Pl. v. 4. 204.—Claſs and order, *Monoecia Triandria.* (Rather *Triandria Digynia.*) Nat. Ord. *Gramina,* Linn. Juſſ.

Gen. Ch. *Common Calyx* a glume of two valves; the outer one broadeſt, concave, abrupt and jagged, ribbed; membranous at the edges; the inner narrower, ſharper and keeled. *Male Florets* two, ſmalleſt, on a common ſtalk the length of the ſolitary female floret, within the common calyx. *Perianth* none. *Cor.* Glume of two ovate-oblong, compreſſed, bluntiſh, awnleſs, equal valves. *Stam.* Filaments three, capillary, the length of the corolla; anthers oblong, cloven at each end.

Female within the larger glume of the common calyx, ſeſſile. *Perianth* none. *Cor.* Glume of one oblong concave valve, twice the ſize of the calyx, bordered towards the top with a dilated membrane, awned; the awn terminal, capillary, ſtraight, half as long again as the glume. *Piſt.* Germen oblong; ſtyle divided; ſtigmas long, ſhaggy. *Peric.* none. *Seed* ſolitary, oblong.

Obſ. Schreber remarks, that this graſs differs ſo entirely, in every character, from *Apluda,* with which Linnæus combines it, that they are totally irreconcileable. We ſhould refer both, with all other true *Gramina,* as in *Fl. Brit.* to the claſs *Triandria.*

Eſſ. Ch. Common Calyx of two valves, with three flowers; the female one ſeſſile; the males ſtalked. Corolla of the males of two beardleſs valves; of the female of one awned valve. Style divided. Seed oblong.

1. Z. *americanus.* Jamaica Yoke-graſs. Willd. n. 1. (Z. arundinaceus, ramoſus, minor, ruſeſcens; paniculâ ſparſâ terminali; Browne Jam. 341. t. 4. f. 3. Apluda Zeugites; Linn. Sp. Pl. 1487. Amœn. Acad. v. 5. (not 6), 412. Swartz Obſ. 384.)—Native of Jamaica. Found by Dr. Browne at Cold-ſpring, in the mountains of New Liguanea, in a rich ſoil, and ſhady ſituation. His original ſpecimens are in the Linnæan herbarium. The *root* is ſaid to be perennial. *Stem* two feet high, much branched, aſcending, round, jointed, poliſhed, browniſh, leafy, rather ſlender. *Leaves* alternate, on ſlender ſtalks, each with a long ſheathing baſe, reclinate, or nearly pendulous, ovate, acute, entire, ſmooth, many-ribbed, from an inch to an inch and a half long, and from half an inch to an inch broad. *Panicles* terminal, from the ſheaths of the uppermoſt leaves, compound, ſpreading, with ſmooth ſlender branches. *Glumes* green, ſtriated, ſmooth. The habit is no leſs foreign to the genus *Apluda* than the generic characters.

ZEUGMA, Ζευγμα, literally denoting a joining together; from ζευγνυω, *I join*, a figure in *Grammar*, whereby an adjective, or verb, which agrees with a nearer word, is alſo, by way of ſupplement, referred to another more remote.

Thus Terence, "Utinam aut hic ſurdus, aut hæc muta facta ſit." So Virgil, "Hic illius arma, hic currus fuit." In which caſes, the words *facta ſit* agreeing primarily with *hæc muta*, are alſo made to agree or extend to *hic ſurdus:* and the verb *fuit* is not only referred to *hic currus*, which it properly reſpects, but farther to *hic illius arma.*

Of this ſpecies of ellipſis, which differs from the ellipſis properly ſo called, in that the word which is to be underſtood once or oftener, has been already mentioned, Meſſieurs De Port Royal enumerate three ſorts; *viz.* when we repeat the noun or verb in the ſame manner it has been already expreſſed; or when the word expreſſed cannot be repeated without receiving ſome alteration in gender, caſe, number, or perſon; or when, after a word which includes the whole, a diſtribution of the parts is made without repeating the verb. Latin Gram. vol. ii. p. 183.

The Latins, it may be here obſerved, take a liberty in conſtructions, which ſome of the nicer critics among the moderns, particularly the French, will not allow in the modern tongues.

ZEUGMA, (*Roum-Kala,*) in *Ancient Geography*, a town of Aſia, or a place on the right bank of the Euphrates, S.E. of Samoſata, and over-againſt Apamea.

ZEVICO, in *Geography*, a town of Spain, in the province of Leon; 10 miles S.E. of Palencia.

ZEVIO, a town of Italy, in the Veroneſe; 10 miles S.S.E. of Verona.

ZEVKETI, a town of the principality of Guriel; 25 miles S.E. of Puti.

ZEULEN, a town of Bavaria, in the biſhopric of Bamberg, on the Rotach; 21 miles N.N.E. of Bamberg. N. lat. 50° 13′. E. long. 11° 16′.

ZEULENRODA, a town of Saxony, in the county of Reuſſen, containing two churches and 350 houſes. Here is a manufacture of ſtuffs, and a conſiderable one of ſtockings; 10 miles W. of Greitz. N. lat. 50° 36′. E. long. 11° 51′.

ZEUS, in *Ichthyology*, a genus of fiſh, of the order of the *thoracici;* the characters of which are, that the head is compreſſed and declining; the upper lip is arched by means of a tranſverſe membrane; the tongue is awl-ſhaped; the branchioſtegous membrane has ſeven perpendicular rays, the loweſt placed tranſverſely; the dorſal fins, in moſt ſpecies, furniſhed with projecting filiform rays; and the body is compreſſed, broad, thin, and of a bright colour. The ſpecies enumerated by Gmelin and Shaw are the following:

VOMER. Silvery dory, with the ſecond ray of the dorſal fin very long. Bloch. (See VOMER.) Its ſhape is rhomboidal, length ſix or eight, or more, inches, body thin, without ſcales, tinged on the upper parts with a blueiſh caſt, mouth with ſmall teeth. Native of the American ſeas, and ſometimes ſeen in thoſe of the north of Europe: eatable, but not much eſteemed.

GALLUS. Silvery dory, with the tenth ray of the dorſal and ſecond of the anal fin longer than the body. Shape and length, and body, like thoſe of the former; back tinged with a greeniſh hue, head large, mouth wide. Native of the American and Indian ſeas, eſculent: when firſt taken grunting, like the gurnards. The abacatuaja of Marcgrave.

FABER. Gold-green, fuliginous dory, with a duſky central ſpot on each ſide of the body, or with a rounded tail, brown ſpot on the middle of the ſides and two anal fins. Linnæus. This is the common dory (ſee DOREE), which is a native of the Mediterranean, Northern, and Atlantic ſeas. Its head is large and long; length generally twelve or fifteen inches, and weight ten or twelve pounds; mouth wide, lower jaw longer than the upper, teeth ſmall and ſharp, eyes large, body covered with ſmall ſcales, and marked by a curved lateral line, which deſcending pretty ſuddenly from the gill-covers, paſſes on to the tail; back arched, and furniſhed with a row of ſtrong, ſmall prickles, continued along the curve of the abdomen; two very ſtrong and ſharp ſpines at the baſe of the pectoral fins. The introduction of this fiſh, as excellent food, to the tables of the higher ranks, is of no remote date; Mr. Quin being conſidered as the founder of its peculiar reputation in the polite circles. This fiſh is of a very voracious nature, preying on ſmaller fiſhes and their ſpawn, as well as various kinds of ſea-inſects, the ſmaller ſhell-fiſh, &c. It emits a noiſe like that of the gurnards and ſcorpænas, when firſt taken, by violently forcing out the air from its gill-covers.

APER. Reddiſh dory, with rough ſcales and even tail; a ſmall ſpecies about three inches long, reſembling the common dory in habit; ſnout protuberant, and turning upwards; no perceptible teeth; eyes large, with white irides; two dorſal fins, the anterior having nine ſtrong and ſharp ſpines, the firſt low and ſcarcely viſible, the ſecond four times longer, and the third very long and thick; the ſecond dorſal fin conſiſting of twenty-three ſoft rays; the vent-fin having twenty-ſix rays, the pectoral fins about fourteen, and the ventral ſix. This fiſh generally reſides at the bottom, and is accidentally taken after great ſtorms: it is not eatable, being ſmall, coarſe, and of an unpleaſant odour. It is a native of the Mediterranean.

INSIDIATOR. Silvery dory, with ſides ſpeckled with black, and narrow extenſile mouth; ſhape rhomboidal; ſmaller than Z. ciliaris; colour bright-ſilvery, blueiſh-green above, and ſpeckled with black points; body without ſcales; lower lip retractile, and mouth capable of forming a tubular ſnout, for ejaculating a drop of water againſt ſuch inſects as happen to alight on or fly about the aquatic plants near the ſhores of the waters it inhabits, and thus obtain its prey. A native of the rivers and freſh-waters of India.

CILIARIS. Silvery dory, with ſome of the rays in the dorſal and anal fin exceſſively long; body rhomboidal, thin, without ſcales, and of a bright-ſilver colour, with a blueiſh or greeniſh caſt on the back, and ſmall and ſloping; lower jaw longer than the upper; teeth ſmall and ſharp; ſeveral of the laſt rays of the dorſal and anal fin extending farther than the tail itſelf, the long and flexible filaments of which count de Cepede imagines attract ſmall fiſhes, which miſtake them for worms, the dory himſelf lying concealed among ſea-weeds, &c. and waiting for its prey: the count alſo conceives that theſe may ſerve to ſuſtain the fiſh by coiling round the ſtems of ſea-plants, &c. A native of the Indian ſeas; but not eſteemed as food, being ſmall and coarſe.

LUNA or OPAH. Dory with ſomewhat lunated tail; the body being generally either red, green, or purple, with oval white ſpots. This is a ſuperb ſpecies, and found, probably wandering from the warmer regions, in the Mediterranean and Northern ſeas, the largeſt ſpecies of the kind, being between four and five feet in length, in colour varying from a bright ſilvery-green ground to a bright gold colour, and variegated on the ſides with pretty numerous and moderately large oval white ſpots, while the fins and tail are bright ſcarlet; the ſkin ſeemingly deſtitute of ſcales and perfectly ſmooth.

Specimens of this fiſh have been occaſionally thrown on the Britiſh coaſts, one of which is deſcribed under the article OPAH. A dried ſpecimen of this fiſh may be ſeen in the Britiſh Muſeum.

QUADRATUS. Grey dory, with tranſverſe duſky or a cinereous body, and even tail. This fiſh, found in the ſea that waſhes the coaſt of Jamaica, is deſcribed by ſir Hans Sloane, as five inches long and four broad in the middle, narrowing from thence gradually to the head and tail; mouth ſmall, but with rows of ſmall, ſharp teeth; tongue round and cartilaginous; pupil large and black, in a white circle; ſeven fins; tail almoſt ſquare; whole body clothed with grey or aſh-coloured ſcales, having three or four tranſverſe black lines; with a very crooked line from head to tail.

ZEUS, a ſpecies of ſcorpæna. See SCORPÆNA PORCUS.

ZEUXIS, in *Biography*, a celebrated ancient painter, who is ſaid to have been a native of Heraclea, either in Greece or Magna Græcia, and to have commenced the practice of his art in the fourth year of the 95th Olympiad, B.C. 397. According to Quintilian, he is the firſt artiſt who underſtood the proper management of lights and ſhades, and to have excelled in colouring; but ambitious of imitating the ſtrength and grandeur of Homer's manner, he is charged with giving unſuitable bulk to the heads and maſſiveneſs to the limbs of his figures. Notwithſtanding theſe alleged imperfections, he attained diſtinguiſhed excellence; and in the proſecution of it he was attentive even to the minuteſt circumſtance. Many inſtances occur in his hiſtory to this purpoſe. In his picture of Helen, executed for the Crotonians, as an ornament for their temple of Juno, he determined to combine every quality that might conſtitute a perfect beauty; and with this view he ſelected five of the handſomeſt females of Crotona, and transferred to his picture, from their naked charms, an aſſemblage of all that were moſt perfect in their kind. This figure has been extolled as the fineſt ſpecimen of art exiſting; and under it the painter, not unconſcious of his merit, inſcribed the lines of Homer, in which Priam expreſſes his admiration of the beauty of the real Helen. Every one who ſaw it, before it was placed in the temple, paid the painter a fee, which, added to the liberal recompence of the Crotonians, amply repaid him for his ſkill and labour. This enabled him to gratify his vanity by making preſents of his pictures, for which no adequate price could be given. To ſuch a degree was he enriched by his art, that he was able to indulge his vanity by appearing at the Olympic games with his name embroidered in golden letters upon his mantle. Such were the failings of a man, who rendered his name illuſtrious by the ſupereminent exerciſe of his art. Among his moſt famous performances are enumerated a Jupiter on his throne, with the other gods ſtanding round;—a Hercules in his cradle, ſtrangling the ſerpents, Alcmena and Amphitryon witneſſing the exploit with terror;—a Penelope, with an expreſſion conformable to her character;—a Cupid crowned with roſes, for the temple of Venus at Athens;—a Marſyas bound, afterwards placed in the temple of Concord at Rome;—and a group of Centaurs. The time of his death is not known; but as to the manner of it, the following whimſical anecdote is recorded: after having painted an old woman, whilſt he was attentively ſurveying it, he was ſeized with ſuch a violent fit of laughter, that he died on the ſpot. Pliny Hiſt. Nat. Gen. Biog.

ZEYA, in *Geography*, a river of Auſtria, which riſes near Ernſprung, and runs into the Marſch, 6 miles E. of Ziſterſdorf.

ZEYL. See ZEIL.

ZEYLAND, a ſmall iſland near the coaſt of Lapland. N. lat. 70° 10′.

ZEYRING, a town of the duchy of Stiria; 6 miles N.W. of Judenburg.

ZEZARE, a river of Portugal, which riſes in the eaſt part of Eſtremadura, and runs into the Tagus, at Tancos.

ZEZARINE, or KIERAZIN, a ſmall iſland in the Perſian gulf, hardly half a mile in length. N. lat. 28° 8′.

ZFOKEN, a town of Saxony, in the circle of Erzgebirg; 8 miles N.W. of Grunhayn.

ZHA, a river of Africa, which forms the eaſt boundary of Fez, and runs into the Mullooiah.

ZHEHOL, ZHEHO, or *Gehò*, a town of Chineſe Tartary, in the country of the Mandſhars, not far beyond the great wall, and ſummer reſidence of the emperor of China; 120 miles N.E. of Peking.

ZIA, an iſland in the Grecian Archipelago, anciently called "Ceos" and "Hydraſſa," about 16 leagues in circumference. The inhabitants are Greeks, who have a biſhop. The ſoil is fertile, and they have a good breed of cattle, with plenty of wild fowl, eſpecially partridges and pigeons. The chief manufactures are, ſilk, camlets, and a ſort of cloaks made of goats' hair. Among the productions of the iſland may be reckoned the velani, a ſpecies of acorn much eſteemed. Of four conſiderable towns or cities in this iſland, the only one at preſent remaining is Carthea, or Zeia, containing about 2500 houſes, with a harbour capable of receiving veſſels of conſiderable burden, and where a whole fleet may ride in ſecurity from every gale, in every depth of water, and in very good anchoring ground. The entrance into this creek or arm of the ſea is very ſafe by keeping it, according to the ſea-phraſe, open; but when once within it, ſhips of whatever burden may ride where they pleaſe to an anchor; 10 miles E. of Cape Colonni. N. lat. 37° 30′. E. long. 24° 24′.

ZIA, *Ziba*, or *Siba*, in *Ancient Geography*, a city beyond Jordan; 5 miles W. from Philadelphia.

ZIATEK, in *Geography*. See SAATZ.

ZIB. See ZEB.

ZIBA, a town of Arabia, in the province of Hedſjas; 20 miles S.S.W. of Madian.

ZIBATSKOI, a fort of Ruſſia, in the government of Kolivan, on the Irtiſch. N. lat. 54° 44′. E. long. 92° 20′.

ZIBELLINA. See MUSTELA *Zibellina*, and SABLE.

ZIBER, in *Geography*, a town of European Turkey, in Bulgaria, on the Danube; 24 miles S.S.E of Viddin.

ZIBET, or ZIBETH. See ZEBID.

ZIBETHA, in *Zoology*. See VIVERRA *Zibetha*.

ZIBETHUM, or ZIBETA, in *Natural Hiſtory*, *civet*, a perfume contained in a bladder, in the groin of a civet-cat. See CIVET.

ZIBIBIÆ, a name given by ſome authors to a large ſort of raiſins, reſembling the ſtones of dates in ſhape; they have much pulp, but very little moiſture.

ZIBREIRA, in *Geography*, a town of Portugal, in the province of Beira; 30 miles S. of Alfayates.

ZIBRITZ, a river of European Turkey, which runs into the Danube, near Ziber, in Bulgaria.

ZIBU. See SIBU.

ZICCARA, a name of an Indian fruit, reſembling a pine-cone, and containing twenty, thirty, or more kernels, of no known uſe in medicine.

ZICHIANS, in *Geography*, one of the tribes of mount Caucaſus, collaterally related to the Tſcherkeſſians or Circaſſians. The Zichians or Tſchekians, called by the Ruſſians Yaſi, are the principal inhabitants of the iſle of Taman. They formerly paid a ſmall tribute to the Krimean khan; in all other reſpects they are governed by their own beys. The iſle Atſchuk or Atſchuyef is likewiſe inhabited by Zichians. The Auchaſſians and Zichians are two tribes, which, properly ſpeaking, are only one collateral branch of the Tſcherkeſſians, have belonged to the Ruſſian empire, as inhabitants of the Kuban, ſince the year 1783. See CIRCASSIA.

ZICKAR, a mountain of Algiers, anciently called "Garaphi;" 18 miles S. of Sherſhell.

ZIDDIM, or ASSEDIM, in *Ancient Geography*, a city of Naphtali. Joſh. xix. 35.

ZIDRACH, in *Natural Hiſtory*, the name given by Cuba, and ſome other authors, to that ſpecies of the ſyngnathus of Artedi, commonly called the hippocampus.

ZIECKRA, in *Geography*, a town of Saxony, in the circle of Neuſtadt; 4 miles S. of Auma.

ZIEGELBACH, a river of Germany, which runs into the Rhine, near Gernſheim.

ZIEGENBALG, BARTHOLOMEW, in *Biography*, a Lutheran German divine, was born in 1683 at Pulnitz, in Upper Luſatia, and finiſhed his education in the univerſity of Halle. In 1705 he was ordained at Copenhagen, with a view of being ſent as a miſſionary by Frederick IV. king of Denmark to India. In 1706 he arrived at Tranquebar, but he was there oppoſed and impriſoned, ſo that he reſolved, upon his releaſe, to return to Europe. In 1715 he landed at Bergen in Norway, and after having viſited Copenhagen, in order to give an account of his miſſion, and to receive further inſtructions, he travelled through Germany and Holland into England, and from thence to India in March 1716. On his return to Tranquebar, he eſtabliſhed a Portugueſe and Malabar printing-houſe, in which many of his own works were printed. In the faithful and laborious diſcharge of his miſſionary duty he employed 13 years, at the cloſe of which period his life terminated by a diſorder probably owing to his intenſe application. This event happened in February 1719, in the 36th year of his age. His works were numerous, and of theſe the principal are mentioned in the Gen. Biog.

ZIEGENFELD, in *Geography*, a town of Bavaria, in the biſhopric of Bamberg; 12 miles N.E. of Bamberg.

ZIEGENHALS, a town of Sileſia, in the principality of Neiſſe: this place is famous for its manufactures of beautiful glaſſes. Here are ſome iron-works; 10 miles S. of Neiſſe. N. lat. 50° 12′. E. long. 17° 17′.

ZIEGENHAYN, a town of Germany, and chief place of a county of the ſame name, in the principality of Heſſe. It is ſituated in a moraſs, and can be occaſionally inundated. In this place were kept the archives of the ſovereign families of Heſſe. The counts of Ziegenhayn are extinct; 15 miles S. of Fritzlar. N. lat. 50° 50′. E. long. 9° 15′.

ZIEGENRUCK, a town of Saxony, in the circle of Neuſtadt, on the Saal; 10 miles S. of Neuſtadt. N. lat. 50° 32′. E. long. 11° 42′.

ZIEGLER, JAMES, in *Biography*, a learned writer of the 16th century, was born at Landſhut in Bavaria, and having ſtudied in the univerſity of Ingolſtadt, finiſhed his education by viſiting the libraries of foreign countries, and cultivating the ſociety of learned men. He reſided ſeveral years at Rome, collecting in the hiſtory of Leo X. and Clement VII. every anecdote that tended to the diſcredit of the papal court; and in his conferences with learned Swedes, materials for a correct hiſtory of Scandinavia, and of the cruelties committed by Chriſtian II. of Denmark. It appears that, beſides ſome other poſts which he occupied, he was for ſome time profeſſor at Ingolſtadt, and, as ſome ſay, of mathematics at Upſal. He was for a conſiderable time a teacher at Vienna, from whence, for fear of the Turks, he retired to Wolfgang, biſhop of Paſſau in Bavaria, under whoſe protection he compoſed ſome of his works; and he died at Paſſau in 1549. The earlieſt of his publications, whilſt he was a Catholic, was written againſt the Waldenſes, and printed at Leipſic in 1512. His other works are multifarious, conſiſting of geographical, hiſtorical, political, mathematical, and controverſial tracts, abounding with literary reſearches. Although he did not openly renounce the Roman Catholic religion, he favoured the cauſe of Luther and the reformers. Thuan. Hiſt. Moreri. Gen. Biog.

ZIELENZIG, in *Geography*, a town of the New Mark of Brandenburg. This town belonged in a conſiderable degree to the knights of Malta; 18 miles S.E. of Cuſtrin. N. lat. 52° 30′. E. long. 15° 16′.

ZIENWALD, a town of Saxony, in the margravate of Meiſſen; 4 miles S.S.W of Lauenſtein.

ZIERCKOWITZ, a town of the duchy of Stiria; 4 miles E.S.E. of Windiſch Feiſtritz.

ZIERENBERG, a town of the principality of Heſſe Caſſel; 11 miles N.W. of Caſſel. N. lat. 51° 22′. E. long. 9° 20′.

ZIERIA, in *Botany*, was ſo named by the writer of the preſent article, in memory of the late Mr. John Zier, F.L.S., who, as Dr. Sims records in the Botanical Magazine, "having been appointed to a profeſſorſhip in a Poliſh univerſity, was preparing to leave this country, but was prevented by a chronic diſeaſe, which terminated in death." That Mr. Zier was "a learned and induſtrious botaniſt," we are moſt ready to confirm by our own teſtimony. He was no leſs meritorious in his private character, and bore with modeſty and patience thoſe privations, which too often belong to literary merit in a foreign country, eſpecially where canting and time-ſerving are out of the queſtion. We have been informed that Mr. Zier was the coadjutor of Mr. WILLIAM CURTIS (ſee that article), in part, at leaſt, of the celebrated *Flora Londinenſis*; taking upon himſelf the technical Latin deſcriptions, while Mr. Curtis was engaged in thoſe practical obſervations, experiments, and ſcientific diſtinctions, which make the peculiar merit of the work. Mr Zier died about the year 1796, perhaps rather earlier, at no advanced period of life.—Sm. Tranſ. of Linn. Soc. v. 4. 216. Jackſon in Andr. Repoſ. v. 9. 606. Sims in Curt. Mag. 1395. Poiret in Lamarck Dict. v. 8. 859.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Rutaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in four deep, ovate, rather acute, equal, permanent ſegments. *Cor.* Petals four, ovate, pointed, ſomewhat coriaceous, downy, equal, longer than the calyx, alternate with its ſegments. *Stam.* Filaments four, alternate with the petals, awl-ſhaped, ſimple, ſmooth, inflexed, much ſhorter than the corolla, each inſerted into a globular gland, projecting above their baſe at the inſide; anthers terminal, roundiſh, with a minute point. *Piſt.* Germen ſuperior, roundiſh, four-lobed; ſtyle terminal, erect, columnar, the length of the ſtamens, deciduous; ſtigma capitate, four-lobed. *Peric.* Capſules four, connected at their inner edge, each compreſſed, abrupt, of two valves and one cell. *Seeds* ſolitary, oval, compreſſed, each encloſed in a horny elaſtic tunic of two valves.

Eſſ. Ch. Calyx in four deep ſegments. Petals four. Stamens ſmooth, each inſerted into a gland. Style ſimple. Stigma four-lobed. Capſules four, combined. Seeds with an elaſtic tunic.

We are acquainted with four ſpecies of this genus, conſiſting of ſhrubs, natives of New South Wales, with oppoſite, ſtalked, ternate *leaves*, and white *flowers*. It is allied to *Boronia*, (ſee RUTACEÆ,) as well as to CROWEA, ERIOSTEMON, CORRÆA, PHEBALIUM, and MELICOPE, to which we refer the reader. *Zieria* is eſſentially characterized by the inſertion of each of its *ſtamens* into the outſide of one of four large glands, ſtanding on the *receptacle*, at the baſe of the germen; as well as by the ſimplicity of thoſe *ſtamens*, in the other part of their ſtructure. All the ſpecies abound with reſinous dots on their *leaves*, *ſtalks*, and *calyx*, lodging an eſſential oil, whoſe qualities are more or leſs acrid and aromatic.

1. Z. *lanceolata*. Lanceolate Zieria. Brown MSS. (Z. Smithii; Andr. Repoſ. t. 606. Curt. Mag. t. 1395. Ait. Epit. 376.) — Cluſters axillary, repeatedly three-forked. Leaflets lanceolate, flat, acute. Branches and ſtalks warty.—Sent from Port Jackſon, New South Wales, by Dr. John White, in 1795. It is ſaid by Mr. Aiton to have been introduced into the Engliſh gardens in 1803, where it proves a tolerably hardy green-houſe ſhrub, flowering in the ſpring and early part of ſummer, and may be increaſed from cuttings. The *ſtem* is buſhy, of humble growth, being ſcarcely three feet high, with round, purpliſh, leafy *branches*, rough with glandular warts, and when young, beſprinkled with minute, ſtarry, rigid pubeſcence. *Footſtalks* warty, channelled, near an inch long, deſtitute of *ſtipulas*, each bearing three lanceolate, flat, entire, ſmooth, ſingle-ribbed *leaflets*, contracted at each end, the middle one rather the largeſt, being two inches, or two and a half, in length. *Panicles* oppoſite, axillary, often two together, ſomewhat leafy, repeatedly forked, many-flowered, various in length, ſpreading, ſlightly downy; their ſtalks quadrangular, purpliſh. *Flowers* white, each about the ſize of a Privet-bloſſom, with yellow *anthers*. *Capſules* brown, dotted with glands. Tunic of the *ſeeds* white and ſhining. We agree with Dr. Sims in preferring an expreſſive ſpecific appellation to one taken from the name of a botaniſt, and, therefore, as the genus in queſtion was not eſtabliſhed on this ſpecies more than the reſt, all, except the laſt, having been equally conſidered, we are happy to ſet the example of an alteration, in which we can have no other motive than propriety and common advantage. We had called this ſpecies *multiflora*; but we conſider the ſynonym in the Botanical Magazine as a publication of the unexceptionable name given by Mr. Brown.

2. Z. *lævigata*. Smooth Zieria. — Cluſters axillary, three-forked, corymboſe. Leaflets linear, revolute. Branches and ſtalks very ſmooth. — Gathered by Dr. White, near Port Jackſon, New South Wales. The *branches* of this pretty ſpecies are quadrangular, and very ſmooth, like every other part, except the *petals*. *Leaves* ſmaller than the foregoing, with ſomewhat of a glaucous hue. *Footſtalks* about half a quarter of an inch long. *Leaflets* ſcarcely an inch, acute, poliſhed, ſtrongly revolute, dotted with glands, and ſomewhat tinged with purple. *Flowers* a little larger than the laſt, and much fewer, the *panicles* being always ſolitary, much leſs compound, and ſituated chiefly towards the upper part of each branch. The *ſtalks* are acutely quadrangular, and very ſmooth. *Calyx* brown or reddiſh, taper-pointed, likewiſe quite ſmooth. *Petals* downy on both ſides, like a piece of woollen cloth.

3. Z. *pauciflora*. Few-flowered Zieria.—Stalks axillary, with one or three flowers. Leaflets linear-obovate, ſomewhat revolute. Branches and ſtalks hairy. Segments of the calyx lanceolate, taper-pointed.—Sent from Port Jackſon, with the former, by Dr. White, in 1795. A ſmall *ſhrub*, with ſlender, round, ſcarcely quadrangular, *branches*, which are more or leſs copiouſly clothed with erect briſtly hairs. *Leaves* about half the ſize of the laſt; their *leaflets* dilated upwards, and obtuſe, a little crenate towards the end; copiouſly dotted, rarely hairy, on the upper ſide; ſometimes very hairy beneath, but occaſionally quite ſmooth even in that part. *Flowers* very ſmall, often quite ſolitary, on an axillary ſtalk, with a pair of ſmall acute *bracteas*; ſometimes there are three flowers on each ſtalk. Segments of the *calyx* broad at the baſe, but tapering ſuddenly into a long point. *Petals* minutely dotted with tufts of ſtarry hairs, giving them a warty, or granulated, aſpect. *Capſules* tuberculated, ſometimes hairy; curiouſly reticulated at the inſide. *Seeds* black, rather opaque, with a ſhining, white, at length convoluted, tunic, whoſe edge is minutely fringed. The hairy and nearly ſmooth varieties of this plant look different at firſt ſight, but we cannot detect a ſpecific diſtinction.

4. Z. *cytiſoides*. Downy Zieria.—Stalks axillary, three-forked, leafy. Leaflets obovate, entire, downy on both ſides. Branches and ſtalks downy.—Native of New South Wales, from whence we obtained a ſpecimen through the favour of earl St. Vincent in 1805. Whether this be Mr. Brown's *arboreſcens*, mentioned by Dr. Sims, we have at preſent no means of knowing, and therefore we are obliged to deſcribe it by a name which appears to us very expreſſive. Every part is clothed with fine denſe ſoft pubeſcence, appearing ſtellated and entangled under a high magnifier. *Branches* round. *Footſtalks* half an inch long. *Leaflets* about an inch in length, entire, ſlightly revolute; their upper ſide peculiarly ſoft and velvet-like; the under moſt hoary. When held againſt the light, they appear full of pellucid dots. *Calyx* very downy; its ſegments broad and ovate. *Petals* about twice as long, and of the ſame ſhape, downy. We have not ſeen the ripe *fruit*.

ZIESAR, or ZIEGESAR, in *Geography*, a town of the Middle Mark of Brandenburg; 18 miles S.W. of Brandenburg.

ZIETZ, a town of the Middle Mark of Brandenburg; 10 miles S.W. of Brandenburg.

ZIEZAR, a town of Spain, in the province of Murcia; 22 miles N.W. of Murcia.

ZIFIUS, in *Ichthyology*, a name given by Albertus to the xiphias, or ſword-fiſh. See XIPHIAS.

ZIGADENUS, in *Botany*, a genus of Michaux, Boreal.-Amer. v. 1. 213. Purſh 241. The name, formed of ζυγος, *a yoke*, and αδην, αδενος, *a gland*, evidently alluding to the pair of glandular depreſſions in each petal, ought therefore to have been *Zygadenus*. We do not, however, believe that this genus can be ſeparated from HELONIAS. See that article.

The ſpecies are,

H. *glaberrima*. Smooth-leaved Helonias. Ker in Curt. Mag. t. 1680. (Zigadenus glaberrimus; Michaux as above; 214. t. 22. Purſh n. 1. Ait. Epit. 376.)—Leaves linear, channelled, recurved. Stalk leafy. Bracteas ovate, pointed as well as the petals.—In low meadows of Virginia and Lower Carolina, perennial, flowering in June and July. *Purſh*. *Root* bulbous. *Leaves* a ſpan long, concave, ſpreading. *Stalk* two feet high, bearing ſeveral, gradually diminiſhing, *leaves*, and terminating in a *panicle* of ſeveral greeniſh-white *flowers*, the ſize of *Veratrum album*, each of whoſe *petals* is marked, near the baſe, with a double glandular, apparently nectariferous, depreſſion. *Stamens* diſtinct from the petals. *Seeds* tunicated. We know not whether they be ſo in any other *Helonias*.

H. *elegans*. Elegant Helonias. (Zigadenus elegans; Purſh n. 2.)—Leaves linear, flat, erect. Stalk nearly naked. Bracteas linear. Petals acute.—On the waters of Cokahlaiſhkit river, near the Rocky Mountains, found by governor Lewis, flowering in July. Radical *leaves* erect, linear, very long, ſmooth, ribbed, flat. *Stalk* taller than the foliage, about two feet in height, round, ſimple, bearing one or two ſhort leaves. *Cluſter* many-flowered, occaſionally branched at the bottom. *Bracteas* as long as the partial ſtalks, membranous, ribbed. *Flowers* whitiſh, the ſize of *Melanthium virginicum*. *Petals* ovate, acute, with ſomething of a claw, marked at the baſe with two vermilion ſpots. *Filaments* ſhorter than the corolla. *Stigmas* three, reflexed. *Purſh*.

ZIGÆ, in *Ancient Geography*, a people of Aſiatic Sarmatia, on the bank of the Tanais. Pliny.

ZIGALOVKA, in *Geography*, a town of Ruſſia, in the government of Irkutſk; 16 miles N.W. of Tutura.

ZIGANEAH, a mountain of Algiers; 18 miles S. of Conſtantina.

ZIGANSK, a town of Ruſſia, in the government of Irkutſk, on the Lena; 1472 miles E. of Tobolſk. N. lat. 67°. E. long. 120° 32′.

ZIGEIRA, or ZIGIRA, in *Ancient Geography*, a town of Africa Propria, between the town of Thabraca and the river Bagradas. Ptolemy.

ZIGER, a word uſed by ſome of the old writers to expreſs a very fine kind of caſſia, extremely aromatic to the taſte, and of a purpliſh-black colour.

ZIGERE, in *Ancient Geography*, a town of the interior of Thrace, on the borders of Lower Mœſia.

ZIGET, in *Geography*, a town of Hungary, ſituated between the ſtreams of a ſmall river, which unite below the town, and ſoon after run into the Drave. It is on every ſide ſurrounded by a moraſs, and defended by moats, walls, and baſtions; 44 miles S.E. of Caniſcha. N. lat. 46° 8′. E. long. 17° 56′.—Alſo, a river of Hungary, which runs into the Drave, 12 miles S. of Ziget.

ZIGIRA, in *Ancient Geography*, a town of Aſia, in Aſſyria, towards the N., and at a great diſtance from the Tigris. Ptol.

ZIGURELLA, in *Ichthyology*, the name by which ſome have called the julis, a ſmall but very beautiful fiſh, common about Genoa, and in ſome degree approaching to the nature of the turdus or wraſſe.

It is a ſpecies of the labrus, according to Artedi, and is diſtinguiſhed by the name of the palmaris labrus, with two large teeth in the upper jaw. See LABRUS.

ZIGZAG TREFOIL, in *Agriculture*, a term ſometimes applied by farmers to the perennial red clover, marl graſs, or wild red clover. See CLOVER and TRIFOLIUM *Purpureum Perenne*.

ZIKLAG, or SICALAG, in *Ancient Geography*, a city which Achiſh, king of Gath, gave to David, while he took ſhelter among the Philiſtines (1 Sam. xxvii. 6.), and which afterwards always belonged to the kings of Judah. Joſhua had allotted it to the tribe of Simeon. (Joſh. xix. 5.) Euſebius ſays, that it lay in the ſouthern part of Canaan.

ZILA, in *Geography*, a river of Moldavia, which runs into the Pruth, 30 miles S.E. of Jaſſy.

ZILEH, a town of Turkiſh Armenia; 30 miles S.S.W. of Arzingan.

ZILGA, a river of Ruſſia, which runs into the Oka, N. lat. 53° 4′. E. long. 101° 14′.

ZILIS, in *Ancient Geography*, a town of Africa, in Mauritania Tingitana, marked in Anton. Itin. 24 miles from Tingis, between Tabernæ and Ad Mercuri. This was a colony eſtabliſhed by Auguſtus, exempt from the juriſdiction of the kings of Mauritania, and dependent upon Bœtica in Hiſpania.

ZILKEFEL, in *Geography*, a town of the Arabian Irak; 18 miles S.W. of Helleh.

ZILLEBA, a town of Arabia, in the province of Yemen; 35 miles E. of Loheia.

ZILLER, a river of Tyrol, which runs into the Inn, 2 miles above Rattenburg.

ZILLY. See CILLY.

ZILMISSUS, in *Ancient Geography*, a hill of Thrace, on which was a temple dedicated to the god Sabadeus. Macrobius.

ZILTAN, in *Geography*, a town of Africa, in the deſert of Barca; 150 miles W. of Angela.

ZIMARA, in *Ancient Geography*, a town of Aſia, in the Greater Armenia, at the foot of mount Capotis, in the place where the Euphrates has its ſource.

ZIMARA, in *Geography*, a town of Aſiatic Turkey, in the government of Sivas; 55 miles E. of Sivas.

ZIMBAOA, or ZIMBAO, a town of Africa, in the kingdom of Sofala, and capital of Mocaranga. S. lat. 16° 40′. E. long. 33° 40′.

ZIMBRA. See ZOWAMORE.

ZIMENT-WATER, or COPPER-*Water*, in *Natural Hiſtory*, the name by which ſome have called water found in places where there are copper-mines, and lightly impregnated with particles of that metal.

The moſt famous ſpring of this kind is about a mile diſtant from Newſol in Hungary, in the great copper-mine called by the Germans *herrn grundt*.

The water in this mine is found at different depths, and is received into baſons, for the purpoſe of ſeparating the copper from it; in ſome of theſe it is much more ſated with this metal than in others, and will make the ſuppoſed change of iron into that metal much ſooner. The moſt common ſpecies of iron uſed in the experiments are, horſeſhoes, nails, and the like; and they are found very little altered in ſhape, after the operation, except that their ſurfaces are more raiſed.

The water appears greeniſh in the baſon where it ſtands; but if a glaſs of it be taken up, it looks clear as cryſtal: it has no ſmell, but a ſtrong vitriolic aſtringent taſte, inſomuch that the lips and tongue are bliſtered and ſcorched upon taſting it.

The miners are well acquainted with the virtue of this water in changing the metals; but they alſo uſe it as a medicine: whatever ſickneſs they are ſeized with, they firſt attempt its cure by a large doſe of this water, which uſually both vomits and purges them very briſkly.

They alſo uſe it in diſorders of the eyes, in ſome of which it muſt be of great power; but in others, it is very improper; ſo that upon the whole they do more harm than good with it.

The copper produced from theſe waters is valued by the people much beyond any other copper, as being much more ductile, and running eaſier in the fire: the people in the neighbourhood have many veſſels of it; but it is to be obſerved, that its ductility and hardneſs increaſe after it is taken out of the water; for while immerſed in it, it is friable.

It is obſerved, that after great rains the ſprings are always fuller than at other times, and the virtues of the water conſiderably leſs.

A pound of this water, when ſtrongeſt, evaporated over a gentle fire, becomes firſt turbid, and afterwards depoſits a yellowiſh ſediment, which evaporated to dryneſs, weighs two ſcruples and a half; and when warm water is poured upon this and filtered, ſix grains of yellowiſh earth will be left in the filtre; and the greeniſh ſolution being again evaporated to a pellicle, and the operation being ſeveral times repeated, ſomewhat more than two ſcruples of a blueiſh-green vitriol will be ſeparated in ſmall cryſtals.

A ſmall quantity of oil of tartar being added to a pound of this water, the whole becomes turbid, and on filtration leaves a large reſiduum in the filtre, which dried, weighs about two ſcruples and a half, and is found to be a cupreous vitriol, with a ſmall mixture of a neutral ſalt. If a pint of this water be put into a bottle, and a ſmall piece of iron thrown into it, bubbles will appear on the iron, which will gradually be changed to a copper colour. On the ſecond day, the water will be turbid, and afterwards whitiſh, and white filaments will gather about the bottom and ſides of the glaſs, and about the iron, which will appear throughout of a coppery colour. From theſe experiments, we may eaſily underſtand what the true nature of the water is; that it contains a large quantity of vitriol of copper, which it probably owes to a ſolution of that metal, by means of the acid of the common pyrites and water: when this is known, the effects are not difficultly accounted for, there being no real change of one metal into another; but the true ſtate of the caſe being, that the particles of one metal are diſſolved and carried away, and thoſe of another metal depoſited in their place. A water thus impregnated is a menſtruum capable of diſſolving iron, and in the ſolution of that metal becomes ſo weakened as to let go the copper it before contained in ſmall parcels. This is ſeen to be the caſe, by examining the changed metal while it lies in the water, the copper then appearing not a ſoft malleable and even maſs, but a congeries of granules cloſely placed together, and reſembling the ſmall granules, or ova, in the ſpawn of fiſhes; and it is very friable and fragile while in this ſtate.

This ſolution of one metal, and depoſition of the particles of another in its place, is a thing very familiar in chemiſtry, and is ſeen every day in numerous inſtances; but in none ſo familiar as in a like caſe, or ſolution of iron and copper in the ſame menſtruum. Thus, if a piece of copper be diſſolved in aqua fortis, and when this ſolution is perfected a piece of iron be thrown into the liquor, the ſame thing will be ſeen that is in this ſpring, for the iron will be diſſolved, and the copper which was before diſſolved in the menſtruum will be ſlowly precipitated and depoſited in the place of it. Phil. Tranſ. N° 479, p. 355, &c. See on this ſubject the articles COPPER and VITRIOL.

ZIMEX, a word uſed by ſome of the old chemical writers for verdigriſe.

ZIMITI, in *Geography*, a town of South America, in the province of Carthagena, near a lake; 60 miles S. of Santa Fé de Bogota. N. lat. 7° 42′. W. long. 74° 6′.

ZIMMER, an iſland of the Red ſea, much ſmaller than *Fooſht*, (which ſee,) without inhabitants, and without water; though, by the ciſterns that now remain, and are ſixty yards ſquare, hewn out of the ſolid rock, there is reaſon to imagine that this was once a place of conſequence: rain, at certain ſeaſons, falls here in abundance. It is covered with young plants of rack-tree, whoſe property it is to vegetate in ſalt water. It has alſo a conſiderable number of Saiel, or Acacia-trees. In this iſland there are antelopes and hyænas; and hence we may infer that water, without which theſe animals could not ſubſiſt, is found in ſome ſubterranean caves or clifts of the rocks, unknown to the Arabs or fiſhermen. Mr. Bruce found here plenty of the large ſhell-fiſh called Biſſer and Surrumbac, but no other. Fooſht bears from this iſland 8 miles N.W. by N. ¼ W. N. lat. 16° 7′.

ZIMMER, in *Commerce*, a term uſed for reckoning in Germany, and denoting 40 pieces.

ZIMMERBACH, in *Geography*, a town of France, in the department of the Upper Rhine; 5 miles W. of Colmar.

ZIMMERMAN, JOHN GEORGE, in *Biography*, an eminent phyſician and miſcellaneous writer, was born in 1728 at Brug, in the canton of Bern. Having completed his preparatory education at Bern, and choſen the medical profeſſion, he placed himſelf in the univerſity of Gottingen, under the tuition of the celebrated Haller; and on graduating in 1751, the ſubject of his theſis was the doctrine of irritability. His reſpect for Haller was teſtified in the account he gave of him in the journal of Neufchatel, printed in 1752. Having married at Bern a relation of Haller, he ſettled as a phyſician in his native town. The retirement of his ſituation afforded him an opportunity of compoſing many pieces in proſe and verſe; and in 1756 he publiſhed the firſt ſketch of his popular work "On Solitude." This publication was followed by an eſſay "On National Pride," in 1758; by his work "On the Experience of Medicine," in 1763, and ſeveral others; and by "A Treatiſe on Dyſentery," in 1766. In 1768 he accepted an invitation to occupy the vacant poſt of phyſician to the king of England for Hanover, whither he removed. In this ſituation, the accumulation of buſineſs furniſhed in ſome meaſure an antidote to that conſtitutional irritability of temper, and tendency to hypochondriacal complaints, which in the retirement of a ſmall town had rendered him unhappy; and having occaſion to place himſelf under the medical care of a ſurgeon at Berlin, on account of a local diſeaſe under which he laboured, his removal thither in 1771, and the notice that was taken of him by ſeveral perſons of diſtinction, and even by the king, were favourable both to his health and ſpirits, and of courſe to his happineſs. Having loſt his firſt wife, he formed a ſecond matrimonial connection in 1782; and to this union he was indebted for many of thoſe comforts which counterbalanced and alleviated his afflictions. His remaining years were chiefly devoted to the completion of his work "On Solitude," which was publiſhed in four volumes. In the year 1786, Zimmerman was ſent for to attend the great Frederick in his laſt illneſs; and this viſit gave him an opportunity of publiſhing an account of his "Converſations" with that celebrated prince. He was induced alſo, by the notice that was taken of him, to undertake a defence of the character of Frederick againſt the cenſures of count de Mirabeau. The ſevere criticiſms to which theſe writings expoſed him, and the part he took in the controverſies that agitated the continent with regard to the principles that produced the French revolution, irritated his feelings and diſquieted a mind like his peculiarly ſuſceptible of contumely and reproach. His political and religious principles led him to view with jealouſy and deteſtation thoſe ſocieties which, in his judgment, and in that of others of ſimilar ſentiments, aimed at the ſubverſion of eſtabliſhed forms and authorities, and to declare war againſt them. Such were his abhorrence and dread of them, that he addreſſed a memoir to the emperor Leopold, recommending the ſuppreſſion of them by force; and he ſubjected himſelf to a proſecution for a libel by a charge brought againſt a perſon by name for an unavowed publication. His mind had arrived to ſuch a ſtate of irritation, that the approach of the French towards Hanover in 1794 almoſt ſubverted his reaſon. Dreading the conſequences of their arrival, he abſtained from food, waſted to a ſkeleton, and died abſolutely worn out in 1795, at the age of 66. "Such," ſays his biographer, "was the melancholy end of a man whoſe moral and intellectual qualities rendered him in a high degree the object of private friendſhip and public eſteem." Tiſſot's Life of Zimmerman. Gen. Biog.

ZIMOVE, in *Geography*, a village of Ruſſia, in the government of Irkutſk, where is a cuſtom-houſe; 52 miles S.E. of Barguzinſk.

Zimove *Tchiſkoi*, a town of Ruſſia, in the government of Irkutſk; 16 miles S.W. of Vitimſkoi.

Zimove *Yaſaſchnoe*, a winter habitation of Ruſſia, on the N. coaſt of Baikal lake, in the government of Irkutſk. The word *Zimove*, in Ruſſian, means a houſe or inn, built at a diſtance from a town, for the accommodation of travellers, where are generally found a warm room, freſh bread, and a kind of liquor called *quaſs*. N. lat. 55° 20′. E. long. 109° 14′.

Zimove *Zaminſkoi*, a town of Ruſſia, in the government of Irkutſk, near lake Baikal; 76 miles S.E. of Vercholenſk.

ZIMOVSKAIA, a town of Ruſſia, in the country of the Coſſacks, on the Choper; 48 miles W. of Arkadinſkaia.

ZIN, Sin, or *Senna*, in *Ancient Geography*, a city S. of the land of promiſe. (Numb. xxxiv. 4.) See Sin.

ZINARI, in *Geography*, an iſland in the Grecian Archipelago. N. lat. 36° 59′. E. long. 26° 10′.

ZINARIA, a word uſed by the Arabians for a kind of vitiated bile, called æruginous bile.

ZINC, in *Chemiſtry*, the name of a metal, in Latin *zincum*. The ancients do not appear to have been acquainted with this metal. *Cadmia* was the name by which they ſeem to have known one of its ores, which was ſo called from Cadmus, who, it is ſaid, taught the Greeks how to form braſs by its means. It is firſt mentioned by Albertus Magnus, but it is doubtful if he had ever ſeen it. The word *zinc* firſt occurs in the writings of Paracelſus. This metal has been alſo called *ſpelter*.

Zinc has never been found in Europe in a ſtate of purity, and chemiſts were late in diſcovering a method of extracting it from its ores. Henkel ſeems to have been one of the firſt who effected this about the year 1720, and he was ſoon followed by others. Zinc is of a brilliant white colour, with a ſhade of blue, and ſeems to be compoſed of a number of thin plates adhering together. It imparts a perceptible ſmell and colour to the ſkin when rubbed by it for ſome time; hence it is rather ſoft. Its ſpecific gravity is ſaid to vary from 6.86 to 7.1, the lighteſt being eſteemed the pureſt. When hammered, its ſpecific gravity becomes as high as 7.19.

This metal is by no means ſo malleable as copper, lead, or tin; it is not however brittle. It yields, and becomes ſomewhat flatter, when ſtruck with a hammer. When heated a little above 212°, it has the remarkable property of becoming very malleable, and in this ſtate may be reduced into very thin plates, either by hammering or rolling. When heated to about 400°, it becomes ſo brittle that it may be reduced to powder in a mortar.

Zinc may be drawn into wire. According to Muſchenbroeck its tenacity is ſuch, that a wire of $\frac{1}{10}$th of an inch in diameter is capable of ſupporting a weight of about 26 lbs.

Zinc melts at a temperature of about 680°, according to Dr. Black. If the heat be increaſed it evaporates, and may be eaſily diſtilled over in cloſe veſſels: upon this property of zinc, Von Swab's method of extracting it from its ore was founded. When allowed to cool ſlowly, this metal cryſtallizes beautifully in ſmall bundles of quadrangular priſms diſpoſed in all directions, which, if expoſed to the air while hot, aſſumes a blue changeable colour.

When expoſed to the air, zinc ſoon tarniſhes, but it ſcarcely undergoes any other change. When kept under water, its ſurface becomes black, the water is decompoſed, hydrogen is emitted, and the oxygen combines with the metal. If heat be applied, theſe changes go on more rapidly; and if the ſteam of water be made to paſs over zinc at a high temperature, it is very rapidly decompoſed.

When this metal is kept melted in open veſſels, it ſoon becomes covered with a grey pellicle of oxyd. If the heat be very ſtrong it takes fire, and burns with a brilliant white flame, and at the ſame time emits a great quantity of very light white flakes. This is merely the oxyd of zinc. It was well known to the ancients, and received from them many whimſical names, ſuch as *pompholyx*, &c. Among the alchymiſts it was known by the names of *nihil album*, *lana philoſophica*, *flowers of zinc*, &c.

Zinc appears to combine with only one proportion of oxygen, which has been ſtated by different chemiſts to vary from 24.16 to 25 of oxygen to 100 of the metal. According to the firſt of theſe determinations, the weight of the atom of zinc will be 41.39; according to the ſecond 40. Dr. Thomſon has decided upon 41.25 as the moſt probable weight of the atom.

Zinc combines readily with chlorine, and forms a chloride of zinc. It may be prepared by diſſolving zinc in muriatic acid, or by expoſing the metal to the gas, when the two combine by a ſpecies of combuſtion. The chloride may be alſo obtained by diſtilling zinc-filings with the oxy-muriate of mercury, or *corroſive ſublimate;* and thus obtained, it was formerly denominated the *butter* of zinc. When thus prepared, it ſublimes on the application of heat, and cryſtallizes in needles; but according to Dr. Davy, when the common muriate is heated in a glaſs tube, it does not ſublime even at a red heat, but remains in a ſtate of fuſion. Expoſed to the air, it ſoon deliqueſces. According to Dr. J. Davy's analyſis, it is compoſed of

Chlorine - - -	100
Zinc - - - -	100

But if we ſuppoſe it to be compoſed of an atom of zinc and an atom of chlorine, and the atom of zinc to weigh as above, its conſtituents ſhould be

Chlorine	100
Zinc	91.6

Zinc readily combines with iodine by heat. The compound, or *iodide*, is white. It is volatile, and cryſtallizes in fine quadrangular priſms. It deliqueſces in the air, and is very ſoluble in water. The ſolution is colourleſs, and does not cryſtallize. Gay Luſſac has ſhewn, that this compound conſiſts of one atom iodine, and one atom zinc, or by weight of

Iodine	100
Zinc	26.52

No compound of zinc with fluorine is at preſent known. Zinc does not combine with azote nor hydrogen ; nor are we acquainted with any compound of this metal with boron and ſilicon.

Zinc may be combined with phoſphorus by dropping ſmall bits of phoſphorus into it while in a ſtate of fuſion. Phoſphuret of zinc is of a white colour, and poſſeſſes a metallic luſtre, which more reſembles lead than zinc. It is ſomewhat malleable. It emits the odour of phoſphorus when filed or hammered, and if expoſed to a ſtrong heat it burns like zinc. Phoſphorus alſo appears to combine with the oxyd of zinc, and to form a peculiar compound.

Sulphur cannot be combined artificially with zinc ; but if melted with the oxyd of zinc a peculiar compound is formed. A ſimilar compound is formed when ſulphuretted hydrogen in combination with an alkali is dropped into a ſolution of zinc. It is at firſt white, but becomes darker on drying. Dr. Thomſon conſiders this compound as a ſulphuret of zinc. Mr. E. Davy aſcertained, that when the vapour of ſulphur is paſſed over zinc in fuſion a yellowiſh compound is obtained, ſimilar in appearance to blende.

One of the moſt common ores of zinc is *blende*, deſcribed below, and which is a ſulphuret of zinc, compoſed, according to Dr. Thomſon's experiments, of

Zinc	100
Sulphur	48.84

Hence he conſiders it as a compound of one atom zinc, and one atom ſulphur.

The alloys of zinc and the metals of the fixed alkalies are ſpeedily decompoſed by expoſure to the air or immerſion in water. We are not acquainted with the alloys of zinc and the metallic baſes of the alkaline earths.

Zinc may be combined with arſenic by diſtilling a mixture of it and arſenious acid. With iron, zinc combines with difficulty ; the alloy when formed, according to Lewis, is hard, ſomewhat malleable, and of a white colour, like ſilver. Malouin has ſhewn, that zinc may be uſed inſtead of tin for covering iron plates ; a circumſtance which demonſtrates an affinity between the two metals.

Zinc does not appear capable of combining with nickel or cobalt by fuſion. The alloys of zinc with manganeſe, cerium, and uranium, are unknown.

For the other alloys of zinc, ſee the different metals ; particularly for the moſt important of them or braſs, ſee BRASS and COPPER.

Salts of Zinc.—Almoſt all the acids act with energy on zinc, in conſequence of its powerful affinity for oxygen. The ſalts of zinc, therefore, are very eaſily formed, and on account of their being but one oxyd of zinc are not much liable to variation.

Nitrate of Zinc.—The nitric acid attacks zinc with ſuch energy, that it is commonly neceſſary to moderate its action by diluting it with water. Even then much heat is evolved, and a ſtrong efferveſcence is produced by the eſcape of nitrous oxyd gas. The ſolution is tranſparent and colourleſs, very cauſtic, and yields by evaporation flat, ſtriated, tetrahedral priſms, terminated by four-ſided pyramids. Theſe cryſtals attract moiſture on expoſure to the air, and are ſoluble in water and alcohol. When heated they melt, and if thrown on burning coals, detonate with a red flame.

Carbonate of Zinc.—*Calamine*, one of the ores of zinc, is a native carbonate of zinc, as deſcribed below. This ſalt uſually exiſts in the form of a white powder, and may be obtained by precipitating zinc from its ſolution in acids by an alkaline carbonate.

Phoſphate of Zinc.—The phoſphoric acid unites in two proportions with the oxyd of zinc. The neutral phoſphate is a taſteleſs white powder inſoluble in water. The biphoſphate is ſoluble in water, if not expoſed to too great a heat. It does not cryſtallize, and is ſtrongly acid.

Sulphate of Zinc.—Concentrated ſulphuric acid ſcarcely acts upon zinc without the aſſiſtance of heat ; but when diluted it acts upon the metal very ſtrongly, and hydrogen gas is given out in abundance. In this caſe, the water is decompoſed, its oxygen combines with the metal, while its hydrogen eſcapes. The ſolution, when concentrated, yields cryſtals in abundance.

This ſalt, formerly known under the name of *white vitriol*, was diſcovered in Germany, about the middle of the 16th century. When quite pure, it is perfectly white. The form of its cryſtals is that of flat quadrangular priſms, terminated by four-ſided pyramids. At a temperature of 60°, it diſſolves in about 1.4 times its weight of water. In boiling water, it diſſolves in any quantity whatever. The conſtituents of this ſalt are,

1 Atom of ſulphuric acid	31.74
1 Atom of zinc	32.54
5 Atoms of water	35.72
	100.00

When heated, the cryſtals part with their water, and if the heat be ſtrong, the whole of the acid likewiſe ſeparates, and leaves the oxyd of zinc in a ſtate of purity. See VITRIOL, *White*.

Muriate of Zinc.—See *Chloride of Zinc, ſupra.*

Sulphite of Zinc.—This ſalt exiſts in the form of cryſtals, ſoluble in water, but inſoluble in alcohol. On expoſure to the air, they are ſoon converted into the ſulphate of zinc. Fourcroy and Vauquelin deſcribe a *hypo-ſulphite* of zinc, which aſſumes the form of four-ſided priſms, terminated by four-ſided pyramids. They are ſoluble in water and alcohol.

Borate of Zinc is a white inſoluble powder. It may be formed by pouring borate of ſoda into the nitrate or muriate of zinc.

Arſeniate of Zinc is a white inſoluble powder, and may be formed by mixing ſolutions of the alkaline arſeniates with the ſulphate of zinc.

Acetate of Zinc.—This ſalt exiſts in the form of rhomboidal or hexagonal plates of a talky appearance, and is not very ſoluble in water. Solutions of this ſalt form an excellent external application to inflammations.

Oxalate of Zinc.—This ſalt is a white powder, little ſoluble n water, and may be formed readily by double decompoſition.

Tartrate and Citrate of Zinc.—Both theſe ſalts exiſt uſually in the form of powders, and are but little ſoluble in water. They may be procured, like the oxalate, by double decompoſition.

The other ſalts of zinc are of very little importance or intereſt, and do not therefore merit to be enumerated here. The ſalts of zinc may be diſtinguiſhed in general by their forming colourleſs ſolutions in water, by their yielding white precipitates with pruſſiate of potaſh, ſulphuretted hydrogen, and the alkalies, and by the characteriſtic circumſtance that zinc is not precipitated in the metallic ſtate by any other metal.

Uſes of Zinc and its Compounds.—Neither this metal nor its compounds, if we except *braſs*, are much employed in the arts nor in medicine. A chief uſe of zinc is in the formation of galvanic apparatus, and in electrical experiments. (See GALVANISM and ELECTRICITY.) As it is not a poiſonous metal, it has been recommended inſtead of tin and lead for domeſtic purpoſes; but the eaſe with which it is oxydized makes it very unfit for all ſorts of culinary apparatus.

The ſtrong affinity of zinc for oxygen renders it of great uſe as a chemical agent for precipitating other metals from a ſtate of ſolution in the metallic ſtate. The oxyd of zinc is uſed in medicine, both internally as a tonic, and externally mixed with hog's-lard as an ointment. The native carbonate is alſo uſed in the ſame manner as an external application. See UNGUENTUM *Calaminæ*, and UNGUENTUM *Zinci*.

The *ſulphate* and the *acetate* are the only ſalts of zinc uſed in medicine; for the properties of which, ſee above.

ZINC, *Ores of*, in *Mineralogy*. The ores of zinc are generally aſſociated with lead-ores, and exiſt abundantly in various parts of England; particularly in veins in the mountain lime-ſtone of Derbyſhire, Durham, Cumberland, Yorkſhire, Somerſetſhire, and North Wales. The ores of zinc are either oxyds, carbonates, or ſulphurets of zinc, and are principally known as calamine or blende. There is an ore of zinc hitherto found only in North America, called by Dr. Bruce red zinc-ore; it occurs in ſeveral of the iron-mines in Suſſex county, New Jerſey.

Red Zinc Ore is of a blood-red or aurora-red colour: it occurs maſſive and diſſeminated. The freſh fracture is ſhining, but becomes dull after long expoſure to the air, and is covered with a pearly cruſt; the principal fracture preſents a foliated ſtructure; the croſs fracture is conchoidal. It is opaque or tranſlucent on the edges; it yields a browniſh-yellow or orange ſtreak; it is brittle. The ſpecific gravity is 6.22. It is infuſible without addition by the blow-pipe, but melts into a tranſparent yellow bead with borax. When pounded and mixed with potaſh, and expoſed to heat, it melts into an emerald-green maſs, which, on ſolution in water, yields the ſame colour; but on the addition of the mineral acids is immediately changed to roſe-red. This ore is ſoluble in the mineral acids. Its conſtituent parts are,

Zinc	76
Oxygen	16
Oxyds of mangan eſe and iron	8
	100

Bruce's American Mineralogical Journal, p. 69.

According to Dr. Bruce, this ore poſſeſſes advantages in the manufacture of braſs over thoſe generally uſed; for without any previous preparation, it affords with copper braſs of the very fineſt quality, poſſeſſing a high degree of malleability, and ſuited for the moſt delicate workmanſhip. Red zinc-ore is characterized and diſtinguiſhed from red ſilver-ore and red lead-ore by its infuſibility; the latter melting into a blackiſh ſlag before the blow-pipe. Red orpiment, with which it might be confounded, is diſtinguiſhed from red zinc-ore by its volatility, and the garlic ſmell which it yields. This ore of zinc has greater ſpecific gravity than red copper-ore, and its ſolution in acids is colourleſs; but thoſe of red copper are green. Calamine is divided by ſome mineralogiſts into four kinds, ſparry calamine, compact calamine, earthy calamine, and electric calamine.

Sparry Calamine: Zinc Carbonaté, Haüy.—Its colours are greyiſh and yellowiſh-white, and ſometimes green and reddiſh-brown. It occurs maſſive, botryoidal, cellular, ſtalactitic, and cryſtallized, in acute and obtuſe rhomboids, and in longiſh quadrilateral tables: the cryſtals are ſmall. The luſtre of ſparry calamine is between reſinous and vitreous. The ſtructure is imperfectly lamellar, and ſometimes radiated. It is tranſlucent, or more or leſs tranſparent; it yields eaſily to the knife. The ſpecific gravity is 4.3. It is infuſible before the blow-pipe, and loſes about 34 *per cent.* by ignition. With muriatic acid it efferveſces, and is diſſolved. According to Smithſon, the conſtituent parts of this ore from Derbyſhire are,

Oxyd of zinc	65.2
Carbonic acid	34.8
	100.

From Somerſetſhire,

Oxyd of zinc	64.8
Carbonic acid	35.2
	100.

Compact Calamine: Zinc Carbonaté, Haüy.—Its colours are, greyiſh, greeniſh, or yellowiſh, and often brown, from an intermixture with iron. It occurs maſſive, botryoidal, diſſeminated, ſtalactitical, reniform, and mamillated: it has a dull, feebly gliſtening, reſinous luſtre. The fracture is uneven and coarſe-grained, or ſplintery, and ſometimes even a flatty conchoidal. It ſometimes occurs in concentric lamellar concretions: it is opaque. Its chemical characters and conſtituent parts are the ſame as of the ſparry calamine, theſe minerals being only varieties differing in form from each other.

Earthy Calamine: Zinc Carbonaté, Haüy.—It is of a greyiſh or yellowiſh-white colour, ſometimes ſnow-white; externally it is frequently covered with a tint of yellowiſh-brown. It occurs maſſive, and coating other minerals; it is opaque, and has an earthy fracture; it yields to the nail, and adheres to the tongue. The ſpecific gravity is 3.358. According to Smithſon, the conſtituent parts are,

Oxyd of zinc	71.4
Carbonic acid	13.5
Water	15.1
	100.

Electric Calamine: Zinc Oxydé, Haüy.—Its prevailing colours are, greyiſh, blueiſh, or yellowiſh-white; externally it is ſometimes browniſh or blackiſh. It occurs cryſtallized, mamillated, botryoidal, ſtalactitical, and maſſive. The cryſtals are ſix-ſided priſms, with dehedral ſummits, or acute octahedrons; ſometimes truncated on the ſummits. The cryſtals are ſmall, and either ſolitary, or radiating in groups, like zeolite. The luſtre is ſhining, gliſtening, and vitreous: the ſtructure is imperfectly lamellar, or divergingly fibrous. It is ſometimes opaque, and ſometimes tranſlucent or tranſparent: it yields to the knife, but is much harder than common calamine. The ſpecific gravity is 3.4. When gently heated it is ſtrongly electric; it is infuſible, and loſes about 12 *per cent.* by ignition. It is ſoluble in muriatic acid with efferveſcence: the ſolution gelatinizes on cooling. According to Klaproth, its conſtituent parts are,

Oxyd of zinc	66
Silex	33
	99

According to Smithſon,

Oxyd of zinc	68.3
Silex	25.
Water	4.4
	97.7

Calamine ſometimes occurs in what are called ſuppoſititious cryſtals, as if it had been moulded over cryſtals of other minerals, and the internal cryſtal had diſappeared. In Derbyſhire, the working miners are of opinion, that the calamine deſtroys the lead-ores when they occur together; or, as they expreſs it, the calamine eats up the lead. That ſome proceſs of decompoſition or change takes place where theſe ores are aſſociated there can be no doubt; but by what means this is effected we are at preſent ignorant. See VEINS, *Metallic.*

Calamine, commonly called lapis calaminaris, when cleaned and roaſted, is uſed for the fabrication of braſs, forming a compound with copper. (See BRASS.) Its uſes in the making of braſs is of very high antiquity, being mentioned by Ariſtotle.

Calamine is alſo the moſt valuable ore from which metallic zinc is extracted.

The uſes of calamine were not known in England before the reign of queen Elizabeth, and even ſo late as the year 1700 it was commonly carried out of the kingdom as ballaſt by the ſhips which traded to Holland. The calamine raiſed in Derbyſhire about the year 1780 amounted to 1500 tons. Sixty years before that time the quantity got did not exceed 40 tons, the greater part being thrown away through ignorance of its nature and value.

The dreſſing of calamine conſiſts principally in picking out all the pieces of lead-ore, lime-ſtone, iron-ſtone, heavy ſpar, and other minerals mixed with it in the mine. The picked calamine is then calcined in proper furnaces, and loſes by calcination between a third and fourth part of its weight, which is the carbonic acid. In great works, where calamine is prepared for the braſs-makers, after its calcination, it is carefully picked again, the accidental ingredients being rendered more diſcernible by the action of fire. It is afterwards ground to a fine powder, and waſhed in a gentle rill of water, to free it from earthy particles with which it may be intermixed; for theſe being lighter are carried off by the water: it is then made up for ſale.

A ton of the crude Derbyſhire calamine, as dug from the mine, is reduced, by the various proceſſes it undergoes before it becomes fit for uſe, to about twelve hundred weight. Part of the zinc is loſt in calcination, particularly if too ſtrong a fire be made: this is evident by the flame viſible over the furnace. It would be practicable to uſe calamine without calcining it, for the carbonic acid would be expelled by the heat applied in making braſs; but then there would be ſeven or eight hundred weight put into the braſs pots which would be of no uſe in the operation: it is therefore better to get rid of ſo large a quantity of unſerviceable matter, and thereby avoid alſo an increaſed expence of carriage from the calamine-furnace to the places where the braſs is made. Watſon's Chemical Eſſays, vol. iv.

Blende compriſes various ſulphurets of zinc, differing in the proportion of their conſtituent parts, and the admixture of other mineral ſubſtances.

Yellow Blende, or Phoſphoreſcent Blende: Zinc Sulphuré Jaune, Brongniart.—The prevailing colours of this ore are yellow, paſſing into green, and ſometimes hyacinth-red, aurora-red, or browniſh-red. It occurs maſſive, diſſeminated, and cryſtallized. The cryſtals are generally ſmall, middle-ſized, and ſo cloſely aggregated, that it is difficult to determine the preciſe figure, which appears either the rhomboidal, the dodecahedron, the octahedron, or the tetrahedron. Yellow blende is tranſlucent, paſſing into tranſparent, and has a ſplendent adamantine luſtre. It yields to the knife, and affords a yellowiſh-grey or yellowiſh-white ſtreak: it is brittle. The ſpecific gravity rather exceeds 4: according to Karſton, it is 4.1.

It decrepitates before the blow-pipe, and becomes grey; but is infuſible either alone or with borax. By friction it becomes phoſphoreſcent, and, according to Bergman, acts as powerful in this reſpect in water as in air.

Foliated Brown Blende: Zinc Sulphuré Brun, Brongniart.—It is of a reddiſh or yellowiſh-brown, paſſing into blackiſh-brown and dark red. It occurs maſſive, diſſeminated, and cryſtallized. The form of the cryſtals is a rhomboidal dodecahedron, either perfect or truncated on the alternate lateral angles and edges, or an octahedron, either perfect or truncated. It occurs alſo in tetrahedrons, perfect or truncated, and in rectangular four-ſided priſms, ſix-ſided priſms, and acicular cryſtals. Sometimes the cryſtals are joined, forming a twin cryſtal. The luſtre is ſhining or ſplendent, and either reſinous, adamantine, or ſemi-metallic; it has a ſtraight lamellar ſtructure, with a cleavage in ſix directions. It is more or leſs tranſlucent; it yields to the knife, and affords a yellowiſh-grey or yellowiſh-brown ſtreak; it is brittle, and eaſily frangible. The ſpecific gravity of this ore varies from 3.7 to 4. It is infuſible, and yields an hepatic odour when digeſted in ſulphuric acids. The conſtituent parts of blende are given as under; but ſome varieties of foreign blende contain ſilex, arſenic, and manganeſe, which may be regarded as accidental.

Blende from Satilberg, according to Bergman:

Zinc	44
Iron	5
Sulphur	17
Silex	24
Alumine	5
Water	5
	100

From Allonhead, in Northumberland, according to Dr. Thomſon:

Zinc	58.8
Iron	8.4
Sulphur	23.5
Silex	7.
	97.7

Fibrous Blende.—The colour is reddiſh-brown: it occurs reniform and maſſive. The ſtructure is divergingly fibrous in one direction, and concentric lamellar in the other: its luſtre is reſinous; it is opaque or faintly tranſlucent at the edges; it agrees in other characters with foliated blende. The conſtituent parts are given as under in the Journal des Mines, t. xlix. No. 13.

Zinc - - - -	62
Iron - - - -	3
Lead - - - -	5
Arſenic - - - -	1
Sulphur - - - -	21
Alumine - - - -	2
Water - - - -	4
	98

Black Blende: Zinc Sulphuré Noir, Haüy.—It is of a greyiſh or velvet-black colour, and ſometimes browniſh-black. When tranſlucent, it appears blood-red; it is ſometimes tarniſhed with various colours. It occurs maſſive, diſſeminated, and cryſtallized, in the ſame forms as brown blende; internally it is ſhining, ſometimes ſplendent; and the luſtre is adamantine, inclining to metallic. It has a foliated ſtructure, and ſix-fold cleavage. The fragments are angular, and rather ſharp-edged. It is almoſt always opaque. The ſtreak is intermediate, between yellowiſh-grey and lightiſh-brown: it is eaſily frangible. The ſpecific gravity varies with the admixture of ingredients in this ore, from 3.9 to 4.1. Auriferous blende from Nagyag, as given by Muller, is 5.39. The conſtituent parts of black blende are as under:

Zinc - -	45	53
Iron - -	9	12
Lead - -	6	0
Arſenic - -	1	5
Sulphur - -	29	26
Silex - -	4	0
Water - -	6	4
	100	100

Blende is diſtinguiſhed from tin-ſtone by its inferior hardneſs; it yields pretty eaſily to the knife. It may be diſtinguiſhed from other ores which reſemble it, by the ſulphureous odour which it yields when thrown into an acid, or triturated in a mortar. The common name given to this ore by the Engliſh miners is Black Jack. It frequently occurs in the upper part of the metallic veins in Cornwall, that are rich in other ores below. Blende is not ſo valuable an ore of zinc as calamine: it muſt be freed from its ſulphur by calcination before it can be applied to the making of braſs. Some blendes loſe one-fourth of their weight, others one-ſixth by calcination. It has been for many years uſed for making braſs at Briſtol as well as calamine; but ſo little was this application of it known in other parts of the kingdom, that in the year 1777 we are informed by Dr. Watſon, in his Chemical Eſſays, that its uſe in Derbyſhire was but recently diſcovered; and he was requeſted not to divulge the purpoſe to which it might be applied, probably to evade the dues on minerals payable to the duchy court of Lancaſter.

ZINCHI, or Zicchi, in *Ancient Geography*, a people of Aſiatic Sarmatia, upon the coaſt of the Euxine ſea, and ſeparated from the Sanichæ, by the river Achæus. Arrian.

ZINCKGRABEN, in *Geography*, a town of Bavaria, in the biſhopric of Bamberg; 5 miles E. of Lichtenfels.

ZINDIKITES, a ſect among the Mahometans; ſo denominated from their leader Zindik, whom Grotius makes to be one of the magi, and a follower of Zoroaſter.

The Zindikites believe no providence nor reſurrection: they allow no other God but the four elements; and, in this ſenſe, they aſſert, that man, being a mixture of thoſe ſimple bodies, returns to God when he dies.

ZINDINSKAIA, in *Geography*, a fort of Ruſſia, on the confines of China, in the government of Irkutſk; 80 miles S. of Selenginſk.

ZINETUS, a word uſed by Paracelſus as a name for one of the braſs-like marcaſites.

ZINGANE-IS-KELESI, in *Geography*, a town of European Turkey, in Romania; 6 miles S. of Burgas.

ZINGAR, a word uſed by ſome of the chemical writers for verdigriſe; and by others for the flos æris, or flowers of copper or braſs.

ZINGHA, in *Geography*, a town of Africa, in Whidah; 20 miles N.W. of Sabi.

ZINGI, in the *Materia Medica*, the name of a ſeed, ſometimes alſo called the aniſum ſtellatum, or ſtarry-headed aniſe.

ZINGIBER, in *Botany*, ζιγγιβερις of Dioſcorides, a name which the Greeks ſeem to have taken, when they obtained the plant itſelf, from the Arabians. Gærtner, diſſatisfied with Linnæus's application of the ancient name *Amomum*, to a genus of the *Scitamineæ*, under which they both of them confounded very different things, ſubſtituted *Zingiber* in its place, as undoubtedly belonging to one or other of the ſpecies. But ſince this tribe, and its generic diſtinctions, have been cleared up by Mr. Roſcoe, it becomes neceſſary to diſcriminate between *Amomum* and *Zingiber*, and conſequently both names are employed.—Roſcoe Tr. of Linn. Soc. v. 8. 347. Dryandr. in Ait. Hort. Kew. v. 1. 5. (Amomum; Lamarck Illuſtr. t. 2. f. 3.)—Claſs and order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. Brown. *Cannæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, ſheathing, membranous, ſplitting at one ſide. *Cor.* of one petal: tube twice the length of the calyx, a little ſwelling upwards: outer limb ringent; the upper lip undivided; lower in two deep, equal, deflexed ſegments: inner limb a large, ſpreading, three-lobed lip, of which the middle ſegment is the largeſt, all of them more or leſs wavy and crenate. *Stam.* Filament one, erect, oblong, extended beyond the anther in an awl-ſhaped incurved beak, involute at the edges, embracing the ſtyle; anther attached by its back, below the beak of the filament, oblong, of two cloſe, parallel, linear lobes, meeting round the ſtyle, burſting in front. *Piſt.* Germen inferior, roundiſh, ſmall, crowned with a pair of glands; ſtyle thread-ſhaped, embraced by the filament, and ſcarcely extending beyond its beak; ſtigma ſmall, concave, fringed, projecting a little beyond the point of the beak. *Peric.* Capſule?

Eſſ. Ch. Anther two-lobed. Filament elongated beyond the anther, with an awl-ſhaped, channelled beak, embracing the ſtyle. Outer limb of the corolla ringent; inner a three-lobed lip.

Obſ. Juſſieu had already, after Adanſon, remarked a difference between the infloreſcence of the Ginger and the Cardamom tribes, though both have been comprehended by all botaniſts under *Amomum*. In the former, the flowers compoſe a denſe ſpike, ſupported by a radical ſtalk; in the latter, they are panicled at the baſe of the ſtem. So important a difference in habit, between plants whoſe general ſtructure is ſo uniform and ſimple, might lead us to look for ſome generic difference in the parts of fructification. This Mr. Roſcoe has detected in the *filament*, according to the principle which runs through all his generic diſtinctions of this tribe, and which is ſupported throughout by the inflorеſcence, as well as the parts of the flower in general. Nothing more perfect has ever been accompliſhed in ſyſtematic botany. See SCITAMINEÆ.

1. Z. *officinale*. Narrow-leaved Ginger. Roſcoe n. 1. Ait. n. 1. (Z. majus; Rumph. Amboin. v. 5. 156. t. 66. f. 1. Amomum Zingiber; Linn. Sp. Pl. 1. Willd. Sp. Pl. v. 1. 6. Jacq. Hort. Vind. v. 1. 31. t. 75. "Inſchi; Rheede Hort. Malab. v. 11. 21. t. 12.")—Bracteas ovate, acute. Segments of the outer limb of the corolla linear, revolute. Middle lobe of the lip entire.—Native of the Eaſt Indies; naturalized in Jamaica. A ſtove plant in England, flowering in September. It appears to have been cultivated here by Edward lord Zouch, before the year 1605. The *root* is perennial, tuberous, fleſhy, with long ſtout fibres, well known for its hot, gratefully aromatic, flavour, and cordial qualities. The whole *herb* is ſmooth, and partakes of the flavour of the root. Barren *ſtems* ſeveral, erect, herbaceous, wand-like, leafy, about three feet high. *Leaves* alternate, linear-lanceolate, acute, entire, ſingle-ribbed, ſpreading, with long, cloſe, ſheathing, abrupt *footſtalks*. *Flower-ſtalks* radical, a foot high, clothed with tubular ſheathing *bracteas*. *Spikes* ſolitary, erect, club-ſhaped, enveloped in broader, ſhorter, leſs pointed, crowded *bracteas*, each accompanied by a ſolitary, ſeſſile *flower*, twice its own length, of a delicate texture and ſhort duration. The outer limb of the *corolla* is of a very pale yellow, or ſtraw colour, revolute; the upper ſegment rather the broadeſt. *Lip*, as well as the incurved point of the *filament*, ſpotted with crimſon. We have never been able to procure any ſpecimen or account of the *fruit*, which is perhaps in conſequence of the great increaſe of the *roots*, not often perfected, or if produced, it is moſt probably overlooked by the cultivators, who may find it expedient for the advantage of their crop, to cut away the ſtalks before they run to ſeed.

2. Z. *Zerumbet*. Broad-leaved Ginger. Roſcoe n. 2. Ait. n. 2. Sm. Exot. Bot. v. 2. 105. t. 112. (Z. ſpurium; Koenig in Retz. Obſ. faſc. 3. 60. Z. latifolium ſylveſtre; Herm. Lugd.-Bat. 636. t. 637. Amomum Zerumbet; Linn. Sp. Pl. 1. Willd. Sp. Pl. v. 1. 6. Jacq. Hort. Vind. v. 3. 30. t. 54. Lampujum; Rumph. Amboin. v. 5. 148. t. 64. f. 1. "Katou-inſchi-kua; Rheede Hort. Malab. v. 11. 27. t. 13.")—Bracteas ovate, obtuſe. Segments of the outer limb of the corolla ſtraight. Middle lobe of the lip cloven, ſlightly wavy. Rib and ſheaths of the leaves ſmooth.—Native of the Eaſt Indies. The *roots* are ſaid to be bitter, without the flavour and pungency of the true Ginger; but the young foliage, according to Rumphius, is uſed in Amboyna as a pot-herb. This ſpecies is not uncommon in our ſtoves, being eaſy of culture, and flowering frequently at the end of autumn. Many perſons who grow it think themſelves poſſeſſed of the real Ginger. The habits of the two plants are indeed very ſimilar, but the barren *ſtems* of the preſent ſpecies are rather the talleſt, being four or five feet high, with elliptic-lanceolate *leaves*; ſilky beneath when young. *Flower-ſtalks* eighteen inches or two feet high, thick and firm. *Spike* ovate. *Flowers* pale yellow, without ſcent, each laſting but a few hours. Upper ſegment of the outer limb ovate, erect, concave: two lower ones lanceolate. *Lip* yellow, its large central lobe emarginate.

3. Z. *Caſumunar*. Caſumunar, or Hairy Ginger. "Roxb. in Aſiatic Reſearches, v. 11. 347. t. 7." Sims in Curt. Mag. t. 1426. Ait. Epit. 376. (Caſſummuniar; Dale Pharmac. 275. Caſumunar; Lewis Diſp. ed. 4. 121.)—Bracteas ovate, rather acute. Segments of the outer limb of the corolla ſtraight. Middle lobe of the lip cloven, dilated, criſped, and crenate. Rib and ſheaths of the leaves hairy.—Native of the Eaſt Indies, from whence it was ſent by Dr. Roxburgh to this country, and flowered in Auguſt 1811, in the ſtove of James Vere, eſq. at Kenſington Gore. The roots had long ago been introduced into the Materia Medica as a powerful ſtimulant and tonic, in hyſteric, paralytic, and other nervous diſorders, poſſeſſing a warm bitteriſh flavour, with the ſmell of Ginger; but they have long gone out of uſe. Their ſhape is leſs elongated and compreſſed than that of Ginger, and more annulated, tuberous or knotty. *Herbage* moſt like the laſt ſpecies, but diſtinguiſhed by the hairy ſheath and mid-rib of the *leaves*. *Flower-ſtalks* not above ſix or eight inches high. *Spike* ovate, browniſh. *Corolla* pale yellow, diſtinguiſhed from Z. *Zerumbet* by the greatly dilated, inverſely heart-ſhaped, criſped and crenate, middle lobe of its *lip*; the two ſide lobes being erect and entire, not larger than in *Zerumbet*. The plant is ſaid to be propagated by cuttings of the *root*.

4. Z. *Mioga*. Japaneſe Ginger. Roſcoe n. 3. Ait. n. 3. (Amomum Mioga; Thunb. Jap. 14. Willd. Sp. Pl. v. 1. 7. Banks Ic. Kæmpf. t. 1. Dsjooka, vulgò Mjoga, ſeu Mionga; Kæmpf. Am. Exot. 826.)—Bracteas ovate, acute. Spike nearly ſeſſile. Segments of the outer limb of the corolla erect, acute. Middle lobe of the lip concave, entire.—Found near Nagaſaki, and in other parts of Japan, flowering in September. *Thunberg*. Kæmpfer ſpeaks of this as an eatable kind of Ginger, with a mild flavour. The leafy *ſtems* are from one to two feet, or more, in height, and with the foliage reſemble thoſe of the three foregoing ſpecies. The *flower-ſtalk* is radical, and remarkably ſhort, or ſcarcely any. *Spike* ovate, with numerous, large, white, pointed, ſtriated, concave *bracteas*; the outer ones largeſt, concealing many within. The *flowers* ſmell faintly like Butter-bur, and have a yellow, very concave, undivided *lip*, and a white *limb*. *Filament* greeniſh-white, beaked, embracing the thread-ſhaped *ſtyle*, according to the generic character, as is faithfully deſcribed by Thunberg, who ſpeaks of the fruit as a nearly ovate, obtuſe *capſule*, with three cells and three valves, and numerous minute *ſeeds*, inſerted into the central column.

5. Z. *roſeum*. Roſe-coloured Ginger. Roſcoe n. 4. (Amomum roſeum; Roxb. Coromand. v. 2. 15. t. 126.) —Bracteas lanceolate, coloured. Spike nearly ſeſſile. Segments of the outer limb of the corolla revolute. Middle lobe of the lip flat, entire.—Native of moiſt valleys in Hindooſtan, flowering in the rainy ſeaſon. The Telingas call this plant Bumacatchicay. *Root* creeping, cylindrical, branched, not knotty. No aromatic or other quality is recorded concerning it, or any other part of the plant. Leafy *ſtems* two or three feet high. *Spikes* nearly ſeſſile at the root, ovate, two or three inches long. *Bracteas* looſely imbricated, erect, lanceolate, acute, of a fine roſe colour, as are alſo the *calyx*, and the narrow revolute ſegments of the outer limb of the *corolla*. The *lip* is whitiſh, obovate, entire, not concave, but ſomewhat reflexed. Beak of the *filament* yellow. No account is given of the *ſeed-veſſel*.

6. Z. *purpureum*. Purple Ginger. Roſcoe n. 5. Ait. n. 4.—"Bracteas ovate, coloured. Segments of the outer limb of the corolla erect. Middle lobe of the lip divided." —Native of the Eaſt Indies. Introduced into the Engliſh ſtoves, by the right honourable ſir Joſeph Banks, in 1796, and obſerved by Mr. Roſcoe in the Botanic garden at Liverpool. It flowers in September.

ZINGIBER, in the *Materia Medica*. See GINGER.

ZINGIS, otherwiſe Jenghiz-khan, or *Genghiz-khan*, in *Biography*, the founder of the Mogul empire, was the ſon of Biſukai, or Jeſukai, a chief over thirteen hordes of Moguls in the Tartarian range between China and the Caſpian ſea, and born about the year 1161 or 1163, his firſt name being Temugin. In the year 1205 he was inſtalled in the Mogul empire, and declared his purpoſe of giving a new code of laws to the nation; the object of which was the preſervation of peace at home, and the conduct of war abroad. The penalty of death was denounced againſt murder, adultery, perjury, and the theft of a horſe or ox, which were the chief articles of Tartarian property. The nation was interdicted all ſervile labour, the performance of which was aſſigned to ſlaves and ſtrangers, and was conſecrated to the ſole profeſſion of arms. The weapons which they were appointed to uſe were bows, ſcymetars, and iron maces; and the troops were diſtributed into diviſions of hundreds, thouſands, and tens of thouſands. The ſoldiers and officers were made individually reſponſible for the ſafety and conduct of one another; and it was an eſtabliſhed rule, that peace ſhould never be granted without previous conqueſt. With regard to religion, Zingis eſtabliſhed univerſal toleration. As for himſelf, his only article of faith was the exiſtence of one God, the creator and governor of all things; but his Mogul and Tartar ſubjects were idolaters, Jews, Chriſtians, and Mahometans, all of whom were allowed to practiſe their ſeveral rites without moleſtation, and without any difference of privileges. Having thus ſettled the affairs of the proper Mogul empire, he ſucceſſively, by his own arms, and thoſe of his lieutenants, reduced the different tribes of the deſert, and rendered himſelf the undiſputed monarch of the paſtoral nations who pitch their tents from the wall of China to the Volga. For a ſketch of his conqueſts, we refer to the article of the Mogul *Empire*. Theſe conqueſts were attended with many acts of ſavage cruelty. In his invaſion of Kitay, the northern empire of China, he took 90 cities, deſtroyed by fire a number of towns and villages, and maſſacred many thouſands of people; at the ſame time obliging the Kin emperor to purchaſe peace at the price of a Chineſe princeſs, 500 youths and maidens, 3000 horſes, and a large tribute in gold and ſilk. At his departure, he inhumanly ordered all the children whom he had taken in four provinces to be butchered. In a ſecond expedition he laid ſiege to the capital city Yen-king, now called Pekin, which, after a long reſiſtance and grievous ſuffering by famine, was ſtormed by the Moguls, with the conflagration of the imperial palace; and after the deſolation of China, its five northern provinces ſubmitted to the dominion of the Mogul conqueror. In the bloody conflicts between Zingis and Mohammed, ſultan of Khariſm or Charaſm, all the rich and populous cities and countries of Tranſoxiana, Khariſm, and Khoraſan, were taken or laid waſte by the Moguls. Mohammed died a fugitive in a deſert iſland of the Caſpian ſea; but his ſon, Gelaleddin, boldly reſiſted the invader, and checked his progreſs, till overpowered by numbers on the banks of the Indus, he was under a neceſſity of ſpurring his horſe into that rapid river, the oppoſite ſide of which he reached in ſafety. Zingis, admiring his heroiſm, and forbidding the purſuit of him, ſaid to his ſons, "Any ſon might wiſh to ſpring from ſuch a father." Nevertheleſs he ordered all the ſultan's male children to be killed. After the defeat of Gelaleddin, Zingis, remaining for ſome time in Khoraſan, purſued his cuſtomary operations of ſacrificing lives, and deſolating whole tracts of country. Returning to Bokhara, or Bucharia, in 1223, he inveſtigated the antiquities of Balk and the doctrines of Zoroaſter, and held conferences with the Mahometan doctors, the reſult of which was his aſſent to their tenets, the neceſſity of a pilgrimage to Mecca excepted. In 1224 he held a grand diet in the plain of Tonkat, which, though ſeven leagues in length, could ſcarcely contain the tents of all the diſtinguiſhed perſons that were aſſembled. In the following year he paſſed through Tartary to the borders of northern China, and ſubjugated the kingdom of Hya or Tangut. In the province of Shen-ſi, on the mountain of Lu-pan, whither he went in order to paſs the ſummer heats, he was taken ill; and as he perceived his end approaching, he ſummoned the generals of his army, before whom he declared his fourth ſon regent, till the arrival of his brother Octai, whom he appointed his ſucceſſor in the dignity of grand khan of the Moguls and Tartars. Recommending unanimity, and adviſing the conduct of the war againſt Kin, he expired in Auguſt 1227, at the age of 66 years. His remains were interred with great pomp under a beautiful tree which he had fixed upon in returning from a hunting expedition. He had many wives, and left a numerous progeny. "This emperor," ſays one of his biographers, "poſſeſſed the civil and military qualities neceſſary for the founder of a mighty monarchy, together with a penetrating and inquiring mind, which, with ſuperior culture, might have placed him in the liſt of truly great princes. His memory now ſurvives as that of one of the great conquerors whoſe deeds have aſtoniſhed the world, to which they have proved the moſt terrible of ſcourges. His ſimple laws were long the rule of the countries he governed, and are ſtill religiouſly obſerved by the Crim Tartars." D'Herbelot. Gibbon's Hiſt. Univ. Hiſt. Gen. Biog.

ZINGST, in *Geography*, a ſmall iſland in the Baltic, near the coaſt of Pomerania, and a little to the weſt of the iſland of Uſedom. N. lat. 54° 28′. E. long. 12° 50′.

ZINIAR, a name given by the old chemical writers for verdigriſe.

ZINIAT, a word uſed by the old chemical writers to expreſs either the action of fermentation, or any thing that is capable of exciting it in bodies.

ZINK. See Zinc.

ZINKOW, in *Geography*, a town of Poland, in Podolia; 32 miles N. of Kaminiec.

ZINN, John Godfrey, in *Biography*, an anatomiſt and botaniſt, was born in 1726, ſtudied under Haller at Gottingen, and became botanical profeſſor in that univerſity. His firſt experiments were undertaken in order to aſcertain the ſenſibility of different parts of the brain; he then proceeded to the examination of the eye, which produced his eſteemed work, intitled "Deſcriptio Anatomica Oculi Humani, Iconibus illuſtrata," Gotting. 4to. 1755. Botany was alſo the ſubject of his aſſiduous ſtudy, the reſult of which appeared in ſeveral papers, and in a catalogue of the plants in the academical garden and vicinity of Gottingen, arranged according to the ſyſtem of Haller. His premature death happened at the age of 32, in April 1758. He was a member of the Academy of Sciences at Gottingen, the Inſtitute of Bologna, and the Royal Society of Berlin. Haller. Eloy.

ZINNA, in *Geography*, a town of the duchy of Magdeburg; 18 miles N. of Wittenberg.

ZINNIA, in *Botany*, was ſo named by Linnæus, in honour of Dr. John Godfrey Zinn, profeſſor of phyſic and botany at Gottingen, author of a *Catalogus Plantarum Horti Academici et Agri Gottingenſis*, printed there in 1757. This work, making an octavo volume, is claſſed after Haller's method. Its author has, beſides, publiſhed various botanical and phyſiological treatiſes, and would probably have contributed much more to the advancement of ſcience, had he not been cut off, at the early age of 32, in 1758. Haller, whoſe diſciple and ſucceſſor he was, ſpeaks of him with much complacency; but it is eaſy to ſee that his favour was greatly conciliated by Dr. Zinn's preference of his ſyſtem to that of Linnæus. One principle of the learned Swede he indeed very juſtly approved, that plants nearly related on the whole ought not to be ſeparated on account of a difference in one particular part. Yet in the application of this rule he ſurely has wandered widely from the truth, in wiſhing to unite *Geum*, *Comarum*, *Potentilla*, *Tormentilla*, and *Fragaria*. Such it ſeems was the avowed opinion of Zinn, in his *Prælectio*, publiſhed in 1755; but he has not followed it in his work above-mentioned. In that volume occurs, if we miſtake not, the firſt figure of a *Zinnia*, under the name of a *Rudbeckia;* though the author juſtly declares it to conſtitute an indubitably new genus.—Linn. Gen. 437. Schreb. 563. Willd. Sp. Pl. v. 3. 2139. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 91. Purſh 565. Juſſ. 188. Lamarck Illuſtr. t. 685. Gærtn. t. 172.—Claſs and order, *Syngeneſia Polygamia-ſuperflua*. Nat. Ord. *Compoſitæ oppoſitifoliæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* ovato-cylindrical, ſmooth, imbricated, with numerous, obtuſe, erect, permanent ſcales. *Cor.* compound, radiated. Florets of the elevated diſk ſeveral, all perfect, funnel-ſhaped, five-cleft, internally villous; thoſe of the radius from five to ten, ligulate, roundiſh or oblong, abrupt, larger than the diſk, permanent. *Stam.* in the perfect florets, Filaments five, very ſhort; anthers united into a cylindrical tube. *Piſt.* in the perfect florets, Germen oblong, with two very unequal awns; ſtyle thread-ſhaped, cloven half way down; ſtigmas two, erect, obtuſe: in the female florets, Germen oblong, triangular, without awns; ſtyle capillary, cloven half way down; ſtigmas two, recurved. *Peric.* none, except the unchanged calyx. *Seeds* in the perfect florets, ſolitary, oblong, quadrangular, compreſſed. Down of two points, one of them awned. In the female florets ſolitary, pointleſs, crowned with the permanent petal. *Recept.* chaffy, with tongue-ſhaped, channelled, deciduous ſcales, the length of the calyx.

Eſſ. Ch. Receptacle chaffy. Seed-down of two erect unequal awns. Calyx imbricated, ſomewhat ovate. Florets of the radius from five to ten, permanent, undivided.

1. Z. *pauciflora*. Yellow Zinnia. Linn. Sp. Pl. 1269. Willd. n. 1. Ait. n. 1. (Bidens calyce oblongo ſquamoſo, ſeminibus radii corollâ non deciduâ coronatis; Mill. Ic. v. 1. 43. t. 64. Rudbeckia foliis oppoſitis hirſutis ovato-acutis, calyce imbricato cylindrico, radii petalis piſtillatis; Zinn. Gott. 409. t. 1. Chryſogonum peruvianum; Linn. Sp. Pl. ed. 1. 920, excluding the ſynonym, which is wrong, and a heap of confuſion; ſee Feuillé 766.)—Flowers ſeſſile. Leaves ſomewhat heart-ſhaped, ſeſſile, claſping the ſtem.—Native of Peru. Cultivated by Miller, but not commonly preſerved in our gardens like the following, being leſs hardy, and not ſo ornamental. The *root* is annual. *Stem* erect, three or four feet high, branched, angular, leafy. *Leaves* oppoſite, deflexed, two or three inches long, acute, roughiſh, entire, rough-edged, with three principal ribs; their baſe broadiſh-heartſhaped. *Flowers* ſolitary at the ends of the branches, nearly or quite ſeſſile, with the uppermoſt pair of leaves cloſe to the baſe of the *calyx; diſk* browniſh; *radius* yellow. We perceive a difference between ſeveral ſpecimens and figures of this plant, but cannot trace an abſolute or conſtant ſpecific diſtinction between them. In the Linnæan ſpecimen, the ſmall number of *florets* juſtifies the ſpecific name, and the *flower* itſelf is quite ſeſſile. This is undoubtedly Miller's plant, though the radiant *florets* are much more numerous in his figure, and the whole *flower* larger. A ſpecimen under this ſame name of *pauciflora*, given us by ſir Joſeph Banks, from Jacquin's herbarium, is what Zinn's figure exactly repreſents. The *leaves* are ſhorter, more rounded and heart-ſhaped, and the *flower* is large, with more or leſs of a ſtalk. Its radiant *florets* are numerous, broad, and yellow. How far theſe characters are permanent, culture and repeated obſervations muſt determine. We are rather inclined to ſuſpect the Linnæan ſpecimen, raiſed in the Upſal garden, is a ſtarved one, the *flowers* perhaps being rendered diminutive by their lateneſs. It is moſt probable that a portion of the ſame ſeed was ſent by Juſſieu to Linnæus and to Miller. The plant indeed flowered at Upſal before the year 1753, when Miller ſays he received his ſeeds, becauſe it is deſcribed, in the firſt edition of Sp. Pl. printed that year, from the garden ſpecimen now before us.

2. Z. *multiflora*. Common Red Zinnia. Linn. Sp. Pl. 1269. Willd. n. 2. Ait. n. 2. Purſh n. 1. Curt. Mag. t. 149. Linn. Dec. 23. t. 12. Jacq. Obſ. faſc. 2. 19. t. 40.—Flowers ſtalked. Leaves oppoſite, ovato-lanceolate.—Native of North America. Found on the banks of the Miſſiſſippi, flowering in July and Auguſt. Annual. *Rays* yellow, orange, and ſometimes brick-red. *Purſh.* The latter colour is moſt common in the gardens of Europe, where this plant is treated as a rather tender annual, like the different ſpecies of *Tagetes*, being beſt raiſed on a hot-bed, and planted out ſo as to flower in the autumn. A yellow variety, almoſt equally common, is leſs ſingular and ſtriking in colour. We are not by any means certain that this variety may not be ſometimes taken for the foregoing; yet the plant of Zinn and Jacquin, of which we have juſt given an account, is too different in the great breadth of its *leaves* to be confounded with the preſent ſpecies. The *Z. multiflora* has a more hairy *ſtem* than the *pauciflora*, much narrower and elongated *leaves*, with three ribs; their ſurface roughiſh to the touch. The *flowers* ſtand each on a hollow, deeply furrowed, terminal ſtalk, from one to two inches long, much thicker than the ſtem, and gradually ſwelling upwards. The *diſk* is conical and acute, compoſed of reddiſh or tawny *florets*, accompanied by the prominent, dark-green, or blackiſh, ſcales of the *receptacle:* the *radius* conſiſts of ten or more broad, elliptical, uſually emarginate *florets*, of a deep brick-red, and very ſmooth, above; pale, greeniſh, and rough beneath; reticulated with veins, and finally becoming rigid, or membranous.

3. Z. *verticillata*. Whorl-leaved Zinnia. Andr. Repoſ. t. 189. Willd. n. 3. Ait. n. 3.—Flowers ſtalked. Leaves whorled, ovato-lanceolate. Radiant florets very numerous.—Native of Mexico. Raiſed by Meſſrs. Lee and Kennedy at Hammerſmith, about the year 1789. We cannot ſuppoſe this to be any thing more than a luxuriant variety of the laſt. Annual plants, pampered with manure, and every poſſible advantage of cultivation, are liable to acquire aggregate *leaves*, double *flowers*, and many other characters, which do not appear in a ſtate of nature. Theſe it is the buſineſs of the gardener to encourage, and of the botaniſt to beware of. Having ſeen no ſpecimen of this plant, we can only judge by the figure, in which we cannot diſcover any ſpecific diſtinctions. The *flowers* indeed are rendered very ſplendid, by their multiplied *radius* of a deep ſcarlet, and their *diſk* ſeems broader, and leſs conical, or pointed, than in either of the foregoing ſpecies. This laſt character, if conſtant, is more material than any which has been mentioned.

4. Z. *elegans*. Purple-flowered Zinnia. Jacq. Ic. Rar. t. 589. Willd. n. 4. Ait. n. 4. (Z. violacea; Cavan. Ic. v. 1. 57. t. 81. Andr. Repoſ. t. 55.)—Flowers ſtalked. Leaves oppoſite, ovate-heartſhaped, ſeſſile, claſping the ſtem, harſh on both ſides. Scales of the receptacle jagged and

fringed. Tubular florets with a hairy diſk.—Native of Mexico; ſaid to have been brought to England from Madrid, in 1796, by the late marchioneſs of Bute; whoſe botanical acquiſitions in Spain, made with no leſs intelligence than taſte, have eminently enriched the gardens of England. This is alſo a tender annual, flowering from Midſummer to the end of autumn. The *herbage* is ſtouter, the *leaves* broader, and much more harſh to the touch, like a file, than in any other of the genus. *Flowers*, in a cultivated ſtate at leaſt, as large as the laſt, with a conical, but rather obtuſe, *diſk*; the prominent orange-coloured ſcales of the *receptacle* have many finely-fringed ſegments; the upper ſurface of the yellow tubular *florets* is denſely ſhaggy; the *radius* conſiſts of numerous, ſpreading, obovate *florets*, of a deep lilac, or light purple, colour, leſs harſh, or ſcarioſe, after flowering than in the *multiflora*.

5. Z. *tenuiflora*. Slender-flowered Zinnia. Jac. Ic. Rar. t. 590. Willd. n. 5. Ait. n. 5. Curt. Mag. t. 555. (Z. revoluta; Cavan. Ic. v. 3. 26. t. 251.)—Flowers ſtalked. Leaves oppoſite, ovato-lanceolate, pointed. Calyx cylindrical. Radiant florets linear, revolute.—Native of Mexico. Raiſed here in 1799, by the late captain Woodford, at Vauxhall. This very diſtinct ſpecies requires the ſame treatment as the reſt. They may all, perhaps, ſucceed, in favourable ſeaſons, as hardy annuals, but are beſt raiſed with artificial heat in the ſpring. The preſent has much narrower *leaves* than the laſt, which moreover are nearly ſmooth. The *flowers* are the ſmalleſt of their genus, and diſtinguiſhed by their bright red, narrow, revolute *radiant florets*, very rough at the edges; the tubular *florets* are yellow, roughiſh in their diſk.

ZINNIA, in *Gardening*, contains plants of the annual flowering kind, in which the ſpecies cultivated are, the few-flowered yellow zinnia (Z. pauciflora), and the many-flowered red zinnia (Z. multiflora).

Theſe are both plants of the annual flower kind.

Method of Culture.—Theſe annual plants are increaſed from ſeeds, which ſhould be ſown on a ſlight hot-bed in the early ſpring, as March; and when the plants are a few inches high, they ſhould be pricked out on another bed previouſly prepared to receive them, where they ſhould remain till the advance of ſummer, when they may be taken up and planted out in the borders of the pleaſure-ground, where they blow and complete their ſeeds for the year following.

They have a fine effect in their leaves and flowers in theſe ſituations.

ZINNORE, in *Geography*, a town of Hindooſtan, in Guzerat, on the Nerbuddah; 30 miles N.E. of Baroach.

ZINTEN, a town of Pruſſia, in the province of Natangen, near which the Poles were defeated in 1520; 30 miles S.S.W. of Königſberg. N. lat. 54° 23'. E. long. 20° 20'.

ZINTI, a town of South America, in the viceroyalty of Buenos Ayres, and archbiſhopric of La Plata; 90 miles S. of La Plata.

ZINU, a province of South America, in the viceroyalty of New Grenada, ſituated to the north of Choco, and weſt of Carthagena.

ZINU, or *Sinu*, a town of South America, and capital of a province, on a river of the ſame name, which runs into the Spaniſh Main; 90 miles S. of Carthagena. N. lat. 8° 58'. W. long. 75° 48'.

ZINWALD, a town of Bohemia, in the circle of Leitmeritz; 18 miles N.W. of Leitmeritz.

ZINZENDORF, NICHOLAS LOUIS, in *Biography*, was born at Dreſden in May 1700, and was educated under the inſpection of his grandmother, who was a pious woman, accuſtomed to the peruſal of the Scriptures. He was thus led into an early acquaintance with the principal doctrines of the Chriſtian religion, and manifeſted a peculiar taſte for ſpiritual ſongs. Under profeſſor Franke at Halle, he became a good claſſical ſcholar; and his facility in compoſing verſes was ſuch, that he indited them faſter than he could write them. Such, however, was his proneneſs to diſſipation, and particularly gaming, that he ſquandered away not only his money, but all his effects. From his youth he was fond of forming religious ſocieties, and it is ſaid that he had eſtabliſhed ſeven aſſociations of this kind between the year 1710 and the year 1716, when he left Halle. One of his companions in forming theſe inſtitutions was baron Frederick von Watteville, in intercourſe with whom he firſt conceived the idea of attempting the converſion of the heathens. With this view they bound themſelves by an oath, and determined to employ others in accompliſhing this deſign who were properly qualified for the office. This reſolution ſeems to have taken its riſe from a baptized native of Malabar, who had been brought to Halle by the miſſionary Ziegenbalg. In 1716 Zinzendorf removed to Wittenberg, where he applied diligently to his ſtudies; and in 1719 he quitted Wittenberg, in order to gratify his relations by purſuing his travels. On his tour he remained for ſome time at Utrecht, proſecuting his ſtudies in hiſtory and juriſprudence; but his chief attention was directed to theology, as he had formed a purpoſe of becoming a preacher. From Holland he proceeded to Paris, where he aſſociated with his friend, Henry, prince of Reuſs, and endeavoured to ſpread his doctrine among the Catholic nobility, by ſome of whom they were treated with reſpect, while others contemptuouſly denominated them Janſeniſts and Pietiſts. At this time he was introduced by Father de la Tour, general of the Society of the Oratory, to the archbiſhop of Paris, and attempts were made, without effect, for gaining him over to the Catholic church. During his abode at Paris he formed an acquaintance with ſeveral other perſons of diſtinction. From Paris he proceeded through Switzerland to Germany in 1720, and having arrived at Hernſdorf, in Luſatia, he found his grandmother ſtill living, and employed himſelf in communicating inſtruction to the domeſtics, and correſponding with his friends. Soon after, retaining his purpoſe of becoming a preacher, he went to Dreſden, and having received his property from thoſe with whom it had been entruſted, he purchaſed the lordſhip of Bertholdſdorf, in Luſatia, and marrying a ſiſter of the prince of Reuſs, diſtinguiſhed for her piety and virtue, he aſſigned to her his whole property, that he might not be incumbered and diverted from the proſecution of his deſign by the cares of the world. About the year 1722 he indulged the notion of a purer church diſcipline, of which he obſerved ſome traces among the Bohemian and Moravian brethren, who, from their earlieſt connection with the Waldenſes and true followers of John Huſs, had formed a peculiar religious community. The Chriſtians of this deſcription had undergone from the year 1458 to 1627 ſevere perſecutions, ſo that they were almoſt extirpated from Germany; but a ſmall number of them remained, under oppreſſion, in Moravia; and about the year 1720 the ſect revived: ſo that they held frequent meetings, read the Scriptures with their old books of hymns, celebrated in ſecret the holy ſacrament, and introduced, at leaſt in their houſes, the ancient church diſcipline. One of their number, of obſcure condition, obtained an introduction to count Zinzendorf, who gave them leave to ſettle on his eſtate at Bertholdſdorf. Availing themſelves of this permiſſion, a ſmall number of them, conſiſting of three men, two women, and five children, came hither from Moravia, in Whitſuntide, 1722, and erected on a hill, in a wild marſhy diſtrict, a wooden habitation, expoſing themſelves to the deriſion of the adjacent inhabitants. They were ſo poor that the counteſs ſent them a cow to ſupply milk for their children. However, they gradually gained new converts; and when the count and his conſort viſited this new ſettlement of the Moravian brethren in the month of December, he gave them a cordial welcome, and falling upon his knees, pronounced a benediction on the infant colony. Such was the origin of the village of Hernhut. (See Hernhuters and Moravians.) The count, whilſt he afforded them protection, left them at full liberty to think for themſelves; more eſpecially as he found, upon examination, nothing improper in their doctrine. From this time, count Zinzendorf, in connection with ſome other perſons ſimilarly diſpoſed, took pains in giving inſtruction to his ſubjects, and educating their children; avowing himſelf a true Lutheran, but wiſhing that his people might remain totally ignorant of the diſputes that ſubſiſted among Proteſtant divines. In 1723 he publiſhed a ſmall catechiſm, entitled "The pure Milk of the Doctrine of Jeſus," which, he ſays, coſt him more labour than all his other works. The count, devoted to the proſecution of the work he had undertaken, reſided ſometimes on his eſtate in Luſatia, and ſometimes at Dreſden, but declined every offer of a place at court. He employed himſelf in the compoſition and occaſional publication of books adapted to his deſign; one of which, being a periodical work, and entitled "The German Socrates," was ſuppreſſed by order of the council, probably becauſe it cenſured the prevailing indifference about religion, and called upon his fellow-citizens to live in a manner more agreeable to what their religion required, or entirely to renounce it. In 1727 he quitted Dreſden, that he might be nearer his favourite object Hernhut, and that he might be at leiſure to devote his whole time and attention to the improvement and increaſe of his congregation. With this view he made a tour through the greater part of Germany, occaſionally preaching, and endeavouring to gain converts. In 1731 he extended his tour to Denmark, and being preſent at the coronation of Chriſtian VI., who conferred upon him the order of Dannebrog, which five years afterwards he reſigned, becauſe he thought it improper to appear as the inſtructor of his flock with the inſignia of his order. In this tour he acquainted himſelf with the ſtate of the Daniſh miſſions in the Eaſt Indies and Greenland; and on his return he took meaſures for carrying into execution the deſign he had formed at Halle with his friend Watteville. From this commencement, in the year 1732, aroſe that miſſionary ſyſtem of the Moravians which has ſince been ſo widely and ſo wonderfully extended. Between 1732 and 1766 nearly 4000 negroes in the Daniſh iſlands were baptized; and in 1768 the congregation of New Hernhut and Lichtenfels, in Greenland, amounted to 784 perſons. When the congregation at Hernhut had increaſed in 1732 to 500 perſons, the Saxon court became alarmed, and appointed a commiſſion for the purpoſe of examining their doctrine and principles. Although they were found to be inoffenſive, the count was forbidden to bring any more new emigrants from Moravia; and ſoon after he received an order to ſell his eſtate and property, which was a kind of ſentence of baniſhment from his country. He alſo perceived a coldneſs and reſerve in the diſpoſition of his friends. Accordingly he quitted Hernhut, and repaired to his friend count Reuſs at Eberſdorf. He now thought ſeriouſly, as he had done twenty years before, of entering regularly into the church; but the counteſs and his friends diſſuaded him from adopting this meaſure. With a view of becoming tutor to the children of Richter, a merchant at Stralſund, to which he was urged by his pecuniary circumſtances, he was examined for orders, and having obtained a flattering teſtimonial, was formally ordained at Tubingen. But a change taking place in the circumſtances of Richter, this plan did not ſucceed. In 1735 he made an attempt to viſit Sweden, but was forbidden to enter the kingdom by an order of government; and this occaſioned the compoſition of one of his moſt important works, entitled "A Letter to the King of Sweden in regard to the general Belief of himſelf and Congregation," which he widely circulated, and which produced various plans for extirpating the Moravian brethren from the empire. In the ſame year he viſited Switzerland, and in 1736 he and the counteſs made a tour to Holland, where, at the deſire of the princeſs dowager of Orange, he founded a new colony at Yſſelſtein, called Heerendyk, which was afterwards removed to Zuyſt. On his return he found at Caſſel a copy of a Saxon reſcript, by which he was forbidden the territories of that electorate, and baniſhed from his native country. He was thus reduced to the neceſſity of making various excurſions; and on his return he was invited to a conference with the king of Pruſſia, who was ſo well ſatisfied with his doctrine and character, that he adviſed him to be regularly ordained. For this purpoſe he recommended him to the chief court preacher Jablonſky, by whom he was conſecrated biſhop of the Moravian congregation in May 1737. In this year he viſited London, and eſtabliſhed the brotherhood in England. Here he became acquainted with John Weſley, and maintained a diſpute with him on the impoſſibility of men's attaining moral perfection, for which the Engliſh preacher contended. Although he obtained permiſſion to return to Hernhut, it was on condition of his making certain declarations with which he could not comply, and therefore he became a voluntary exile; and was forbidden ever to enter Saxony. In the year 1738 he undertook his firſt voyage to America, in the courſe of which he compoſed a work entitled "Jeremiah a Preacher of Righteouſneſs." Upon his arrival at the iſland of St. Thomas, he found that all the miſſionaries had been thrown into priſon, but he immediately procured their releaſe, and liberty for his congregation to aſſemble. After his return he viſited Holland and Switzerland, wrote in his own defence againſt the accuſations of his German enemies, and held public aſſemblies at Geneva. In 1742 he made a ſecond voyage to America, and preached alternately with their own miniſter to the Lutheran congregation at Germantown, in Pennſylvania, and built for them a place of worſhip. In a Latin ſpeech at Philadelphia he laid aſide the title of count, and aſſumed the name of Von Thumſteen, which belonged to his family. The Quakers generally ſtyled him friend Lewis. He alſo eſtabliſhed the celebrated colony at Bethlehem, and made a tour among the Indians, who received him favourably, and, as a token of their friendſhip, gave him the wampum belt. In America, however, he ſuffered much abuſe and calumny. In 1743 he returned to Europe; and having proceeded to Riga with a view of ſettling ſome differences among his followers at Livonia, he was arreſted, conveyed to the frontiers, and ordered never to enter the imperial territories any more. In 1747 he obtained permiſſion to return to Saxony, after an exile of ten years; and the king, having received from one of the Moravians a conſiderable ſum of money for the caſtle of Barby and diſtrict of Doben, iſſued a declaration that the ſociety ſhould be allowed, in every part of his territories, the ſame privileges which they had enjoyed at Hernhut. In 1748 he ſucceeded in obtaining a commiſſion, which, after particular examination, declared the members of the Moravian community to be true adherents to the Augſburg confeſſion. In the following year he viſited England, and obtained an act of parliament for the protection of his followers in the Britiſh dominions in America. In 1757 he made his laſt tour to Switzerland, and from thence proceeded to Holland. In 1760 he died at Hernhut, after an illneſs of four days, and his funeral was attended by 2000 of his followers, and as many ſpectators; and his coffin was carried to the grave by thirty-two preachers and miſſionaries, ſome of whom had come from Holland, England, Ireland, North America, and even Greenland. Count Zinzendorf was ſomewhat above the middle ſize; and his countenance combined ſeriouſneſs with animation. In early life his manners were elegant, but as he withdrew from intercourſe with the world, in more advanced life they became ſtiff and reſerved. To money he was perfectly indifferent, and as he gave to every mendicant, he was often pennyleſs. His diſpoſition was lively, but he was capable of long-continued and intenſe application. His memory was prompt and comprehenſive, but as he was of a lively imagination it was not very retentive. In his ſtyle he bid defiance to all the rules of grammar, and his ambiguous mode of expreſſion ſubjected him to many inconveniences, ſo that his meaning was often miſtaken and miſrepreſented. To perſons of the lower order he was condeſcending, and in his intercourſe with all mild and candid. In his temper he was irritable and paſſionate, but placable and forgiving. His activity in doing good and ſerving others was indefatigable and unbounded; he often promiſed, it is ſaid, with the beſt intentions, beyond his ability of performance; and he is charged with having uſed art and flattery to carry on his own purpoſes, and to gain converts to his cauſe. Moſheim, &c. Gen. Biog.

For a further account of the tenets and partiſans of the ſect with which he was connected, and of which he was, according to his own ſtatement, a reformer, and not a founder, we refer to the articles HERNHUTERS, MORAVIANS, and UNITAS *Fratrum.*

ZINZIBER, GINGER. See ZINGIBER and GINGER.

ZINZIBER *Rubrum*, *Red Ginger*, a name by which ſome authors have called the officinal caſumunar-root.

ZINZIBER *Caninum*, *Dog's Ginger*, in *Botany*, a name given by ſome of the old writers to the *perſicaria urens*, or biting arſmart; a plant which is very hot, and pungent to the taſte, and grows in watery places. It had hence the name of *hydropiper*, water-pepper, among the Greeks, and was called *zinziber caninum*, or dog's ginger, by Avicenna and others, from its heat, and from an opinion that it would poiſon dogs that eat of it.

The Arabian name is *zinzibil alkeleb*.

ZINZIBER *Caninum* is alſo a name given by ſome authors to the *capſicum*, or Guinea-pepper. Ger. Emac. Ind. 2.

ZINZIG, or SINZIG, in *Geography*, a town of France, in the department of the Roer; 18 miles N.N.W. of Coblentz. N. lat. 50° 33′. E. long. 7° 12′.

ZINZILLA, a name by which ſome medical writers have called that ſpecies of the herpes, which we uſually call the ſhingles.

ZINZOACZA, in *Geography*, a town of Mexico, in the province of Mechoacan, anciently the reſidence of a cacique.

ZIOBERIS, in *Ancient Geography*, a river of Aſia, in Hyrcania, which diſcharged itſelf into the Rhydage, according to Quintus Curtius. Diodorus Siculus calls it Stiboetes.

ZIOLO, in *Geography*, a town of Italy, in the Paduan; 10 miles S.E. of Padua.

ZION, in *Ancient Geography*. See SION and JERUSALEM.

ZIPH, a town of Paleſtine, in the tribe of Judah. (Joſh. xv. 24.) St. Jerom ſays, that in his time they ſhewed the village of Ziph, 8 miles from Hebron eaſtward. David for ſome time concealed himſelf in the wilderneſs of Ziph. (1 Sam. xxiii. 14, 15.) There was another city called Ziph, near Maon and Carmel of Judah. Joſh. xv. 55.

ZIPHRON, or ZEPHRONIA, a city N. of the land of promiſe, now unknown. Numb. xxxiv. 9.

ZIPOETIUM, a town of Aſia Minor, in Bithynia, near mount Lyperus, and which had been founded by king Zipoteus. Steph. Byz.

ZIPPORIS, a name which the ancients gave to the town of Sefora or Sauſſori. It was the ſtrongeſt place in Galilee, and its poſition might be regarded as the key of the province, according to Joſephus.

ZIPSERCHLOSS, in *Geography*, a town of Hungary; 6 miles E. of Leutſch.

ZIRBALIS HERNIA, a term uſed by medical writers to expreſs that kind of rupture which is cauſed by a deſcent of the omentum into the ſcrotum.

ZIRBUS, the name by which the Arabian phyſicians have called the omentum.

ZIRCON, in *Mineralogy*, *Jargon de Ceylon*, Romé de Liſle, *Zircon*, Haüy, a gem originally found in the iſland of Ceylon, in the ſands of rivers, along with ſpinel, ſapphire, temmaline, and iron-ſand. Zircon, the gem called the hyacinth, and zirconite, are regarded by moſt mineralogiſts as varieties of the ſame ſpecies. They are eſſentially compoſed of the earth called zircon, (ſee ZIRCONIA, in *Chemiſtry*,) with ſilex, and a minute portion of iron, which may be regarded merely as the colouring matter. The primitive form of the cryſtals of zircon, according to Haüy, is an octahedron, compoſed of two four-ſided priſms, whoſe ſides are iſoſceles triangles. The inclination of the planes of the ſame pyramid to each is 124°.12; the inclination of the ſides of one pyramid to thoſe of the other 82°.50. The angle of the ſummit is 73°.44. The common forms in which it occurs are rectangular four-ſided priſms, rather flatly terminated by four-ſided pyramids, the planes of which are ſet on the lateral planes of the priſm under equal angles. The above figure is often truncated in the lateral edges. The angles of the priſm, in junction with the pyramid, are often bevelled, and ſometimes the priſms are terminated by four planes at each end, two of which at each end form very obtuſe angles, and are ſet on the lateral planes of the priſm. The cryſtals are generally ſmall, and occur looſe or imbedded. The ſurface of the cryſtals is ſometimes rough, and ſometimes ſmooth and ſhining; that of the grains is uneven, and gliſtening internally. Zircon is ſplendent or ſhining, with a luſtre intermediate, between adamantine and reſinous. The ſtructure is imperfectly foliated, with the folia parallel to the lateral edges of the priſm. The fracture is flatly conchoidal. The prevailing colour of zircon is grey; it is ſometimes white, green, and brown, and occaſionally yellow, blue, and red. The colours are pale; it is ſometimes tranſparent, but more frequently ſemi-tranſparent or tranſlucent: it refracts doubly. Zircon is harder than quartz, but ſofter than the diamond. The ſpecific gravity varies from 4.5 to 4.7. It is infuſible without addition by the blow-pipe.

According to Klaproth, the conſtituent parts are,

Zircon	69	63
Silex	26.50	33
Oxyd of iron	50	1
	96.	97

Hyacinth: Zircon Hyacinth, Brongniart.—The prevailing colour of this mineral is orange-red; it is ſometimes yellow, grey, and green, and very rarely white. It occurs in angular grains, but more frequently in ſmall cryſtals, which have the following forms. A rectangular four-ſided priſm, terminated by four rhomboidal faces at each end, ſet on the lateral edges of the priſm; the priſm is ſometimes truncated on the edges. Sometimes it occurs in an irregular garnet-ſhaped dodecahedron, and ſometimes in a flat octahedron. The ſtructure is foliated; it has a double rectangular cleavage, and the folia are parallel with the diagonal of the priſm. Hyacinth is tranſparent or tranſlucent, and refracts doubly: the luſtre is reſino-vitreous and ſplendent. It is very hard, ſcratching quartz with eaſe. The ſpecific gravity varies from 4.3 to 4.7. Before the blow-pipe it loſes its colour, but not its tranſparency, and is infuſible. According to Klaproth, the conſtituent parts of hyacinth of Ceylon are,

Zircon	70
Silex	25
Oxyd of iron	0.50
Loſs	4.50
	100.

According to Vauquelin, the conſtituent parts of hyacinth of Expailly are,

Zircon	64
Silex	32
Oxyd of iron	2
Loſs	1
	99

Zirconite does not appear to differ from zircon, except in the ſituation in which it is found. It occurs in ſmall cryſtals of a reddiſh-brown colour, imbedded in ſienite. According to Klaproth, its conſtituent parts are,

Zircon	65
Silex	33
Oxyd of iron	1
	99

Zircon and hyacinth, as we have ſtated, were originally found in Ceylon; they have ſince been found in various parts of Aſia and Europe.

Zircon occurs in conſiderable quantities along with ſapphire and iron-ſand in volcanic ſand, in a rivulet near Expailly in Auvergne; alſo near Piſa, and in the volcanic ſand of the Vicentine. It has been found in trap-rocks in Bohemia, and in the vicinity of Liſbon. It was firſt found in its native ſituation at Freidrickſchwarn, in the diſtrict of Chriſtiana, in Norway, imbedded in ſienite. It was alſo found in baſalt near Expailly, and in the mountain of Aniſe in Auvergne, and alſo in volcanic ſcoria in the ſame country. It has been found in rolled maſſes of ſienite by profeſſor Jameſon in Scotland, in the county of Galloway; and has ſince been met with in granite near Cuffel, in Dumfriesſhire.

Zircon has been found in South America, and in the province of New Jerſey, in the United States.

Zircon and hyacinth are characterized by their great ſpecific gravity. Common zircon has been frequently confounded with the diamond, but the ſpecific gravity alone would be ſufficient to diſtinguiſh them; that of the diamond not exceeding 3.5. The hyacinth has often been confounded with other minerals. The oriental hyacinth of Romé de Liſle is orange-coloured ſapphire. The occidental hyacinth of Dutens is yellow-coloured topaz.

Cruciform hyacinth is croſs-ſtone; brown volcanic hyacinth is veſuvian; white hyacinth of Somma is meionite.

The hyacinth of Deſſentis, mentioned by Sauſſure, is a variety of garnet.

Common zircon is frequently cut and poliſhed by the jewellers as a gem. The greyiſh-white and yellowiſh-white varieties are the moſt prized, on account of their reſemblance to the diamond. The darker coloured varieties may be deprived of their colour by heat. It is cut into the ſame forms as the diamond, and exhibits faintly the ſame play of colours, and is not unfrequently ſold as an inferior kind of diamond. The hyacinth is alſo employed by jewellers in various kinds of ornaments; but pale garnets and rock cryſtals are frequently ſold for hyacinths.

ZIRCONIA, or Zircon, in *Chemiſtry*, the name of a peculiar earth, hitherto only met with in the minerals termed *hyacinth*, and *zircon* or *jargon*. See the preceding article.

Zirconia exiſts in the form of a fine white powder, which feels rather harſh when rubbed between the fingers. It has neither taſte nor ſmell. It is infuſible before the blow-pipe; but when heated violently in a charcoal crucible it undergoes a ſort of imperfect fuſion, and acquires a greyiſh colour and porcelanious appearance. In this ſtate it is very hard, and its ſpecific gravity is 4.3.

Zirconia is inſoluble in water, but has a conſiderable affinity for that liquid. It does not combine with oxygen, azote, or any of the ſimple combuſtibles, but appears to have a ſtrong affinity for many metallic oxyds, eſpecially for that of iron.

It is inſoluble in alkaline ſolutions, neither can it be fuſed with them by the aſſiſtance of heat; but it is ſoluble in the alkaline carbonates. Sir H. Davy ſubjected this earth to the action of galvaniſm, and obtained evidences of its containing a metal as its baſis. To this metal he gave the name of *zirconium*. Nothing ſatisfactory is known reſpecting its nature.

No very accurate analyſis of the ſalts of this earth have been yet made. From ſome experiments of Klaproth and Vauquelin, Dr. Thomſon fixes the weight of its atom at 46.25, though it is probable that this is not to be abſolutely relied upon.

Salts of Zirconia: Nitrate of Zirconia.—This ſalt may be formed by pouring nitric acid on newly precipitated zirconia. It always contains an exceſs of acid, and does not cryſtallize. It is decompoſed by heat, and moſt of the vegetable acids, except perhaps the acetic.

Carbonate of Zirconia is a white inſoluble powder. It may be formed by double decompoſition with the alkaline carbonates, and ſolutions of zirconia in acids.

Sulphate of Zirconia.—This ſalt exiſts in the form of a white powder, but may be obtained in ſmall needle-formed cryſtals. It has no taſte, and is inſoluble in water. It is eaſily decompoſed by heat.

Acetate of Zirconia.—This ſalt has an aſtringent taſte. It does not cryſtallize. It is very ſoluble in water and alcohol.

The other ſalts of zirconia are moſtly white inſoluble powders, very little known, and apparently poſſeſſing very little intereſt. With reſpect to the general properties of zirconia and its compounds, it may be remarked, that the alkalies and alkaline earth ſeparate this earth from its combinations with acids. The ſalts of zirconia have an aſtringent, harſh, diſagreeable taſte, ſimilar to ſome of the metallic ſalts. They are moſt of them inſoluble in water. Thoſe which are ſoluble yield white precipitates when ſulphuric acid, carbonate of ammonia, oxalate of ammonia, tartrate of potaſh, and infuſion of nut-galls, are dropped into their ſolutions. Theſe properties ſufficiently diſtinguiſh this earth from *alumina* and *yttria*. For further particulars reſpecting this earth, ſee the articles above referred to.

ZIRCONITE. See Zircon.

ZIRCONIUM, the metallic baſis of zirconia. See Zirconia *ſupra*.

ZIRIANKA, in *Geography*, a ſmall river of Ruſſia, which runs into the Eniſei, near its mouth.—Alſo, a town of Ruſſia, on the Niznei Tunguſka. N. lat. 16° 16′. E. long. 106° 54′.

ZIRICZEE, a town of Holland, one of the moſt ancient in Zealand, and capital of Schouwen, built and ſurrounded with walls in the year 859, by a perſon named Ziringus, from whom it is called. It was the ancient reſidence of the comtes of Zealand, and was at that time a place of much more conſequence than it is at preſent, the port being filled with ſand. The inhabitants carry on a conſiderable trade in grain, ſalt, and fiſh: the town is large and populous, and has ſeveral good buildings; the church, called the "Munſter," dedicated to St. Levinus, is a handſome ſtructure. N. lat. 51° 40′. E. long. 30° 48′.

ZIRKNA, a river of Syria, which runs into the Mediterranean, 8 miles S. of Tortura.

ZIRKNITZ. See Cirknitz.

ZIRKWITZ, a town of Sileſia, in the province of Oels; 14 miles N. of Breſlaw.

ZIRL, or Cirl, a town of the county of Tyrol, on the Inn; 7 miles W. of Innſpruck.

ZIRNOE, a town of Ruſſia, in the government of Saratov; 32 miles S.W. of Saratov.

ZIRO, Lo, a town of Naples, in Calabria Citra; 9 miles E. of Umbriatico.

ZIROVAIA, a ſmall river of Ruſſia, which runs into the Penzinſkaia gulf, 32 miles S.W. of Oklanſk.

ZIRUA, a ſmall iſland in the Mediterranean, near the coaſt of Tunis. N. lat. 33° 39′. E. long. 11° 39′.

ZIRWITZ, a town of Sileſia, in the principality of Oels; 3 miles E. of Trebnitz.

ZIRZING, a town of Auſtria; 6 miles E. of Steyregg.

ZIS, a river of Africa, which riſes in the Atlas, paſſes by Sugulmeſſa, and loſes itſelf in the ſands, in the country of Tafilet.—Alſo, a mountain of Africa, between Sugulmeſſa and Fez; 40 miles S.S.E. of Fez.

ZISEL, in *Zoology*, a name given by Buffon to the earleſs marmott, or *mus citellus* of Linnæus. See Citellus.

ZISKA, John, in *Biography*, a diſtinguiſhed leader among the Huſſites, was the ſon of a Bohemian gentleman, named "De Trocznou," and celebrated for military valour in his youth. Ziſka, denoting "one-eyed," was an appellation, which he bore in conſequence of having loſt an eye in a combat, on occaſion of the perfidious execution of John Huſs and Jerome of Prague, at the council of Conſtance. Their followers took up arms, and invited Ziſka to be their commander. In 1519 he accepted the invitation; and having aſſembled a body of peaſants, he ſoon diſciplined them ſo as to be equal to veteran troops. From a fortreſs which he conſtructed on an elevated ſituation, and called Thabor, the Huſſites derived the name of Thaborites. At the ſiege of Rabi he loſt his other eye; but though totally blind, he executed his office as commander with great vigour and ſucceſs. At Auſſig on the Elbe he gained a complete victory over the Catholics, and left 9000 of them on the field, retaliating the ſeverities which they inflicted on the Reformers, by demoliſhing their churches, committing their prieſts to the flames, maſſacring thoſe who were priſoners, and laying waſte their country, and thus rendering his name formidable. Having made himſelf maſter of the new town of Prague, it was inveſted by the emperor Sigiſmund and other princes: but Sigiſmund, being defeated with great ſlaughter by the Thaborites, was obliged to retreat into Moravia, while Ziſka laid ſiege to Wiſrhade. When the emperor with a freſh acceſſion of forces renewed the attack, he loſt his whole army, and the town ſurrendered to Ziſka. He alſo diſperſed an army of cruſaders commanded by an archbiſhop; and in 1422 he again routed the army of Sigiſmund. In the mean time the Huſſites renounced their allegiance to Sigiſmund, and choſe for themſelves a king; but this meaſure was diſapproved by Ziſka and the Thaborites, becauſe they were inclined to a republican government; and the new king was compelled to abdicate his crown. Such were the reputation and importance which Ziſka acquired, that Sigiſmund propoſed to him terms of accommodation; but in his journey to hold a conference with the emperor, he was ſeized with the plague, which terminated his life in 1524. Although the ſtory of his having ordered his fleſh to be given to the birds and beaſts, and his ſkin to cover a drum, for the purpoſe of ſounding diſmay to his enemies and courage to his friends, be fabulous, it is certain that the Bohemians regarded his memory with ſuperſtitious veneration. Un. Hiſt. Gilpin. Gen. Biog.

ZISPATA, in *Geography*, a bay of the Spaniſh Main, on the coaſt of South America; 80 miles S. of Carthagena.

ZISTERSDORF, a town of Auſtria, with a citadel. In the year 1704, this town was miſerably laid waſte by the Hungarian rebels; 20 miles N.E. of Vienna. N. lat. 48° 28′. E. long. 16° 43′.

ZITARA, a town of South America, in New Grenada, and capital of a diſtrict, to which it gives name, in the province of Chocos; 120 miles S.W. of Santa Fé de Antiquia. N. lat. 6°. W. long. 76° 30′.

ZITHA, or Sitha, in *Ancient Geography*, a town of Aſia, in Meſopotamia, on the bank of the Euphrates. Ptolemy.

ZITTAU, in *Geography*, a river of Germany, which runs into the Saal, 4 miles S.S.E. of Bernburg.—Alſo, a town of Luſatia, on the river Neiſſe. This town is conſidered as one of the beſt in Luſatia, and fortified in the ancient manner; it contains two churches within the walls, and three without, with three hoſpitals and an orphan-houſe; 17 miles S. of Gorlitz. N. lat. 50° 49′. E. long. 14° 56′.

ZITWA, a river of Lithuania, which runs into the Niemen, 20 miles S.E. of Lida, in the palatinate of Wilna.

ZIVAGEE, or Archachera, a town of Hindooſtan, in Concan, on the Pirate coaſt; 30 miles S. of Severndroog.

ZIUF, a town of Africa, in the kingdom of Tunis.

ZIVOLO, in *Ornithology*, a name by which ſome authors have called the ſmaller ſpecies of yellow-hammer, from its conſtant note, which is only *zi, zi*.

It is of the ſize of the common ſparrow; its beak is thick and ſhort; its breaſt and belly yellowiſh, ſpotted with brown; and its head, back, wings, and tail, of a duſky-brown, but two of the tail-feathers on each ſide have a variegation of white.

The difference between the male and female in this ſpecies is, that the male is yellow, and has ſome yellow ſpots on its neck and ſides, which are wanting in the female. It is almoſt always ſeen on the ground, and feeds on ſeeds, &c. It ſeems but little if at all eſſentially to differ from the common yellow-hammer; and Mr. Ray has ſome ſuſpicion that they are the ſame ſpecies.

ZIWICA, in *Geography*, a town of Auſtrian Poland; 35 miles S.W. of Cracow.

ZIZA, in *Ancient Geography*, a town in the interior of Arabia Petræa. Ptol.

ZIZANIA, in *Botany*, an ancient name, ζιζανιον of the Greeks, ſynonymous with the *infelix lolium* of the Latins, as well as with our Darnel, and belonging to an unprofitable weed, of the tribe of Graſſes, which greatly injured the crop of corn, and into which Corn itſelf was ſuppoſed to degenerate. (See LOLIUM.) Our tranſlators of the New Teſtament call it Tares! Αιρα was another Greek name for Darnel, and is ſtill uſed for *Lolium temulentum* in the Morea. *Zizania* was merely adopted, as an unoccupied claſſical name, by Gronovius and Linnæus, for the preſent genus, which yields an inferior ſort of grain, uſed by the inhabitants of ſome parts of North America. We cannot applaud this application of ancient names, to plants to which they could not poſſibly have originally belonged, though Linnæus often practiſed it. Gærtner has ſucceſsfully oppoſed this principle, but did not always change things for the better.—Linn. Gen. 491. Schreb. 639. Willd. Sp. Pl. v. 4. 394. Mart. Mill. Dict. v. 4. Purſh 60. Ait. Hort. Kew. v. 5. 278. Juſſ. 33. Poiret in Lamarck Dict. v. 8. 863. Lamarck Illuſtr. t. 768. Gærtn. t. 82. (Elymus; Mitchell in Ephem. Nat. Cur. v. 8. append. 210.)—Claſs and order, *Monoecia Hexandria*. Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. Male, *Cal.* none. *Cor.* Glume of two lanceolate, membranous, ribbed, claſping valves, one rather larger than the other, and moſt pointed. Nectary of two ovate obtuſe ſcales. *Stam.* Filaments ſix, capillary, very ſhort, equal; anthers pendulous, linear, notched at each end, ſhorter than the corolla.

Female in the ſame panicle, larger, *Cal.* none. *Cor.* Glume of two valves, cloſed, except a vacancy at each ſide juſt above the baſe; the outer valve largeſt, concave, long, ſtraight, rigid, revolute at the edges, embracing the inner at each ſide, and terminating in a long ſtraight awn; the inner narrower, lanceolate, involute at the edges. Nectary of two acute ſcales. *Stam.* ſometimes preſent, though minute and imperfect, with ſmall incomplete anthers. *Piſt.* Germen ſuperior, oblong; ſtyles two, ſpreading, capillary, ſhort; ſtigmas feathery, projecting between the valves of the corolla. *Seed* ſolitary, oblong, even, poliſhed, naked, unconnected with the glumes.

Eſſ. Ch. Male, Calyx none. Corolla of two valves; the outer one pointed.

Female, Calyx none. Corolla of two unequal cloſed valves; the outermoſt largeſt, revolute at the edges, with a terminal awn. Styles two, divaricated. Seed ſolitary, encloſed in the plaited corolla, but unconnected with it.

1. Z. *aquatica*. Canadian Wild-Rice. Linn. Sp. Pl. 1408, excluding the ſynonym of Sloane. Ait. n. 1. Purſh n. 1. Lambert Tr. of Linn. Soc. v. 7. 264. t. 13. (Z. clavuloſa; Michaux Boreal.-Amer. v. 1. 75. Willd. n. 3. Z. paluſtris; Linn. Mant. 295. Willd. n. 4. Schreb. Gram. v. 2. 54. t. 29.)—Panicle pyramidal, compound, with numerous male flowers, in the lower part; ſpiked and female above.—Common in all the waters, from Canada to Florida, flowering in July and Auguſt, and known by the name of *Tuſcarora*, or Wild Rice. *Purſh.* Sir Joſeph Banks introduced it into this country in 1790, and ſtill cultivates it abundantly in the ponds of his delightful villa of Spring Grove. The ſeeds were obtained from Canada in jars of water. Mr. Lambert is of opinion, that this grain might be cultivated in many ſhallow lakes of Ireland, and turn to conſiderable advantage. The *root* is certainly annual; not, as Mr. Purſh marks it, perennial; and conſiſts of numerous, long, ſtout, hairy fibres. *Stems* ſeveral, two or three feet high, round, jointed, hollow, leafy. *Leaves* graſſy, long, narrow, ſmooth, with long, cloſe, ſtriated, ſmooth ſheaths. *Stipula* ſhort, ſomewhat pointed, membranous, decurrent, entire. *Panicle* two feet, or more, in length, erect, and terminating in a compound, cloſe, ſtraight, ſpiked *cluſter*, of numerous *female flowers*; the lower part conſiſting of ſtill more numerous, drooping *male ones*, of a ſmaller ſize, with green or purpliſh *glumes*, and yellow *anthers*, compoſing an elegant ſpreading aſſemblage, of compound *branches*. We have from Mr. Fraſer a mutilated ſpecimen, of what Michaux and Willdenow call *clavuloſa*, a name well expreſſing the appearance of the female flower-ſtalks, after the *flowers* are gone; being larger than in the common ſpecimens. Other writers conſider this is not even a variety of the plant in queſtion, and we ſubmit to their opinion. Linnæus, who cultivated the Z. *aquatica* at Upſal, confounded with it originally a Jamaica ſpecies, which he afterwards diſtinguiſhed. But he by inadvertence, in his *Mantiſſa* above quoted, applies the name of *paluſtris* to his original *aquatica*, and cites Browne's Jamaica, who has two *Zizaniæ*, neither of which appears to be this North American graſs. We ſhall attempt to ſet this matter right under the next ſpecies.

2. Z. *effuſa*. Jamaica Wild-Rice. (Z. aquatica; Linn. Syſt. Veg. ed. 13. 714. ed. 14. 855. Willd. n. 1. Z. n. 1; Browne Jam. 340. Arundo alta gracilis, foliis e viridi cæruleis, locuſtis minoribus; Sloane Jam. v. 1. 110. t. 67.)—Panicle looſe, much branched. Male and female flowers interſperſed.—Common in all the waters, or lagoons, of Jamaica. Sloane calls it the Trumpet reed. The *ſtems* are as thick as the little finger, and appear to be ſeveral feet high. *Leaves* longer and broader than in the foregoing, with a ſtrong mid-rib. *Panicle* large, with numerous, whorled, repeatedly compound branches, whoſe ultimate diviſions are quite capillary, and very ſmooth. We have ſeen but a few damaged *flowers*. This is unqueſtionably a very diſtinct ſpecies from the laſt, though it does not appear that Linnæus ever deſcribed it as ſuch. He did not, in fact, diſtinguiſh between the names of *aquatica* and *paluſtris*, but uſed one at one time, and another at a different period, for the ſame plant, to which he miſapplied Browne's ſynonym. This has cauſed great confuſion, to remedy which we are obliged to chooſe a new name, which has ſome meaning attached to it.

3. Z. *miliacea*. Millet-ſeeded Wild-Rice. Michaux Boreal.-Amer. v. 1. 74. Willd. n. 2. Purſh n. 2, excluding the references to Willdenow and Sloane.—"Panicle looſe, much branched. Male and female flowers interſperſed. Glumes with ſhort awns. Seed ovate, ſmooth."—In meadows and ditches overflowed by the tide, in Pennſylvania and Carolina, perennial, flowering in Auguſt. *Purſh.* The *ſtem*

is deſcribed as rather thick. *Panicle* long and large, much branched. Permanent *corolla* tumid, and, as well as the *ſeed*, ſomewhat ovate, with very ſhort awns. We have ſeen no ſpecimen of this ſpecies, but the ovate tumid *glumes*, with the ſimilar form of the *ſeed*, which gave occaſion to the ſpecific name, appear to conſtitute a very clear diſtinction between this and both the preceding, nor is the figure of Sloane, which we have referred to our *effuſa*, by any means reconcileable to the preſent plant.

4. Z. *fluitans*. Floating Wild-Rice. Michaux Boreal.-Amer. v. 1. 75. Willd. n. 5. Purſh n. 3.—"Spikes ſolitary, axillary, about four-flowered; the upper ones male. Glumes beardleſs."—On the banks of lakes Champlain and St. Laurence; perennial, flowering in July. Of humble ſtature, with ſlender, branched, floating *ſtems*. *Leaves* floating, linear, flat. *Spikes* briſtle-ſhaped; the lower ones female. All the *glumes* are deſtitute of awns. *Michaux*, *Purſh*.

5. Z. *terreſtris*. Land Wild-Rice. Linn. Sp. Pl. 1408. Willd. n. 5. (Katoú-Tsjolam; Rheede Hort. Malab. v. 12. t. 60. Raii Hiſt. Pl. v. 3. 617.)—Panicle nearly ſimple.—Native of ſandy ground, on the coaſt of Malabar. *Stems* round, leafy, jointed. *Leaves* long and narrow, green, rigid, ſharply pointed. *Flower-ſtalks* ſlender, from the ſheaths of the leaves. *Glumes* leafy, bearing round, blackiſh, glaſſy *buds*, (we preſume *ſeeds*). Theſe bruiſed with the juice of Betle-nut, and applied to the tongue, are ſuppoſed to cure the thruſh to which children are ſubject. *Ray*. We have ſeen no ſpecimen. Linnæus deſcribed this ſpecies from the *Hortus Malabaricus* alone, and we preſume its genus may, at leaſt, be doubtful.

ZIZDRA, in *Geography*, a town of Ruſſia, in the government of Kaluga; 60 miles S.W. of Kaluga. N. lat. 53° 43′. E. long. 34° 54′.

ZIZERIA, a word uſed by Apicius, and ſome other authors, to expreſs the inteſtines of fowls of the gallinaceous kind, often uſed in decoctions for glyſters, &c.

ZIZERS, or ZITZERS, in *Geography*, a town of the Griſons, in the Cadee league; 6 miles N. of Coire.

ZIZEVON, a town of Perſia, in the province of Farſiſtan; 23 miles E.S.E. of Schiras.

ZIZIPHORA, in *Botany*, a mongrel name, compoſed, as it is ſaid, of *Zizi*, an Indian word, and φερω, *to bear;* but what is meant by *Zizi*, we are not informed. Moriſon appears to have received from Aleppo one of the ſpecies of this genus, under the name of *Ziziforum*, and Linnæus, with a ſlight correction, adopted it.—Linn. Gen. 16. Schreb. 21. Willd. Sp. Pl. v. 1. 123. Vahl Enum. v. 1. 216. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 1. 49. Sm. Prodr. Fl. Græc. Sibth. v. 1. 12. Juſſ. 111. Poiret in Lamarck Dict. v. 8. 865. Lamarck Illuſtr. t. 18. Gærtn. t. 66.—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, cylindrical, very long, ſtriated, briſtly, with five minute marginal teeth, and bearded in the orifice. *Cor.* of one petal, ringent: tube cylindrical, the length of the calyx: limb minute; its upper lip ovate, flat, reflexed, undivided; lower ſpreading, broadeſt, in three round equal ſegments. *Stam.* Filaments two, ſimple, ſpreading, about the length of the corolla; anthers oblong, diſtant. *Piſt.* Germen ſuperior, four-cleft; ſtyle briſtle-ſhaped, the length of the corolla; ſtigma cloven, pointed, inflexed. *Peric.* none, except the calyx remaining unchanged, a little gibbous at the baſe. *Seeds* four, oblong, obtuſe, gibbous at one ſide, angular at the other, very much ſhorter than the calyx.

Eſſ. Ch. Corolla ringent; its upper lip reflexed, flat, undivided. Calyx thread-ſhaped. Seeds four.

The plants of this genus are ſlender, generally aromatic herbs, or diminutive ſhrubs, of humble growth, with the habit of *Thymus*, or *Clinopodium;* but diſtinguiſhed by their long and ſlender *calyx*, as well as almoſt capillary tube of the *corolla*, even more than by having only two *ſtamens*. Their texture is hard and rigid, and they inhabit dry ſunny ſituations. The *leaves* are oppoſite and undivided. *Flowers* whorled or capitate, red or purpliſh. *Root* moſtly annual; ſometimes perennial, and rather woody.

1. Z. *capitata*. Oval-leaved Ziziphora. Linn. Sp. Pl. 31. Mant. 317. Willd. n. 1. Vahl n. 1. Ait. n. 1. Sm. Fl. Græc. Sibth. v. 1. 10. t. 13. (Thymus humilis latifolius; Buxb. Cent. 3. 28. t. 51. f. 1. Clinopodium fiſtuloſum pumilum Ind. Occid. ſummo caule floridum; Pluk. Phyt. t. 164. f. 4.)—Flowers faſciculated, terminal. Leaves ovate.—Native of Syria, Tauria, and the iſle of Cyprus. A hardy annual, flowering in July and Auguſt, ſometimes kept in botanic gardens. Miller ſeems to be the firſt perſon who raiſed this plant in England. The *root* is fibrous, branched and zigzag. *Stem* erect, three or four inches high, when cultivated much taller, ſquare, leafy, uſually with two oppoſite ſpreading branches, beſides the central part, clothed all over with fine, ſhort, curved, hoary pubeſcence. *Leaves* hardly an inch long, entire, hoary, roughiſh at the edges, furrowed with parallel veins. *Footſtalks* one-eighth as long as the leaves. *Bracteas* four at the top of each branch, nearly ſeſſile, like the leaves, but larger, more pointed and fringed; ſomewhat heart-ſhaped at the baſe; about the length of the *flowers*, which are numerous in each head. *Calyx* half an inch long, furrowed, briſtly, a little wavy, with ſlender, ſharp, purple teeth. *Corolla* with a white, downy, zigzag *tube*, and pale purpliſh *limb*. *Stamens* prominent, about as long as the lower lip, with blueiſh *anthers*. We ſcarcely perceive any aromatic flavour in the dried plant. Plukenet was much miſinformed as to this *Ziziphora* being of Weſt Indian origin.

2. Z. *hiſpanica*. Spaniſh Ziziphora. Linn. Syſt. Nat. ed. 10. 853. Sp. Pl. 31. Amœn. Acad. v. 4. 263. Willd. n. 2. Vahl n. 2. Ait. n. 2.—Flowers axillary. Leaves obovate, pointed, many-ribbed.—Gathered by Lœfling in Spain. *Root* annual. The *ſtem* is three or four inches high, croſs-branched and buſhy, downy with minute recurved hairs. *Branches* leafy. *Leaves* a quarter or one-third of an inch long, fringed; tapering at the baſe; marked on both ſides with conſpicuous glandular dots: the lower ones ſmaller, and ſomewhat crenate. *Flowers* two or three together, ſeſſile. *Calyx* tapering upwards, ſtrongly furrowed, hiſpid, about the length of the leaves. *Corolla* externally downy. Linnæus conſidered the branches as *ſpikes* and the *leaves* as *bracteas*, but we can ſee no more reaſon for this than in any of the following ſpecies. The *leaves* in the original ſpecimen ſtill retain a powerful ſmell of Pennyroyal.

3. Z. *ſpicata*. Spiked Ziziphora. "An. Hiſt. Nat. Madr. v. 4. 254." Vahl n. 3.—"Flowers in racemoſe ſpikes, imbricated. Bracteas ovate, acute, ribbed. Leaves lanceolate, ſomewhat toothed."—Native of Spain. Annual. *Stem* from ten to eighteen inches high, throwing out from the baſe a branch or two as tall as itſelf. *Leaves* ribbed; the lower ones ſtalked; the upper ſeſſile. *Flowers* ſeveral, on ſhort ſtalks, ſtanding near together. *Bracteas* broad, entire, acute, fringed. Perhaps a mere variety of Z. *hiſpanica*. Yet it ſeems to differ in having the ſtem *leaves* lanceolate, narrower than thoſe that accompany the *flowers*, which are ovate, not obovate. *Vahl*. We have ſeen no

ſpecimen; but this deſcription ſeems to make the inflorescence of the preſent ſpecies really ſpiked rather than whorled, though it does not alter our opinion as to the laſt.

4. Z. *tenuior*. Spear-leaved Ziziphora. Linn. Sp. Pl. 31. Willd. n. 3. Vahl n. 4. Ait. n. 3. (Acinos ſyriaca, folio mucronato, capſulis hirſutis; Moriſ. v. 3. 404. ſect. 11. t. 19. f. 3; alſo A. ſyriaca, tenuiore folio, capſulis hirtis; ibid. f. 4.)—Flowers axillary. Leaves ovato-lanceolate, taper-pointed, acute, entire.—Native of Syria. Sent to Moriſon from Aleppo, by the Rev. Dr. Huntington. We preſume, from a remark of Moriſon under a plant immediately following, that the two varieties here indicated, as well as perhaps a third, with a ſmoother *calyx*, his f. 2, were all ſent him in ſeed, and that he raiſed the plants. If ſo the introduction of this ſpecies ſhould be dated before the time of Miller. The *root* is annual. *Stem* a ſpan high, with many ſquare, downy, leafy *branches*. *Leaves* an inch long, nearly ſeſſile, ſtrongly ribbed, downy, dotted, entire, more or leſs fringed with ſtrong white hairs. *Flowers* ſtalked, moſtly in pairs, altogether axillary. *Calyx* about half the length of the leaves, hoary with fine recurved pubeſcence, more or leſs intermixed with long, prominent, briſtly hairs; its lower part ſwelling much, as the ſeeds ripen. *Corolla* pale, hairy externally, with a dilated throat.

5. Z. *acinoides*. Baſil-leaved Ziziphora. Linn. Sp. Pl. 31. Willd. n. 4. Vahl n. 5. Ait. n. 4. (Clinopodium ſupinum incanum; Amm. Ruth. 51.)—Flowers axillary. Calyx hairy. Leaves ovate, ſtalked, ſomewhat ſerrated.—Native of Siberia. Introduced into England by the late Dr. William Pitcairn, in 1786. Mr. Aiton marks it as perennial. The *ſtems* are diffuſe, branched, bluntly quadrangular, finely downy. *Leaves* ſcarcely aromatic, though dotted with pellucid ſpots, many-ribbed, rough-edged, and ſomewhat fringed, from half to three-quarters of an inch long, on *footſtalks* about half or a third as much. *Flowers* all axillary, three, four, or more, together; on downy *ſtalks*, half the length of the footſtalks. *Calyx* cylindrical, ſtrongly ribbed, not downy, but beſet with numerous, prominent, horizontal hairs. *Corolla* hairy, its limb larger than in the firſt and ſecond ſpecies, ſcarcely ſo long as the third, of a light purple, or lilac, eſpecially the lip. *Anthers* large, ovate, purple.

6. Z. *taurica*. Narrow-leaved Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18.—Flowers axillary. Leaves linear-lanceolate, ſtriated, obtuſe, entire.—Native of mount Caucaſus and its neighbourhood, among lime-ſtone rocks, or about the ſtony banks of torrents, flowering in June and July. We received ſpecimens of this, and all the following ſpecies, from the Chevalier de Steven. The *root* is annual, long, tapering and zigzag. *Stems* one or more, ſcarcely divided, except at the bottom, aſcending, near a ſpan long, not compoſed of oppoſite *branches* croſſing each other, as in Z. *tenuior*, to which the author of the Flora Taurico-Caucaſica conſiders this plant very nearly allied. Without adverting to the greater ſize of the *corolla*, which is very likely to vary, and to the pubeſcence of the *calyx*, which certainly does, the *leaves* appear to be much narrower and more obtuſe; not acute or ſpinous-pointed. The whole herb ſmells ſtrongly, but pleaſantly, of Penny-royal, and its *leaves* are dotted as in the *tenuior*. One of our ſpecimens has broader *leaves* than the other, and rather ſhakes our opinion of its being a diſtinct ſpecies.

7. Z. *ſerpyllacea*. Thyme-headed Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18. (Serpyllum orientale, folio pulegii vulgaris; Tourn. Cor. 13.)

β. Bieberſt. ibid. (Serpyllum orientale, folio pulegii cervini; Tourn. Cor. 13. Herb. Tourn.)

Cluſters terminal, capitate, ſomewhat leafy. Leaves lanceolate, naked, even, obtuſe. Stems rather ſhrubby, aſcending.—Native of the graſſy hills of Caucaſus, flowering from June to Auguſt. β of open fields in Georgia, about Teflis; communicated by the Chevalier de Steven. The *ſtems* are rather woody, their *branches* hoary, with fine, recurved, denſe hairs. *Leaves* ſmooth, with copious pellucid dots, and the flavour of Penny-royal. They have a mid-rib, but no lateral ribs, veins, or furrows. *Flowers* ſtalked, crowded at the ſummit of each branch into a cloſe tuft, ſome of the lowermoſt being axillary. *Flower-ſtalks* round, clothed with fineſt poſſible hoary pubeſcence, as are alſo the ſtrong ribs of the *calyx*, whoſe teeth are fringed with long white hairs. Limb of the *corolla* rather large, and *ſtamens* prominent. The variety β, which is all we have ſeen, is ſaid to differ only in having narrower, perfectly entire, *leaves*, which are alſo more crowded than in α. If there be any affinity between the two varieties, neither of them can poſſibly be the *Z. ſerpyllacea* of Curt. Mag. t. 906. See the following ſpecies.

8. Z. *daſyantha*. Hairy-headed Ziziphora. Bieberſt. Taur.-Caucaſ. v. 1. 18. (Z. ſerpyllacea; Sims in Curt. Mag. t. 906. Ait. n. 5. Z. Pouſchkini; Sims in Curt. Mag. t. 1093. Ait. n. 6.)—Cluſters terminal, capitate, ſomewhat leafy. Calyx denſely hairy. Leaves ovate, obtuſe, notched. Stems procumbent.—Native of mountainous parts of Georgia, towards Caucaſus, flowering from July to September. Introduced into this country by Mr. Loddiges. The *root* is perennial, and rather woody, as is the lower part of the ſpreading, nearly proſtrate, hairy, purpliſh *ſtems*. *Leaves* ſtalked, about a quarter of an inch long, roundiſh-ovate, ribbed and veiny, diſtantly ſerrated, dotted, roughiſh with ſhort hairs, eſpecially the ribs beneath. *Flowers* numerous, crowded into very denſe oval heads. *Calyx* in our ſpecimens quite concealed by very long, denſe, ſpreading, hoary hairs, much more remarkable than in any other known ſpecies. Limb of the *corolla* rather large. *Stamens* more or leſs prominent, though variable in length, with large *anthers*. The colour of the *flowers* may very well vary between the two extremes repreſented in the Botanical Magazine. The ſmell of the *herb* may alſo be variable. We cannot but think the original opinion of our judicious friend Dr. Sims far preferable to that which induced him to ſeparate the above two plants. Leſt we ſhould be wrong however, it is proper to announce that our ſpecimen of *Z. daſyantha*, from the Chevalier de Steven, has little or no ſcent, and agrees beſt with *Z. Pouſchkini*. The *Flora Taurico-Caucaſica* ſpeaks of a variety, found in the elevated fields of Georgia, in which the *leaves* are rather narrower, and the hairs of the *calyx* ſhorter, as well as fewer. The author eſteems this to be cloſely related to *Z. hiſpanica*, ſee n. 2, of which perhaps he had not examined an authentic ſpecimen. No two ſpecies of this genus, or any other, can be more diſtinct, than the Linnæan *hiſpanica*, and the plant of which we are treating.

ZIZIPHUS, perhaps *Ziziphа* of Pliny, though reckoned by him among the kinds of apples; certainly *Ziziphus* of Columella; as well as of Caſpar Bauhin and others of the earlier modern botaniſts; ζίζιφι of the modern Greeks. Shaw, in his *Specimen Phytographiæ Africanæ*, n. 631, traces this word to the African or Mooriſh name of the ſame fruit *Aſafiſa*; but its Arabic appellation, *Zizoùf*, comes much nearer.—Juſſ. Gen. 380. Tourn. t. 403. Lamarck Dict. v. 3. 316. Illuſtr. t. 185. Purſh 188.

Gærtn. t. 43. (Z. excluding PALIURUS, ſee that article; Willd. Sp. Pl. v. 1. 1102. Sm. Prodr. Fl. Græc. Sibth. v. 1. 159. Ait. Hort. Kew. v. 2. 18. Rhamni ſpecies; Linn. Gen. 105. Schreb. 142.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Dumoſæ*, Linn. *Rhamni*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, nearly flat, in five ſpreading, ovate, equal, coloured, deciduous ſegments. *Cor.* Petals five, minute, obovate, between the ſegments of the calyx, but much ſhorter, oppoſite to the ſtamens, ſpreading horizontally. *Stam.* Filaments five, ſhort, lying over the petals, and not half ſo long; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, orbicular, depreſſed; ſtyle one, very ſhort; ſtigmas two or three, obtuſe. *Peric.* Drupa oval, or roundiſh, pulpy, of one cell. *Seed.* Nut ſolitary, the ſhape of the drupa, of one or two cells, with ſolitary kernels.

Eſſ. Ch. Calyx flattiſh, in five deep ſegments. Petals five, oppoſite to the ſtamens. Drupa ſuperior. Nut of one or two cells.

Obſ. We have already (ſee RHAMNUS and PALIURUS) declared our determination of ſeparating all theſe genera, though, like Willdenow and ſome others, the writer of this has united *Ziziphus* and *Paliurus*, in the *Prodromus Fl. Græc.*; an error which will be corrected in the *Flora Græca* itſelf. With reſpect to ſome of the ſpecies, we can only rely on thoſe who have deſcribed the *fruit*, on which the diſtinction chiefly depends. They are all ſhrubby, and for the moſt part thorny, with alternate, ſimple, undivided, deciduous, ſtrongly ribbed *leaves*, and ſmall, axillary, tufted, ſometimes racemoſe and partly terminal, *flowers*, of a yellow or greeniſh colour, and inconſpicuous appearance; their *calyx* more flat, for the moſt part, than that of *Rhamnus*. The *fruit* is in moſt inſtances eatable, or medicinal. In a few inſtances, the *petals* are wanting.

Sect. 1. *Thorns or prickles none.*

1. Z. *lineata*. Veiny Jujube. Willd. n. 1. (Rhamnus lineatus; Linn. Sp. Pl. 281. Amœn. Acad. v. 4. 308. Oſbeck It. 219. t. 7. Engl. ed. v. 1. 353. t. 7.)—Stem erect, unarmed. Leaves ronndiſh-ovate, obtuſe, wavy. Cluſters terminal; their lower flowers axillary.—Gathered by Oſbeck, on the French iſland, in the river of Canton, flowering in September. A buſhy ſhrub, often as tall as a man, with copious, alternate, round, leafy, finely downy *branches*. *Leaves* alternate, on ſhort ſtalks, of a roundiſh, abrupt, often emarginate, figure, half an inch long at moſt, ſmooth on both ſides; dark green above; paler and yellowiſh beneath, with very elegant, oblique, parallel, red veins. *Flowers* about the ends of the branches, ſtalked, partly axillary, partly collected into terminal ſmooth *cluſters*. *Calyx* a little concave, or bell-ſhaped, at the baſe; its ſegments lanceolate, as are likewiſe the *petals*. *Anthers* black before they burſt. *Drupa* ſmall, oval, ſeated on the orbicular permanent baſe of the calyx.

2. Z. *volubilis*. Twining Jujube. Willd. n. 2. Ait. n. 1. Purſh n. 1. (Rhamnus volubilis; Linn. Suppl. 152. Walt. Carol. 101. Jacq. Coll. v. 2. 236. Ic. Rar. t. 336.)—Stem twining, unarmed. Leaves ovate, acute, ſomewhat wavy. Umbels axillary and terminal, ſtalked.—In deep ſwamps, near the ſea-coaſt, from Virginia to Carolina, flowering in June. *Flowers* ſmall, greeniſh-yellow. *Fruit* oblong, violet-coloured. It aſcends the higheſt trees of *Cupreſſus diſticha*, in the Diſmal ſwamp, near Suffolk in Virginia, and is known there by the name of Supple-Jack. *Purſh*. The *branches* are round and ſmooth. *Leaves* ſtalked, drooping, one and a half or two inches long, and near one broad, acute, and tipped with a ſmall point, ſmooth, with oblique parallel veins, more numerous than in the laſt; their under ſide rather the paleſt. *Flowers* ſmall, pale. *Drupa* ſmall, blackiſh, of a long oval ſhape. *Nut* of two cells in the wild ſtate, according to Walter, though Jacquin, in the cultivated plant, found only one. Lamarck, in an obſervation at the end of this genus, though he allows this ſpecies to have the proper fruit of *Ziziphus*, gives his reaſons for keeping it in *Rhamnus*; theſe are the concave *calyx*, and the want of a fleſhy diſk, or, in Linnæan language, "receptacle of the flower." Probably the ſame remarks would apply to the preceding ſpecies, which Lamarck alſo excludes from *Zizyphus*. We are ready to allow that they both have more of the habit and foliage of *Rhamnus*, and their *fruits* are ſo ſmall, it may be difficult to ſay whether they are *drupas* or *berries*. Not having had an opportunity of inveſtigating this point ourſelves, we muſt rely on thoſe who have.

3. Z. *peruviana*. Peruvian Jujube. Lamarck n. 12.—Stem unarmed. Leaves elliptic-obovate, ſparingly and minutely toothed, ſomewhat angular, rather fleſhy, ſmooth. Petals acute, longer than the calyx.—Native of Peru. Long cultivated in the public garden at Paris, from whence the younger Linnæus procured a ſpecimen, and where Lamarck ſaw it flowering for many ſucceſſive years, but without producing fruit, which led him to ſuppoſe the flowers might be dioecious. The plant itſelf appears now to be no longer in exiſtence there, no mention being made of it in profeſſor Deſfontaine's Tableau de l'Ecole de Botanique au Jardin du Roi, ed. 2. printed in 1815. This is an evergreen, branching, looſely ſpreading *ſhrub*, about three feet high, ſmooth in every part. *Branches* a little zigzag, nearly round. *Leaves* ſcattered, ſtalked, from an inch to an inch and a half long, generally obovate, blunt, or ſometimes pointed, thick and ſomewhat fleſhy, of a glaucous green, with a mid-rib, and a few ſcattered veins, none of which ſeem to be viſible but in a dried ſtate, and then but ſlightly. The margin is irregularly angular, each angle tipped with a glandular tooth. Our ſpecimen has no *flowers*. Lamarck ſays they are ſmall, axillary, two or three together, or ſolitary, ſtalked, yellowiſh-white, widely expanded, five-cleft. *Petals* oval, pointed, flat, larger than the *calyx*.

4. Z. *emarginata*. Notched Jujube. Swartz Ind. Occ. 1954.—Stem erect, unarmed. Leaves roundiſh-ovate, emarginate. Umbels axillary, ſtalked. Petals none.—Gathered by Mr. Fahlberg, in the Weſt Indian iſland of St. Bartholomew. The *ſtem* is ſhrubby, with round, erect, rigid *branches*, whoſe bark is grey and ſmooth; their extremities angular. *Leaves* ſtalked, alternate, but approaching each other in pairs, ſo as to become nearly oppoſite, rather membranous, very ſmooth on both ſides, an inch or an inch and a half long, entire, the extremity only being ſlightly emarginate. *Footſtalks* ſhort. *Umbels* oppoſite. *Stalks* the length of the footſtalks, thickened as the fruit advances. *Partial ones* from three to ſix, rather longer, ſingle-flowered. *Calyx* concave, with a ſpreading limb, in five acute ſegments, divided as it were into two cavities. *Petals* none. *Filaments* very ſhort, inſerted below the diviſions of the calyx. *Anthers* ovate, embraced at each ſide by the hollows in the ſegments of the calyx. *Stigmas* two, obtuſe. *Drupa* roundiſh-ovate, ſmooth, the ſize of Allſpice, crowned with the permanent *ſtyle*. *Nut* of two cells, with ſolitary kernels. *Swartz*.

Sect. 2. *Branches prickly.*

5. Z. *Lotus*. Lotus Jujube. Willd. n. 4. Lamarck n. 2. Ait. n. 3. (Z. ſylveſtris; Tourn. Inſt. 627. Shaw

Afric. n. 632. f. 632. Rhamnus Lotus; Linn. Sp. Pl. 281. "Desfont. in Act. Paris, for 1788. 446. t. 21. Mungo Park's Travels, 99, with a plate.")—Prickles in pairs; one of them hooked. Leaves elliptic-oblong, ſlightly crenate, three-ribbed, ſmooth on both ſides.—Native of Africa, eſpecially of the kingdom of Tunis, "in a tract called *Jereed*, which was formerly the country of the *Lotophagi*. The Arabs know this plant by the name of *Seedra*. It has the habit of a *Rhamnus*, and the *flowers* of the Common Jujube. But the *fruit* is ſmaller, rounder, and ſweeter; the ſize of Sloes, with a large ſtone. This *fruit* is borne on every part of the branches, like Gooſeberries; whereas that of the Common Jujube grows only on the ſlender annual ſhoots, thrown out from the ends of the branches. The *Z. vulgaris* is 20 feet, or more, in height, with a large furrowed *ſtem*, twiſted *branches*, knotty at the extremities, and larger oblong *leaves*; but the *Lotus* is ſcarcely three or four cubits high, with numerous ſhoots from the ſame root, which are ſmoother, ſtraighter, and paler, or whitiſh; the *leaves* ſmall, round, and more rigid. The *fruit* is ripe, and fit for eating, in December and January." Such is Dr. Shaw's very intelligent account; to which we may add, that the *prickles* grow in pairs, both of them very ſtraight, ſlender, and ſharp, when young, but in proceſs of time one becomes thick and hooked, the other much elongated, remaining quite ſtraight. The *leaves* are at moſt an inch long, perfectly ſmooth, naked, and green, on both ſides; their three ribs ſometimes ſeparate, ſometimes more or leſs combined.

6. Z. *Napeca*. Smooth Indian Jujube. Willd. n. 5. Lamarck n. 11. (Rhamnus Napeca; Linn. Sp. Pl. 282. Rh. n. 87; Linn. Fl. Zeyl. 36. Jujuba indica ſpinoſa, folio et fructu longiori; Pluk. Almag. 199. Prunus zeylanica ſpinoſa, &c.; Pluk. Phyt. t. 216. f. 6. Vidara littorea; Rumph. Amboin. v. 2. 119. t. 37.)—Prickles generally in pairs, hooked. Corymbs axillary, many-flowered. Leaves ovate, acute, finely ſerrated, ſmooth on both ſides. Fruit elliptical.—Native of Ceylon, Amboyna, and other iſlands of the Eaſt Indies. We know this only by the ſpecimen in the Linnæan herbarium, which does not quite agree with the deſcription in the *Flora Zeylanica*, the *leaves* being neither oblique, unequal, nor bluntiſh, but exactly as repreſented by Plukenet and Rumphius. The *branches* are ſomewhat zigzag, round, or a little angular, with a ſmooth whitiſh bark; rough with mealy down when young, like the flower-buds, ſtalks, and young leaves. *Prickles* ſtout, recurved, dark brown. *Leaves* an inch, or an inch and a half long, elliptic-ovate, acute, tipped with a ſmall glandular point, finely and bluntly ſerrated, ſtrongly three-ribbed; paler and yellowiſh beneath. *Footſtalks* quarter of an inch long, a little downy. *Flowers* very numerous, in denſe, compound, downy or mealy, corymboſe cluſters, on ſhort axillary ſtalks. *Drupa* like an olive, elliptical, or ſomewhat ovate; its flavour acid and aſtringent. Rumphius ſays, this fruit is ſeldom eaten but with ſalt, or as a ſauce to fiſh or other food, for the purpoſe of exciting an appetite. Lamarck unites this ſpecies, or at leaſt its ſynonyms, with the *Rhamnus Spina-Chriſti* of Linnæus, of which we ſhall ſpeak hereafter; ſee n. 15.

7. Z. *Jujuba*. White-leaved Indian Jujube. Willd. n. 6. Lamarck n. 6. Ait. n. 4. (Rhamnus Jujuba; Linn. Sp. Pl. 282. Rh. n. 89; Linn. Fl. Zeyl. 36. Manſſanas; Sonnerat Nouv. Guin. 134. t. 94. Malum indicum; Rumph. Amboin. v. 2. 117. t. 36. Perin-toddali; Rheede Hort. Malab. v. 4. 85. t. 41.)—Prickles ſolitary, deflexed. Corymbs axillary, many-flowered.—Leaves roundiſh-ovate, obtuſe; downy and ſnow-white beneath.—Native of the Eaſt Indies. A ſtove plant in England, flowering in April and May. When wild, it makes a *tree* of a moderate ſize. The *branches*, *flower-buds*, *ſtalks*, and backs of the *leaves*, are all white with fine, denſe, entangled, rather ſtarry, pubeſcence. Form and ſize of the *leaves* much like the laſt, but rather rounder and more blunt; the margin crenate, or bluntly ſerrated; upper ſide very ſmooth, of a fine green. *Infloreſcence* like the laſt. *Flowers* white; ſometimes ſix-cleft and hexandrous. *Style* divided. *Drupa* globular, or ſomewhat heart-ſhaped. *Nut* rugged, with two green kernels. Sonnerat reckons this fruit among the beſt that are the produce of New Guinea. Rheede ſpeaks of it as "agreeably acid," and more olive-ſhaped than in Sonnerat's figure. Cultivation perhaps may account for theſe differences. Hence we preſume *Z. mauritiana*, Lamarck n. 7, may be but a variety of this.

8. Z. *Xylopyrus*. Wooden-fruited Indian Jujube. Willd. n. 7.—"Prickles ſolitary, recurved. Leaves ovate, rather acute, ſomewhat heart-ſhaped; downy beneath. Flowers corymboſe."—Native of deſert places, at the bottoms of hills in the Eaſt Indies. A *tree*, ſcarcely taller than a man. *Branches* hoary. *Leaves* broadly-ovate, often in ſome degree heart-ſhaped, not unfrequently oblique; unequally ſerrated; dark coloured above; clothed beneath with very fine white down. *Prickles* few, ſmall, ſolitary under each footſtalk. *Flowers* in axillary ſtalked corymbs. *Calyx* downy. *Drupa* dry, inſipid, ſlightly aſtringent, larger than a cherry. *Nut* rugged. *Retzius, Willd.* Poſſibly this may be *Z. rugoſa*; Lamarck n. 8, for which that author cites *Frutex biſnagaricus ſpinoſus*, &c.; *Pluk. Phyt.* t. 29. f. 7.

9. Z. *Oenoplia*. Velvet-leaved Jujube. Willd. n. 8. Lamarck n. 5. Mill. Dict. ed. 8. n. 3. (Rhamnus Oenoplia; Linn. Sp. Pl. 282. Rh. n. 88; Linn. Fl. Zeyl. 36. Jujuba aculeata, nervoſis foliis, infra ſericeis, flavis; Burm. Zeyl. 131. t. 61.)—Prickles ſolitary, conical, recurved. Leaves unequally ovate, or half-heartſhaped, acute; ſilky beneath.—Native of Ceylon. A ſmall *tree*, with downy branches, and ſhort, thick, hooked *prickles*. *Leaves* two inches long, very obſcurely ſerrated; remarkably uneven or oblique at the baſe, the three ribs alſo being much nearer one margin than the other; the under ſide finely ſilky and yellowiſh; the upper alſo ſilky while young, but in a leſs degree. *Flowers* in little denſe, ſilky, axillary tufts.

10. Z. *iguanea*. Lizard Jujube. Lamarck n. 4. (Rhamnus iguaneus; Linn. Sp. Pl. 282. Jacq. Amer. 74. Jujube americana ſpinoſa, loti arboris foliis et facie, fructu rotundo parvo dulci; Commel. Hort. v. 1. 141. t. 73.)—Prickles in pairs, unequal, divaricated. Leaves ovate, pointed, ſerrated, ſmooth on both ſides. Cluſters axillary, monoecious. Petals wanting. Fruit roundiſh.—Native of the Weſt Indies, as well as of the neighbouring continent, in buſhy, rocky, or ſtony places, where the *Lacerta Iguana*, reported to be fond of this fruit, is likewiſe frequently to be met with. This is an inelegant trailing *ſhrub*, with round, zigzag, ſcarcely downy, *branches*. *Leaves* thin, pliant, three-ribbed, very ſmooth, two or three inches long, ſometimes more, Jacquin ſays eight inches, though rarely, in which caſe they are more elliptical. The *prickles* are long and ſlender, in pairs under each footſtalk; one of them always ſtraight; the ſhorteſt ſometimes curved, but not remarkably. *Flowers* ſmall, yellow, according to Jacquin deſtitute of *petals*. *Drupa* roundiſh or ovate, yellow, twice the ſize of a pea, with a ſweet pulp, and a rugged *nut*, of one cell. Willdenow ſeems to have omitted this ſpecies entirely.

11. Z. *ſinenſis*. Chineſe Jujube. Lamarck n. 3. Deſfont. Tabl. 231.—“Young branches prickly, downy; old ones unarmed. Leaves ovate-oblong, ſharply ſerrated. Petals reflexed under the calyx.”—Cultivated in the public garden at Paris, and ſaid to be a native of China. As this point is uncertain, how much better might the name of *cryptopetala* have been choſen! Lamarck deſcribes the preſent ſpecies as a *ſhrub*, only three or four feet high, loſing its ſlender, unequal, briſtle-like prickles as the *branches* advance in age. *Leaves* of a very pale green, crowded, three-ribbed, rather ſmaller than thoſe of *Z. vulgaris* hereafter deſcribed; we preſume they are quite ſmooth. *Footſtalks* ſhort and downy. *Flowers* ſmall, whitiſh, axillary, ſolitary or in pairs, remarkable for having their *petals* ſo completely reflexed, and concealed by the *calyx*, as not to be viſible when we regard the flower vertically. *Lamarck.*

12. Z. *rotundifolia*. Round-leaved Jujube. Lamarck n. 9. (Jujuba, ſive Ziziphus, zeylanica rotundifolia crenata minor, foliis ſubtus lanuginoſis; Pluk. Phyt. t. 197. f. 2. Burm. Zeyl. 132.)—“Prickles in pairs; one of them recurved. Leaves roundiſh-oval; downy beneath.”—Native of Ceylon. *Leaves* ſmall, perhaps hardly an inch long, rather more rounded than in Plukenet's figure, ſlightly toothed; ſmooth above; cottony beneath; on very ſhort *footſtalks*. *Branches* ſlender, cylindrical. *Prickles* ſmall. An Indian ſpecimen in the Linnæan herbarium, attached to *Z. Napeca*, to which it certainly is very little related, agrees in many points with this deſcription of Lamarck, except that the very ſmall *prickles* are ſolitary, nor are the footſtalks very ſhort. We know not to what other ſpecies of *Ziziphus* to refer this ſpecimen. It is marked *Ber*, and ſaid to afford gum lac, which is collected from it by winged inſects.

13. Z. *angulata*. Angular-branched Jujube. Lamarck n. 10.—“Prickles in pairs, ſtraight. Leaves roundiſh-oval, ſomewhat toothed, ſmooth on both ſides. Branches acutely angular.”—Deſcribed from the herbarium of Juſſieu, without fructification. The angular *branches* ſtrikingly diſtinguiſh this ſpecies from all the reſt. They are woody, ſmooth, zigzag, ſquare, with prominent acute angles. *Leaves* three-ribbed, an inch and a half broad, on ſhort *footſtalks*. *Lamarck.* Nothing is recorded of the native country of this plant.

14. Z. *vulgaris*. Common Jujube. Willd. n. 9. Lamarck n. 1. Ait. n. 5. Sm. Fl. Græc. Sibth. t. 241. (Z.; Dod. Pempt. 807. Zizypha; Camer. Epit. 167. Rhamnus Zizyphus; Linn. Sp. Pl. 282. Pall. Roſſ. v. 1. part 2. 24. t. 59. C. L. Willich Obſ. 5. Jujube Arabum, ſive Ziziphus Dodonæi; Ger. Em. 1501.)—Prickles in pairs, unequal. Leaves ovate, abrupt, bluntly ſerrated, ſmooth. Flowers in axillary tufts. Fruit elliptical.—Native of the ſouth of Europe. Gathered by Dr. Sibthorp about Megara, and on mount Parnaſſus. It has been cultivated in England ever ſince Parkinſon's days, but requires the ſhelter of a green-houſe, and though it may ſometimes bloſſom, never bears fruit. Pliny ſays the Jujube-tree was brought, in his time, from Syria into Italy. When wild it attains the ſize of a ſmall *tree*, with round, ſmooth, glaucous *branches*, zigzag and leafy when young. The *prickles* make no appearance on the young leafy ſhoots, but the following year they become ſtrong thorns, one of them an inch long, the other much ſhorter, and ſometimes, not always, recurved, as Willich well obſerves. *Leaves* rather crowded, deciduous, on ſhort ſtalks, ovate, ſomewhat tapering into a broad blunt point, frequently emarginate; their edges copiouſly though bluntly ſerrated; both ſurfaces ſmooth; the under paler, ſtrongly three-ribbed; their length an inch and a quarter or an inch and a half. *Flowers* yellowiſh, on ſhort ſtalks, in little axillary tufts, not much longer than the footſtalks. *Petals* obtuſe, half the length of the *calyx*. *Stigmas* two or three. *Drupa* the ſize and ſhape of an olive, blood-red, ſweet, mucilaginous, eſteemed good in ſoreneſs or inflammation of the mouth and throat, but are out of uſe in our preſent practice. If Pallas's plate above quoted be the true *Z. vulgaris*, of which we cannot help feeling ſome doubt, a compariſon of that plate with the old wooden cut of Camerarius, may ſerve to ſhew how ſuperior the artiſts of thoſe earlier times were to ſome of our modern delineators and colourers.

15. Z. *Spina Chriſti*. Chriſt's-thorn Jujube. Willd. n. 10. (Z. africana; Mill. Dict. ed. 8. n. 4. Rhamnus Spina Chriſti; Linn. Sp. Pl. 282. Oenoplia ſpinoſa; Cluſ. Hiſt. v. 2. 313. Nabca, Paliurus Athenæi credita; Alpin Ægypt. 16. t. 19. Jujube ſive Zizyphus africana, mucronatis foliis, ſpinâ gemellâ; Pluk. Almag. 199. Phyt. t. 197. f. 3.)—Prickles in pairs, ſtraight. Corymbs axillary, ſtalked, many-flowered. Leaves ovate, finely crenate, ſmooth on both ſides. Fruit globoſe.—Native of Ethiopia and Paleſtine. Seeds collected near Jeruſalem, by Haſſelquiſt, produced the plant deſcribed by Linnæus, a wild ſpecimen of which, ſent alſo by Haſſelquiſt, is preſerved in the Linnæan herbarium. Miller alſo raiſed this ſpecies from Syrian ſeeds, ſo that it is entitled to a place in Hort. Kew. Reſpecting Plukenet's ſynonym, we feel no doubt. The cut of Alpinus as much reſembles *Z. Napeca*, n. 6, in the foliage, but the globoſe *fruit* agrees beſt with the ſpecies before us. The *prickles* are hardly viſible on our ſpecimen, which is a young luxuriant leafy branch, in flower. They perhaps acquire their full proportion on older branches, as in *Z. vulgaris*, n. 14. The *leaves* are ſcattered, of a broad-ovate, ſomewhat roundiſh, obtuſe figure, two and a half or three inches long, and two wide, ſtrongly three-ribbed, with tranſverſe veins, minutely and ſlightly crenate rather than ſerrated, very ſmooth and even on both ſides; paler beneath. *Footſtalks* ſcarcely an inch long; downy on their upper ſide. *Corymbs* forked, downy, many-flowered, each on a ſolitary axillary ſtalk, ſhorter than the *footſtalk*. *Bracteas* awl-ſhaped. In our only expanded *flower*, the ſegments of the *calyx*, as well as the *petals* and *ſtamens*, are ſtrongly reflexed, quite under the baſe of the *calyx*. The *drupa* is ſaid to be the ſize and ſhape of a Sloe.

ZIZITH, in the *Jewiſh Cuſtoms*, a name given by the Jews to the tufts or fringes they uſed anciently to wear at the four quarters of their upper garments, but which they now only wear under their clothes, fixed to a ſquare piece of cloth, which repreſents the garment they anciently wore in their own country before their diſperſion. The zizith of the modern Jews is a tuft made of eight threads of yarn, ſpun on purpoſe for this uſe, each having five knots, which take up half the length. That which is not knotted, being furled out, makes a kind of tuft or fringe. Numb. xv. 38. Deuter. xxii. 12. Leo of Modena, Cerem. of the Jews, part i. chap. 5. Calmet. Dict. Bibl. in voc.

ZIZYPHA, in *Botany*. See ZIZIPHUS.

ZLABINGS, in *Geography*, a town of Moravia, in the circle of Iglau; 28 miles W. of Znaym.

ZLATOUSTOVSKOI, a town of Ruſſia, in the government of Upha; 60 miles W. of Tcheliabinſk.

ZLEBY, a town of Bohemia, in the circle of Czaſlau; 4 miles S.E. of Czaſlau.

ZLIN, a town of Moravia, in the circle of Hradiſch; 15 miles N.N.E. of Hradiſch.

ZLOTI, a money of account in Poland, where accounts are kept in zloti, guldens, or florins of 30 groſchen or groſz, and each groſchen is divided into 18 pfenings. The florin alſo contains 2½ ſkoſtacks, 90 ſchillings, or 270 pfenings. A ſkoſtack is worth 12 groſchen, or 36 ſchillings; a groſchen, 3 ſchillings; and a ſchilling, 3 pfenings.

ZMEINOGORSKAIA, in *Geography*, a fort of Ruſſia, on the river Porobalika; 200 miles S. of Kolivan. N. lat. 51° 10′. E. long. 82° 10′.

ZMILACES, in *Natural Hiſtory*, a name given by Pliny to a ſtone found in the river Euphrates, reſembling marble, and of a blueiſh-green colour.

ZMILAMPIS, the name of a gem, deſcribed by Pliny and the ancients, which they tell us was very like the Proconneſian marble, except that in the centre of the ſtone there was always a blueiſh ſpot, reſembling the pupil of an eye.

The Proconneſian marble of the ancients was of a fine clear and elegant white, variegated with irregular black veins. Pliny's deſcription is ſo ſhort, that it has been ſuppoſed from him that the zmilampis was a ſort of marble; he only ſays of it, that it was like the Proconneſian marble, but blue in the middle. Many had inferred from this, that he meant no more by it than that this was a ſtone, which had blue veins inſtead of the black ones in the Proconneſian kind. But when we examine the reſt of the ancients, and find that it was a ſmall ſtone, found in the river Euphrates, and worn in rings, and that its blue ſpot was like a pupil of an eye, we may eaſily determine that it was one of thoſe gems which we call *oculus beli*, or *bellocchio;* of which there is a vaſt variety found in the rivers of the Eaſt Indies, and many have a fine opaque white ground, and a blueiſh or greeniſh ſpot for the pupil.

ZMILANTHES, a name given by Solinus and ſome others to a gem called by the more correct writers *zmilampis*.

ZNAMENSKOI, in *Geography*, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 28 miles N.N.W. of Tara.

ZNAYM, a town of Moravia, in the circle of the ſame name, near the river Teya. This town was built about the year 1222, at a little diſtance from another town, laid waſte by the Bohemians. It contains a citadel, four cloiſters, and a college; the circle borders on Auſtria; 68 miles S.W. of Olmutz. N. lat. 48° 48′. E. long. 15° 51′.

ZNENDEI, a river of Ruſſia, which runs into the Vitim, N. lat. 53°. E. long. 115° 14′.

ZNIN, a town of the duchy of Warſaw; 20 miles N. of Gneſna.

ZNONIGRAD, a town of Croatia; 36 miles S. of Bihacs.

ZOAGLI, a town of Genoa; 20 miles E. of Genoa.

ZOANA, in *Ancient Geography*, a town of Aſia, in the Leſſer Armenia, upon the route from Satala to Arabiſſus, between Tonoſa and Gunduſa. Anton. Itin.

ZOANNES, a name given by Strabo to a people half-ſavage, that inhabited the mountains of the Colchide.

ZOAR, Zoara, *Segor*, or *Bela*, a city of Pentapolis, on the ſouthern extremity of the Dead ſea. It was preſerved by deſtruction from fire by means of the interceſſion of Lot. (Gen. xiv. 2.) Its name before this circumſtance was Bela; but when Lot requeſted it to be ſpared as a place of refuge for himſelf, he repreſented it as a *ſmall* place; and hence it had the name *Zoar*, or Segor, which, in Hebrew, ſignifies ſmall or little. The Romans kept a garriſon at Zoar. St. Jerom obſerves, that the name Bela was given to this city, becauſe, as ſoon as Lot left it, an earthquake cauſed it to be ſwallowed up; *bela* in Hebrew ſignifying to ſwallow up. Jerom alſo ſays, that the Hebrews think that Zoar bears alſo the name of Shaliſha. (1 Sam. ix. 4.) They pretend that this city has been often demoliſhed by earthquakes.

Zoar, in *Geography*, a town of Arabia, in the province of Hedsjas, on the ſouth coaſt of the Dead ſea, at the mouth of the Safia; 30 miles N. of Karac.

Zoar. See Tsor.

ZOARA, a town of Africa, in the country of Tripoli; 60 miles W.N.W. of Tripoli.—Alſo, a town of Africa, in the country of Barca; 140 miles S.W. of Tolometa. N. lat. 32° 35′. E. long. 11° 56′.

ZOBAYA, a town of Mexico, in the province of Guatimala; 30 miles N. of Guatimala.

ZOBEIR, a town of the Perſian empire, in the pachalic of Bagdad, about 10 miles W. of the city of Baſſora, ſituated on the dry canal of the Djurre Zade, ſuppoſed to be the former bed of the Euphrates. It is by ſome ſaid to be the ancient Baſra, and derives its preſent name from Zobeir, who was defeated and ſlain in the battle of the Camel, fought near this place.

ZOBELN, a town of the duchy of Courland; 20 miles E. of Goldingen.

ZOBERA, a town of Arabia, in the province of Yemen; 35 miles S.E. of Chamir.

ZOBERN, a town of Saxony, in the Vogtland; 8 miles W. of Oelſnitz.

ZOBIN, a town of Germany, in the principality of Oettingen Wallerſtein; 6 miles W.N.W. of Nordlingen.

ZOBING, a town of Saxony, in the margravate of Meiſſen; 15 miles S. of Deſſau.—Alſo, a town of Auſtria; 3 miles N. of Crems.

ZOBLITZ, a town of Saxony, in the circle of Erzgebirg. This place conſiſts of 110 houſes, and the inhabitants ſubſiſt principally by working the ſerpent-ſtone, which is found here, into pitchers, bowls, tea and coffee diſhes, mortars, cups, &c. The ſerpent-ſtone is dug juſt above the town, and farther on to the eaſt of it is found a red ſpecies, which is reckoned among the fineſt, and for that reaſon is alſo conſidered by the ſovereign as his property, together with a yellow, green, grey, and black ſort. In the electoral red quarry is alſo found aſbeſtos of divers colours and granites; 17 miles S. of Freyberg. N. lat. 50° 36′. E. long. 13° 11′.

ZOBOWITZ, a town of Pomerelia; 14 miles S. of Dantzic.

ZOBTEN, a town of Sileſia, in the principality of Schweidnitz; 9 miles E.N.E. of Schweidnitz. N. lat. 50° 48′. E. long. 16° 41′.

ZOBTENBERG, a mountain of Sileſia, ſituated in a country otherwiſe level, 2424 Paris feet above the level of the ſea, near Zobten.

ZOCCO, Zoccolo, *Zocle*, or *Socle*, in *Architecture*. See Socle.

ZOCELAR, in *Geography*, a town of Croatia; 2 miles S.W. of Bihacs.

ZOCHINACAZTLIS, in *Botany*, a name by which ſome authors have called the *flos auriculæ*, a flower of New Spain, uſed in making of the Spaniſh chocolate.

ZODIAC, Zodiacus, in *Aſtronomy*, a faſcia, or broad circle, whoſe middle is the ecliptic, and its extremes two circles parallel to it, at ſuch diſtance from it, as to bound, or comprehend, the excurſions of the ſun and planets.

The word is formed from the Greek ζωον, *animal*, by reaſon of the conſtellations in it, which have the forms of animals given them; others derive it from ζωη, *life*, from an opinion, that the planets have a great influence on animal life.

The ſun never deviates from the middle of the zodiac; *i. e.* from the ecliptic: the planets all do more or leſs. Their greateſt deviations, called latitudes, are the meaſure of the breadth of the zodiac; which is broader, or narrower, as the greateſt latitude of the planets is made more or leſs. Accordingly ſome make it 16, ſome 18, and ſome 20 degrees broad.

The zodiac interſecting the equator obliquely makes an angle with it of 23 degrees and a half; or, more preciſely, of 23° 29′; which is what we call the *obliquity of the zodiac*, and is the ſun's greateſt declination. See Ecliptic.

The zodiac is divided into twelve portions, called *ſigns*; and thoſe diviſions, or ſigns, are denominated from the conſtellations which anciently poſſeſſed each part. But the zodiac being immoveable, and the ſtars having a motion from weſt to eaſt, thoſe conſtellations now no longer correſpond to their proper ſigns; whence ariſes what we call the *preceſſion of the equinoxes*.

When a ſtar, therefore, is ſaid to be in ſuch *a ſign of the zodiac*, it is not to be underſtood of that ſign, or conſtellation, of the firmament, but only of that twelfth part of the zodiac, or dodecatemory of it.

Caſſini has alſo obſerved a tract in the heavens, within whoſe bounds moſt of the comets, though not all of them, are obſerved to keep, which, for this reaſon, he calls the *zodiac of the comets*.

This he makes as broad as the other zodiac, and marks it with ſigns, or conſtellations, like that; as Antinous, Pegaſus, Andromeda, Taurus, Orion, the Leſſer Dog, Hydra, the Centaur, Scorpion, and Sagittary.

Zodiac, *Hindoo*. The early inveſtigators of Hindoo mythology, which comprehends not only their aſtronomy, but every ſcience, and almoſt every art, of which the Hindoos have any knowledge, were ſurpriſed to find that the days of the week were named, as with us, after the planets, and in the ſame order. It was natural enough to ſuppoſe that the Hindoo almanac was borrowed from the Arabians. The few Brahmans who at that time had acceſs to Europeans of ſcience, ſuppoſed the ſame of us, when they diſcovered the ſimilitude of fable and of name. But it has been made manifeſt by the inveſtigations of later writers, that the Hindoo zodiac is of very great antiquity. Such of our readers as may be deſirous of extended information hereon, are referred to the diſſertations of ſir William Jones and Mr. Colebrooke; on the Hindoo zodiac, in the 2d and 9th volumes of the Aſiatic Reſearches; and to the Hindoo Pantheon. In both works, plates of the Hindoo zodiac are given from different authorities; and in the latter work ſeparate engravings alſo of the perſonified planets. We will extract from it a ſort of table, ſhewing the Engliſh and Sanſkrit names, and the vehicles aſſigned to the ſeveral planets by the latter fabuliſts.

Names of Planets, &c.		Days over which they reſpectively preſide.		Vehicles or Seats, according to the Plate of	
Engliſh.	Sanſkrit.	Engliſh.	Sanſkrit.	Sir William Jones.	The Hindoo Pantheon.
Sun	Surya	Sunday	Aditvar	Lion	Chariot
Moon	Soma	Monday	Somavar	Antelope	Antelope
Mars	Mangala	Tueſday	Mangalvar	Horſe	Ram
Mercury	Boodh	Wedneſday	Budhvar	Eagle	Carpet
Jupiter	Vrihaſpati	Thurſday	Vrihaſpatvar	Boar	Do.
Venus	Sukra	Friday	Sukervar	Camel	Rat
Saturn	Sani	Saturday	Sanivar	Elephant	Raven
Dragon's Head	Ketu			Frog	Carpet
Dragon's Tail	Rahu			Tortoiſe	Owl

Under the Sanſkrit names of the planets we have given ſhort articles deſcriptive of their mythological and hiſtorical attributes and alluſions. To them (Surya, Soma, &c.) we therefore refer for farther particulars, and to the article Vahan for an account of the vehicles aſſigned to them and other mythological perſonages of Hindoo fable.

ZODIACAL Light, a brightneſs reſembling that of the milky way, but leſs bright, and which is ſometimes perceived in the heavens, at certain times of the year, after ſun-ſet, or before its riſe. Some have ſuppoſed, that this phenomenon is the ſame with that which the ancients called *trabes*, a term by which they denoted a meteor, or impreſſion in the air like a beam. Thus Pliny (lib. ii.) ſays, "emicant trabes, quos docos vocant." The form of this light reſembles that of a pyramid, lying lengthways in the zodiac, within which its point and axis are always encloſed, its baſe being towards the ſun, and placed obliquely with reſpect to the horizon. In the torrid zone, the zodiacal light is frequently, or almoſt conſtantly, ſeen. At or near our latitude it may be ſeen about the time of the equinoxes. The beſt time for ſeeing it is about the 1ſt of March, at 7 o'clock in the evening, when the twilight is ending, and the equinoctial point in the horizon. This phenomenon was firſt diſcovered by Deſcartes, and by Childrey about the year 1659. It did not engage general attention till it was deſcribed and named by M. Caſſini the elder, in 1683. It was afterwards obſerved by M. Fatio, in 1684, 1685, and 1686, and by M. Kirch and Eimmart, in 1688, 1689, 1691, 1693, and 1694. See Mairan, Suite des Mem. de l'Acad. Royale des Sciences, 1731, p. 3.

In 1707, April 3, it was obſerved by Mr. Derham in Eſſex. It appeared in the weſtern part of the heavens, about a quarter of an hour after ſun-ſet, in the form of a pyramid, perpendicular to the horizon. The baſe of this pyramid he judged to be the ſun. Its vertex reached 15° or 20° above the horizon. It was throughout of a duſky-red colour, and at firſt appeared pretty vivid and ſtrong, but fainteſt at the top. It grew fainter by degrees, and vaniſhed about an hour after ſun-ſet. This ſolar atmoſphere has alſo been ſeen about the ſun in a total ſolar eclipſe, a luminous ring appearing about the moon at the time when the eclipſe was total.

M. Fatio conjectured that this appearance ariſes from a collection of corpuſcles encompaſſing the ſun in the form of a lens, reflecting the light of the ſun. M. Caſſini ſuppoſed that it might ariſe from an infinite number of planets revolving about the ſun; ſo that this light might owe its exiſtence to theſe bodies, as the milky way does to an innumerable number of fixed ſtars. It is now, however, generally ſuppoſed, that it is matter detached from the ſun by its rotation about its axis. The velocity of the equatorial parts of the ſun being the greateſt would throw the matter to the greateſt diſtance, and on account of the diminution of velocity towards its poles, the height to which the matter would there riſe would be diminiſhed; and as it would probably ſpread a little ſideways, it would form an atmoſphere about the ſun ſomething in the form of a lens, whoſe ſection perpendicular to its axis would coincide with the ſun's equator. And this agrees very well with obſervation. There is, however, a difficulty in thus accounting for this phenomenon. It is very well known that the centrifugal force of a point of the ſun's equator is a great many times leſs than its gravity. It does not appear, therefore, how the ſun, from its rotation, can detach any of its groſs particles. If they be particles detached from the ſun, they muſt be ſent off by ſome other unknown force; and in that caſe they might be ſent off equally in all directions, which would not agree with the obſerved figure. The cauſe is probably owing to the ſun's rotation, although not immediately to the centrifugal force ariſing therefrom.

The zodiacal light, according to M. de Mairan's ingenious and plauſible hypotheſis, is nothing but the ſolar atmoſphere, a rare and ſubtile fluid, either luminous by itſelf, or made ſo by the rays of the ſun ſurrounding its globe; but in a greater quantity, and more extenſively about its equator than any other part. As it always accompanies the ſun, it is natural to aſcribe it to a ſolar atmoſphere, extending beyond the orbit of Mercury, and ſometimes even beyond that of Venus. Accordingly, the zodiacal light has been ſuppoſed to be a ſection of this atmoſphere, which, being extremely flat at its poles, cannot be conceived to partake of the ſun's monthly motion. Dr. T. Young (Lectures, vol. i. p. 502.) obſerves, that the only probable manner in which it can be ſuppoſed to retain its figure, is by means of a revolution much more rapid than that of the ſun's motion. To that purpoſe, M. de la Lande remarks, that it ſeems now to be generally believed, that the zodiacal light is the atmoſphere of the ſun; for it always accompanies that luminary; and the equator of the ſun is in the direction of this light: conſequently he ſays, that in all probability the zodiacal light is an atmoſphere ſituated round the ſun, in the direction of its equator, and flattened by its rotatory motion. Aſtrom. Paris, 1771. § 845 to 849.

The zodiacal light is more or leſs viſible according to circumſtances; but the ſolar atmoſphere is not always viſible by means of this light, though it be always ſeen about the globe of the ſun in total eclipſes.

One of the moſt eſſential circumſtances for the perception of the ſolar atmoſphere by the zodiacal light is its having ſufficient length on the zodiac; for without this its brightneſs is entirely hid from us by the twilight.

M. de Mairan ſays, it may be proved from many obſervations, that the ſun's atmoſphere ſometimes reaches as far as the earth's orbit, and there meeting with our atmoſphere produces the appearance of an aurora borealis.

The length of the zodiacal light varies ſometimes in reality, and ſometimes in appearance only, from various cauſes.

The oblique poſition of this light, little different from that of the plane of the ecliptic, does not permit us to ſee it diſtinctly, and ſufficiently elevated above the horizon; but ſome time after ſun-ſet, towards the end of the winter, and in ſpring, or before ſun-riſing in autumn, and towards the beginning of winter. Several cauſes hinder our ſeeing it, any more than the milky way; ſuch as moon-light and ſtrong twilights, among others.

M. Caſſini often mentions the great reſemblance of the zodiacal light to the tails of comets. M. Fatio has made the ſame obſervation; and M. Euler has lately endeavoured to prove them owing to ſimilar cauſes. Decouverte de la Lumiere Celeſte que paroit dans le Zodiaque, art. 41. Lettre à M. Caſſini, printed at Amſterdam, 1686. Euler, in Mem. de l'Acad. de Berlin, tom. ii.

The figure of this ſolar atmoſphere muſt be lenticular, or that of a flatted ſpheroid. M. de Mairan gives us a draught of its appearance and projection.

The extent of the zodiacal light from the ſun to its point is ſeldom leſs than 45, ſometimes 150 degrees in length; M. Pingré being on the torrid zone ſaw it 120 degrees: and its breadth varies from 8 to 30 degrees.

This light ſeems to have no other motion than that of the ſun itſelf.

M. Euler obſerves, that if the ſun has an atmoſphere, the force of the impulſe of light iſſuing from that globe muſt drive particles of that atmoſphere before it; but as gravity is very ſtrong at the ſun, this impulſe would never drive thoſe particles beyond the limits of their atmoſphere, were it not for the centrifugal force ariſing from the ſun's motion round its axis. This being oppoſite to the action of gravity, diminiſhing its effects, the impulſe of the light may conſiderably dilate the figure of the ſolar atmoſphere, from what it would be if it aroſe from the gravity and centrifugal force of its particles only: and this dilatation will be very conſiderable near the ſun's equator, and very ſmall towards its poles. The action of light thus diminiſhing the action of gravity, M. Euler attempts to calculate how far this diminution of gravity may increaſe the extent of the ſun's atmoſphere about its equator. He finds a cubic equation, the roots of which expreſs the ſemi-axis, or greateſt amplitude of this atmoſphere. He adds, that this equation having three real roots, it is poſſible that the ſolar atmoſphere may become a ring ſurrounding the ſun's globe, as the ring of Saturn ſurrounds the body of that planet. As the electric fluid is now generally acknowledged to be the cauſe of the aurora borealis, which M. de Mairan aſcribes to the ſolar atmoſphere, which produces the zodiacal light, and which is thrown off principally and to the greateſt diſtance from the equatorial parts of the ſun, in conſequence of his rotation on his axis, and extending viſibly, in the form of a luminous pyramid, as far as the orbit of the earth, falls into the upper regions of our atmoſphere, and is collected chiefly towards the polar parts of the earth, in conſequence of the diurnal revolution, where it forms the aurora borealis: it is no improbable conjecture, that the ſun may be the fountain of the electric fluid, and that the zodiacal light, and the tails of comets, as well as the aurora borealis, lightning, and artificial electricity, are its various and not very diſſimilar modifications. See *Theory of* ELECTRICITY.

ZODZISZKI, in *Geography*, a town of Lithuania, in the palatinate of Wilna; 52 miles E. of Wilna.

ZOEGEA, in *Botany*, was ſo named by Linnæus, in honour of his pupil and correſpondent Dr. John Zoega, who viſited Iceland, and communicated from thence, as well as from the neighbouring ocean, many new or rare plants, eſpecially of the cryptogamic tribes, to the great Swediſh naturaliſt. Dr. Zoega wrote a *Flora Iſlandica*, which has been ſeveral times printed, with Olafſen's, and von Troil's, accounts of that country. In the latter book this *Flora* is a mere catalogue of Linnæan names, the ſynonyms and deſcriptions being omitted. He wrote alſo a mineralogical work on Zeolites. The plant which bears his name was raiſed in the Copenhagen garden, from Siberian ſeeds, and communicated by himſelf to Linnæus.—Linn. Mant. 15. Schreb. Gen. 577. Willd. Sp. Pl. v. 3. 2276. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 5. 143. Juſſ. 174. Poiret in Lamarck Dict. v. 8. 868. Gærtn. v. 2. 452.—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ capitatæ*, Linn. *Cinarocephalæ*, Juſſ.

Gen. Ch. *Common Calyx* ovate, imbricated, of numerous lanceolate, fringed ſcales; the inner ones linear-lanceolate, chaffy, longeſt. *Cor.* compound, radiant. Florets of the diſk numerous, perfect, of one petal, with a ſlender tube, and a limb in five deep, lanceolate, erect ſegments: thoſe of the radius fewer, neuter, of one flat, ligulate, abrupt, ſharply five-toothed petal. *Stam.* in the florets of the diſk, Filaments five, ſhort; anthers united into a cylindrical tube. *Piſt.* in the ſame florets, Germen ſhort; ſtyle capillary, very long, erect; ſtigma ſhort, cloven: in the radiant florets, Germen a rudiment only, without ſtyle or ſtigma. *Peric.* no other than the unaltered cloſed calyx. *Seeds* in the florets of the diſk, ſolitary. Down briſtly. In the radius none. *Recept.* briſtly.

Eſſ. Ch. Receptacle briſtly. Seed-down of ſimple briſtles. Florets of the radius ligulate. Calyx imbricated.

Obſ. Linnæus juſtly obſerves that this genus is very intimately related to CENTAUREA (ſee that article). Indeed the only difference conſiſts in the flat, or ligulate, not tubular, florets of the radius. How far that diſtinction is ſufficient, ſome perſons have doubted; eſpecially as the preſence of the radiant florets themſelves in *Centaurea*, has been thought but a caſual occurrence, equivalent to double flowers in other natural orders. As long, however, as the Syngeneſious family continues to be characterized at all by the different figure of the florets, *Zoegea* muſt remain ſeparate from *Centaurea*.

1. Z. *Leptaurea*. Yellow Zoegea. Linn. Mant. 117. Suppl. 383. Willd. n. 1. Ait. n. 1. L'Herit. Stirp. Nov. 57. t. 29. (Z. aleppica; Jacq. Col. v. 1. 89. Ic. Rar. t. 177.)—Native of Siberia, according to a manuſcript correction of Linnæus in his own Mantiſſa: other authors ſay, of the Levant. It appears to have been cultivated in Mr. Blackburne's celebrated garden at Orford, Lancaſhire, before the year 1779, when the catalogue of that rich collection was printed. This plant is a hardy annual, flowering in July and Auguſt. The *ſtem* is much branched, ſpreading in every direction, leafy, angular and roughiſh, twelve or eighteen inches high. *Leaves* alternate, diſtant, roughiſh, entire; the lower ones pinnatifid; the reſt undivided, obtuſe, tapering down into a *footſtalk*. *Flowers* ſolitary, on long terminal ſtalks, large, near two inches broad. *Scales* of the *calyx* delicately fringed with tawny briſtles. *Corolla* of a ſhining golden yellow.

Another ſpecies is deſcribed in the *Supplement* by Linnæus himſelf, under the name of *Z. capenſis*. This is *Relhania pedunculata* of L'Heritier. See Willd. Sp. Pl. v. 3. 2136, and is the ſame thing as *Athanaſia pumila*, Linn. Suppl. 362.

ZOFALA, in *Geography*. See SOFALA.

ZOFFANY, JOHAN, in *Biography*, was born at Frankfort, about the year 1735. He came to England as a painter of ſmall portraits when he was about 30 years of age. After paſſing ſome time with very little encouragement, he at length was fortunate enough to attract public attention by a portrait of the earl of Barrymore, and thenceforward enjoyed conſiderable favour and encouragement. The moſt conſiderable of his productions at this period were portraits of the moſt celebrated dramatic performers in their favourite characters; as Garrick, in Abel Drugger, ſir John Brute, and lord Chalkſtone, &c.; Foote, in major Sturgeon; and Jacob, as Jacob Gallop; Foote and Weſton, as Dr. Laſt and the Preſident, in the Devil on Two Sticks; Parſons, Moody, Branſby, Aicken, and many others, whoſe likeneſſes he preſerved moſt admirably, with all the variety of expreſſion required for the characters they perſonified. One picture he painted of the members of the Royal Academy, in the hall of the Academy devoted to the ſtudy of the living figure, round which they here aſſembled, and it received univerſal applauſe.

He had the honour to be employed by his majeſty, and painted portraits of the royal family; and he was engaged by the queen to paint for her a view of the Tribune of the Gallery at Florence. He was ſomewhat of a humouriſt, and it is ſaid of him, that whilſt he was engaged painting in the Florentine Gallery, the emperor of Germany viſited the grand duke, and coming up to Zoffany in the Gallery, was much pleaſed with his performance, and aſked him his name; and on hearing it, inquired what countryman he was; when he anſwered, an Engliſhman. Why, ſaid the emperor, your name is German. True, returned the painter, I was born in Germany, that was accidental; I call that my country where I have been protected!

Soon after his return from Italy, he went to the Eaſt Indies, where he was much employed, and acquired a conſiderable fortune; but it diſappeared upon his return home, and was only reſtored by a ſecond adventure to the ſame hot-bed of wealth and diſeaſe. He again returned to England, but with diminiſhed powers: yet he ſtill continued to paint, and, among other works, produced an elaborate picture of the ſacking of the wine vaults at the Tuileries, in 1792; a diſguſting diſplay of the atrocities of that eventful period. He lived to a very advanced age, but was reduced exceedingly in intellectual powers for ſome years before his deceaſe, which happened in 1808. He was a member of the Royal Academy.

ZOFFINGEN, in *Geography*, a town of Switzerland, in the canton of Berne, on the Wigger. It was at one time imperial, after which it put itſelf under the count of Habſburg. In the 13th century it was ſubject to the houſe of Auſtria, from which it was taken by the Bernois, in the year 1415, and is the principal place of a bailiwick, with conſiderable privileges; 26 miles N.N.E. of Berne.

ZOGNO, a town of Italy, in the department of the Serio; 5 miles N. of Bergamo.

ZOGOCARA, in *Ancient Geography*, a town of Aſia, in Greater Armenia. Ptol.

ZOGOR, in *Geography*, a town of Thibet; 16 miles W.S.W. of Zuenga.

ZOHAUB, one of the diſtricts of the province of the Lower Kurdiſtan, in the pachalic of Bagdad, which has a ſeparate hakem or governor. See SOLYMANIA.

ZOHAUK, a town of Grand Bucharia; 12 miles N.E. of Bamian.

ZOHRA, a town of Egypt, on the left bank of the Nile; 5 miles N.N.E. of Miniet Ebn Kaſib.

ZOIKA, a town of Ruſſia, in the government of Archangel, near the mouth of the Petchora; 160 miles N.E. of Mezen.

ZOILUS, in *Biography*, a carping critic belonging to the claſs of grammarians, was a native of Amphipolis, and lived in the time of Ptolemy Philadelphus, about the year B.C. 270. His natural diſpoſition to depreciate eminent characters is ſaid to have been ſtrengthened by the courſe of his education, as a diſciple of Polycrates, who wrote an accuſation againſt Socrates. This diſpoſition, which he was in the habit of indulging, gave occaſion to his being denominated the rhetorical dog; rhetorical, as his ſtyle was elegant, and dog, from his practice of ſnarling. Both his perſon and mind are very unfavourably exhibited by Ælian; who ſays of him, that being once aſked, why he *ſpoke* ill of all mankind?—he replied, "becauſe I cannot *do* ill to them." Ambitious of gaining reputation, he endeavoured to acquire it by degrading others; and valued himſelf by having eſtabliſhed a kind of claim to the title of "Homeromaſtix," or the ſcourge of Homer. Suidas informs us, that he wrote nine books of grammatical remarks upon this poet. Plato and Iſocrates, as well as Homer, were objects of his critical ſeverity. Zoilus was the author of ſeveral works; particularly a hiſtory commencing from the theogony, and continued to the death of Philip of Macedon, and a hiſtory of his own city. His attack upon Homer ſeems to have been an unpardonable offence, and threw a ſhade over every other good quality he poſſeſſed; for if we may credit Dionyſius of Halicarnaſſus, he teſtifies that he was actuated by the love of truth, and he ranks him with Ariſtotle, and other eminent philologiſts. But his virtues and talents, whatſoever they were, could neither ſecure him from poverty whilſt he lived, nor guard his memory from reproach. Vitruvius reports, that when he viſited Alexandria, he recited his writings againſt the Iliad and Odyſſey of Homer to king Ptolemy, which gave the king ſuch offence, that he would take no notice of him; and afterwards, when urged by indigence, he ſolicited charitable aſſiſtance, Ptolemy repulſed him with this contemptuous reflection; that if Homer, who had been dead 1000 years, could by his works give maintenance to many thouſand people, a writer ſo much his ſuperior might ſurely maintain himſelf. It is further ſaid, that the king was ſo much diſpleaſed with his conduct, that he treated him as if he had been guilty of parricide; and that he was put to death, as ſome ſay, by crucifixion, and as others ſay by ſtoning; and according to another account, he was burnt alive at Smyrna. Vitruvius adds, "that whichſoever of theſe was his fate, he well deſerved the puniſhment." The penalty, however, if this ſtatement be true, ſeems to have been much more than adequate to the offence. Ælian Hiſt. Var. Voſſ. Hiſt. Græc. Gen. Biog.

ZOISITE, in *Mineralogy*, *Epidote*, Haüy, a mineral ſo called by Werner after baron Von Zoïs of Laybach.

Common Zoiſite.—Its colours are yellowiſh and blueiſh-grey; it occurs maſſive and cryſtallized in very oblique four-ſided priſms. The cryſtals are middle-ſized, and deeply ſtreaked longitudinally. The ſtructure is lamellar, and the joints parallel with the axis of the cryſtal. The internal luſtre is ſplendent; the luſtre of the croſs fracture is gliſtening, and between pearly and reſinous; it is tranſlucent, hard, and eaſily frangible. The ſpecific gravity is 3.31. According to Klaproth, the conſtituent parts are,

Silex - - - - -	42
Alumine - - - -	29
Lime - - - - -	21
Oxyd of iron - -	3
	95

Friable Zoiſite is of a reddiſh-white colour, ſpotted with pale peach-bloſſom red; it occurs maſſive. The fracture is intermediate, between earthy and ſplintery; the fragments are very ſharp-edged, and tranſlucent on the edges; it is rather hard and brittle. The ſpecific gravity of this mineral is 3.3. According to Klaproth, its conſtituent parts are,

Silex - - -	44
Alumine - - -	32
Lime - - -	20
Oxyd of iron - -	2.50
	98.50

Zoiſite was firſt found in Carinthia, but has ſince been diſcovered in various parts of the continent of Europe, and at Glenelg in Inverneſsſhire. It is nearly allied to tremolite, with which it was at firſt arranged.

ZOITIUM, in *Ancient Geography*, a town of the Peloponneſus, in Arcadia; 15 ſtadia from Tricolons. Steph. Byz.

ZOK, Sokor, in *Geography*. See Sokor *Zok*.

ZOKOL, a town of Servia; 16 miles S. of Sabatz.—Alſo, a town of Boſnia; 45 miles E. of Boſnaſerai.

ZOL Engers. See Engers.

ZOLCA, in *Ancient Geography*, a town of Aſia, in Galatia, which belonged to the Paphlagonians, and was ſituated on the coaſt of the Euxine ſea. Ptol.

ZOLDO, in *Geography*, a town of Italy, in the Belluneſe; 18 miles N.W. of Belluno.

ZOLDORF, a town of Bohemia, in the circle of Boleſlaw; 6 miles W.N.W. of Jung Buntzel.

ZOLERI, a town of the county of Tyrol; 8 miles S.S.E. of Trent.

ZOL-HUYS. See Tol-huys.

ZOLLERN, a caſtle of Germany, ſituated on a mountain, in the principality of Hohenzollern, to which it gives name; 10 miles S. of Tubingen.

ZOLLICKOFEN, a town of Switzerland, and principal place of a diſtrict, in the canton of Berne; 2 miles N.W. of Berne.

ZOLNOK, a town of Hungary, on the river Theyſſe; 48 miles W.S.W. of Debriczin.

ZOLOGEV, a town of Ruſſia, in the government of Charcov; 24 miles N.N.W. of Charcov. N. lat. 50° 20′. E. long. 35° 44′.

ZOLOTITZA, a town of Ruſſia, in the government of Archangel, on the eaſt coaſt of the White ſea; 60 miles N. of Archangel.

ZOLOTONOSCHA, a town of Ruſſia, in the government of Kiev; 72 miles S.S.E. of Kiev. N. lat. 49° 30′. E. long. 31° 58′.—Alſo, a river of Ruſſia, which runs into the Dnieper, near Zolotonoſcha, in the government of Kiev.

ZOLOTTA, or Szelotta, a ſilver coin of Turkey, containing 30 paras, the para being = 3 aſpers.

ZOMBA, in *Geography*, a town of Africa, in the kingdom of Congo; 70 miles E. of St. Salvador.

ZOMBAR, a town of Hungary; 40 miles S. of Coloceſa. N. lat. 45° 56′. E. long. 19° 12′.

ZOMERAW, a town of Pruſſia, in Oberland; 12 miles N.E. of Biſchofswerder.

ZOMUCHANA, in *Ancient Geography*, a town of Aſia, in Aria. Ptol.

ZONA, or *Zona Uxoris Regiæ*, a very fertile country of Perſia. It was ſo called becauſe its revenue was deſtined for the accommodation of the queen. Plato.

Zona, a word uſed by ſome authors for that ſpecies of herpes, which others call the *zinzilla*, and we term the *ſhingles*.

ZONCHIO, in *Geography*, a cape of European Turkey, on the coaſt of the Morea; 12 miles N.N.W. of Navarin. N. lat. 37° 12′. E. long. 21° 30′.

Zonchio, a ſea-port town of European Turkey, in the Morea: the harbour is large, but not commodious; 8 miles N. of Navarin.

ZONCOLCUCAN, a mountain of Mexico, in the province of Guaxaca.

ZONDAGS, a river of Africa, which runs into the Indian ſea, N. lat. 31° 20′. E. long. 29°.

ZONDORO, a town of Hungary; 26 miles S.W. of Caſchau.

ZONE, Zona, ζωνη, q. d. *belt*, *girdle*, in *Geography* and *Aſtronomy*, a diviſion of the terraqueous globe, with reſpect to the different degrees of heat found in the different parts of it; formed by the two tropics and two polar circles, which divide the ſurface of the earth into five parts.

The zones are denominated *torrid*, *frigid*, and *temperate*.

Zone, *Torrid*, is a faſcia, or band, ſurrounding the terraqueous globe, and terminated by the two tropics.

Its breadth, therefore, is 46° 56′. The equator running through the middle of it, divides it into two equal parts, each containing 23° 28′.

The ancients imagined the torrid zone uninhabitable.

Zones, *Temperate*, are two faſciæ, or bands, environing the globe, and contained between the tropics and the polar circles. The breadth of each is 43° 4′.

Zones, *Frigid*, are ſegments of the ſurface of the earth, terminated, the one by the antarctic, and the other by the arctic circle; or included between theſe circles and the poles. The breadth of each is 46° 56′.

The difference of zones is attended with a great diverſity of phenomena.

1. In the torrid zone, the ſun paſſes through the zenith twice a year; and his receſs from the equator towards the pole, which is above the horizon, is twice a year equal to the height of the pole.

2. In the temperate and frigid zones, the leaſt height of the pole exceeds the greateſt diſtance of the ſun from the equator; and therefore, to the inhabitants of it, the ſun never paſſes through the zenith; yet if, on the ſame day, the ſun riſes, at the ſame time, to a greater height, the height of the pole is the leſs, ſince the inclination of the circles of diurnal revolution to the horizon is leſs.

3. In the temperate and torrid zones, the ſun riſes and ſets every natural day, becauſe the diſtance of the ſun from the pole always exceeds the height of the pole; yet every where but under the equator, the artificial days are unequal, and the inequality is the greater as the place is leſs diſtant from the frigid zone.

4. Where the temperate zones terminate on the frigid, the height of the pole is equal to the ſun's diſtance from the pole, when in the neighbouring tropic; and conſequently, once a year, the ſun, in its diurnal motion, performs an entire revolution, without going down under the horizon.

5. Every where, in a frigid zone, the height of the pole is greater than the leaſt diſtance of the ſun from the pole; and therefore, during ſome revolutions of the earth, the ſun is at a diſtance from the pole leſs than the pole's height; and, during all that time, does not ſet, nor ſo much as touch the horizon. Where the diſtance from the pole, as the ſun recedes from it, exceeds the height of the pole, or latitude of the place, the ſun riſes or ſets every natural day.

Zone, *Cingulum*, or girdle, part of the eccleſiaſtical dreſs of the Roman Catholic miniſters. The uſe of it being derived from the church of Rome, it was called *zona Romana*.

Zone, *Ciliary*, in *Anatomy*, the black impreſſion of the ciliary proceſſes on the vitreus humour. See Eye.

Zone, *Greater and Smaller*, *of the Iris*, arterial circles produced by the anaſtomoſes of the arteries. See Eye.

ZONGHAN, in *Geography*, a town of Cochinchina, near the ſea. N. lat. 14° 30′. E. long. 108° 48′.

ZONGO, or Morena, a river of Africa, which runs into the Atlantic, near Old Benguela.

ZONITES, in the *Materia Medica of the Ancients*, a name given to a kind of tutty, called alſo *placitis*. It had the latter name from the Greek ϖλακος, *a cruſt*, it being formed by way of cruſt on the ſides of the furnaces. The latter name *zonites* was given from its being formed of ſeveral coats, which, when broken tranſverſely, had the appearance of belts or zones. See Tsaphari, and Tumex.

ZONITIS Cadmia, a name given by ſome authors to a kind of *cadmia fornacum*, from its uſually ſurrounding the upper parts of the furnaces like a girdle or belt.

Zonitis, in *Entomology*, a genus of the *coleoptera* order of inſects, the characters of which are, that the antennæ are ſetaceous; the palpi four and filiform, and ſhorter than the whole jaw; and the lip emarginated. There are two ſpecies; *viz.*

Chrysomelana. Yellow, the wing-ſheaths having a point in the middle, and the apex black: found in Egypt and the Eaſt.

Flava. Reddiſh, with wing-ſheaths yellow, and black at the apex.

ZONNAR, a kind of belt, or girdle, of black leather, which the Chriſtians and Jews of the Levant, particularly thoſe of Aſia, and the territories of the grand ſignior, are obliged to wear, to diſtinguiſh themſelves from the Mahometans.

The word is corrupted from the vulgar Greek; a contraction of ζωναριον, or ζωνη, *girdle*.

It was Motavakkel X. kaliph, of the family of the Abaſſides, that firſt enjoined the Chriſtians, &c. to wear the zonnar.

The ordinance to this effect was publiſhed in the year of the Hegira 235.

Hence, as moſt of the Chriſtians of Syria, Meſopotamia, &c. are either Neſtorians or Jacobites, thoſe ſectaries are often called *Chriſtians of the girdle*.

ZONOSBIO, in *Geography*, an Indian town, belonging to the Seneca tribe; 2 miles N. of lake Seneca.

ZONS, a town of France, in the department of the Roer, ſituated on the Rhine, with a caſtle: at this place a river-toll is paid; 13 miles N.N.W. of Cologn. N. lat. 51° 4′. E. long. 6° 43′.

ZOOGRAPHY, formed of ζωον, *animal*, and γραφω, *I deſcribe*, denotes a deſcription of animals.

ZOOLATRIA, Ζωολατρια, compoſed of ζωον, *an animal*, and λατρια, *worſhip*, a ſpecies of idolatry, in which divine worſhip was offered to animals.

ZOOLOGIA, Zoology, Ζωολογια, compounded of ζωη, *life*, or ζωον, *animal*, and λογος, *ſpeech*, *diſcourſe*, a diſcourſe or treatiſe upon animals, or living creatures.

Zoology makes a conſiderable article in natural hiſtory, comprehending what relates to the form, ſtructure, method of living, feeding, propagating, &c. of the divers ſpecies of brute creatures, and the deſcriptions of every kind. This makes one of the three kingdoms, as they are called, of natural hiſtory; the vegetable and the mineral being the two others: in theſe, however, there is this difference made by writers, that while vegetables and minerals are treated of together, as all of a piece in each, the ſubjects of zoology are divided, and it is made to compoſe, as it were, ſeveral kingdoms. Whoever is to write on plants and minerals, calls his work a treatiſe of botany, or mineralogy; and we have no words to expreſs any ſubdiviſion of them into kingdoms; but in zoology, we treat, as different ſubjects, the different parts of it; and the hiſtory of birds is ſeparated by ſome from the reſt under the name of *ornithology;* that of quadrupeds, under the name of *tetrapodology;* and we have for the reſt, the words *entomology*, *amphibiology*, and the like, expreſſing thoſe things which are properly but the parts of zoology, as ſo many diſtinct and ſeparate ſtudies.

This may eaſily be amended by our conſidering the animal world as we do the vegetable and mineral, and dividing it, as we do the others, into its proper families; it will then be found that theſe are no better diſtinctions than thoſe of the families of theſe things, and that the authors may as well ſet up ſeparate ſtudies under the names of *bulbology*, *umbelliferology*, and the like, as thoſe.

A natural diviſion of the ſubjects of zoology, on this principle, will afford ſix ſeveral families of its ſubjects. 1. The hairy quadrupeds. 2. The birds. 3. The amphibious animals, ſuch as ſerpents, lizards, frogs, and tortoiſes. 4. The fiſhes. 5. The inſects. And, 6. Thoſe loweſt order of animated beings, the zoophytes. Artedi's Ichthyol. See QUADRUPED, BIRD, FISH, &c.

ZOOMBO, in *Geography*, a town on the weſt coaſt of Celebes. S. lat. 3°. E. long. 119° 10′.

ZOOMINERALIA, a word uſed by ſome writers to expreſs certain ſubſtances which are of animal origin, yet have ſomewhat of the nature of ſtones, as pearls.

ZOOPHORIC COLUMN. See COLUMN.

ZOOPHORUS, or ZOPHORUS, in the *Ancient Architecture*, the ſame thing with the *freeze* in the modern.

It was thus called in Greek, becauſe anciently adorned with the figures of animals: from ζωον, *animal*, and φερω, *I bear*.

The Greeks ſometimes alſo call the *zodiac* zoophorus, becauſe of the ſigns and conſtellations in it.

ZOOPHTHALMUS, in *Botany*, a name given by the ancient Greeks to the *ſedum majus*, or common great houſeleek.

It had this name from the Greek ζωον, *an animal*, and οφθαλμος, *an eye*, as expreſſing a reſemblance to the eyes of large animals, in the round and radiated growth of its cluſters of leaves. They alſo called it *ambroſia*.

ZOOPHYTON, ZOOPHYTE, Ζωοφυτον, compounded of ζωον, *animal*, and φυτον, *plant*, q. d. *plant-animal*, in *Natural Hiſtory*, a kind of intermediate body, ſuppoſed to partake both of the nature of an animal and a vegetable.

In the Linnæan ſyſtem, the zoophytes, which conſtitute the fifth order of worms, (ſee VERMES,) are compoſite animals, reſembling a flower, and ſpringing from a vegetating ſtem. This order contains 15 genera, as the TUBIPORA, MADREPORA, MILLEPORA, CELLEPORA, ISIS, ANTIPATHES, GORGONIA, ALCYONIUM, SPONGIA, FLUSTRA, TUBULARIA, CORALLINA, SERTULARIA, PENNATULA, and HYDRA: ſee each reſpectively. The ſpecies enumerated and deſcribed in Gmelin's Linnæan ſyſtem are 489.

The fœtus, while in the womb, appears to many to be a real zoophyte, growing to the mother by the funiculus umbilicalis, as plants do to the earth by their ſtem. See FŒTUS, and EMBRYO.

Concerning the zoophyte called *borametz*, ſee AGNUS *Scythicus*.

ZOOPHYTE-*Marygold*. See MARYGOLD.

ZOOPHYTES, *Chemical Compoſition of*. See SHELLS and VERMES.

ZOOTOMY, Ζωοτομη, compounded of ζωον, *animal*, and τεμνω, *I cut*, the art, or act, of diſſecting animals, or living creatures.

Zootomy amounts to the ſame with anatomy, or rather comparative anatomy. See ANATOMY.

ZOPARITUS, in *Ancient Geography*, a town of Aſia, in Melitene, on this ſide of the Euphrates. Ptol.

ZOPH, in *Geography*, a town of Syria; 25 miles S.S.E. of Jeruſalem.

ZOPH, a diſtrict in the N. part of the government of Diarbekir.

ZOPHA, a town of Pruſſia, in Pomerelia; 10 miles S.W. of Marienburg.

ZOPHOCIDELUS, in *Botany*, a word uſed ſometimes as an epithet with the word *chamæleon*, and ſometimes ſingly as the name of a plant, in both caſes expreſſing the black chamæleon-thiſtle, which the ancients carefully diſtinguiſhed in their writings from the white kind; the former being a poiſonous plant, the other not ſo.

ZOPHORIC. See ZOOPHORIC.

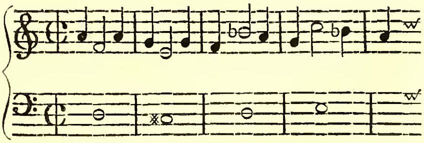
ZOPHORUS. See ZOOPHORUS.

ZOPISSA, Ζωπισσα, *naval pitch*, a kind of mixture of pitch and tar, ſcraped off from the ſhips that have been a long time at ſea. See *Naval* PITCH.

The word ſeems formed from ζεω, *bullio*, *I boil*, and πισσα, *pitch;* q. d. *concocted pitch*.

This matter, by being gradually penetrated by the ſalt of the ſea, becomes impregnated with its qualities; and, being applied to the body externally, is found reſolutive and deſiccative.

ZOPPO, in the *Italian Muſic*, is applied to all thoſe counterpoints deſcribed under the article OBLIGATO, &c. Thus they ſay, *contra-punto alla zoppa*, a lame or hopping counterpoint; becauſe, in theſe, a note is placed between two others, each of half its value in time. When this comes to be played or ſung, the voice or inſtrument ſeems to proceed by unequal leaps or ſteps, like thoſe of a lame perſon. See the example here annexed.



There are *contra punto alla zoppa ſopra il ſogetto*, as well as *ſotto il ſogetto*, *i. e.* above and below the ſubject. See SOGETTO.

ZOPPOLA, in *Geography*, a town of Italy, in Friuli; 13 miles N.N.W. of Concordia.

ZOQUES, a diſtrict of Mexico, in the province of Chiapa, bordering on Tabaſco.

ZORABA, a word uſed by ſome of the chemical writers to expreſs vitriol.

ZORAH, in *Geography*, a town of Africa, on the coaſt of Barca. N. lat. 30° 45′. E. long. 18° 30′.

ZORAMBUS, in *Ancient Geography*, a river of Aſia, in Carmania. Ptol.

ZORBIG, or LITTLE ZERBST, in *Geography*, a town of Saxony, in the circle of Leipſic, with a citadel; 15 miles S. of Deſſau. N. lat. 51° 40′. E. long. 12° 18′.

ZORECZA, a town of Lithuania; 80 miles E.S.E. of Pinſk.

ZORGE, a town of Saxony, belonging to the abbey of Walkenried; 6 miles N.E. of Walkenried.

ZORGE, a river of Thuringia, which runs into the Helm, 5 miles W. of Nordhauſen.

ZORIGA, in *Ancient Geography*, a town of Aſia, in the Greater Armenia, to the left of the Euphrates, and at ſome diſtance from it. Ptol.

ZORILLE, in *Zoology*, a ſpecies of weaſel, having the back and ſides marked with ſhort ſtripes of black and white, the laſt tinged with yellow; the tail long and buſhy, partly white, and partly black; the legs and belly black. This animal inhabits Peru, and other parts of South America: its peſtilential vapour overcomes even the panther of America, and ſtupefies that formidable enemy. Pennant. See VIVERRA.

ZORITA, in *Geography*, a town of Spain, in New Caſtile; 12 miles N.W. of Huete.

ZORLESCA, a town of Italy; 8 miles S.S.E. of Lodi.

ZORN, a river of France, which riſes near Saverne, in the department of the Lower Rhine, paſſes by Brumath, and enters a canal which communicates with the Rhine, 8 miles N. of Straſburg.

ZORNDORF, a town of the New Mark of Brandenburg, where the king of Pruſſia defeated the Ruſſians in the year 1758, near Cuſtrin.

ZORNIA, in *Botany*, received that name from the late profeſſor Gmelin of Gottingen, the compiler of a very faulty edition, at leaſt as to the botanical department, of the *Syſtema Naturæ* of Linnæus. He choſe this appellation for one of Walter's anonymous genera, which he himſelf knew nothing of. It has been adopted by Michaux and Purſh, and ſeems intended for the commemoration of Mr. John Zorn, an apothecary of Kempten, in Bavaria, who was born in the year 1739, and may poſſibly be ſtill living. He has publiſhed five volumes in octavo of *Icones Plantarum Medicinalium*, each volume containing one hundred plates, with a Latin and German text. Theſe figures are coloured in the Nuremberg ſtile; at which place the work appeared, between the years 1779 and 1784. There was, moreover, a Dr. Bartholomew Zorn of Berlin, who publiſhed there, in 1714, *Botanologia Medica*, a thick German quarto, with ſix plates. He edited alſo, in 1673, the *Herbarium portatile* of Thomas Pancorius, and according to Driandr. Bibl. Banks, v. 5. 496, died in 1717, at the age of 78.—Gmel. Syſt. Nat. v. 2. 1096. Michaux Boreal.-Amer. v. 2. 76. Purſh 484. Poiret in Lamarck Dict. v. 8. 872. (Anonymos n. 279; Walt. Carol. 181.)—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, two-lipped; upper lip broad, abrupt, emarginate; lower in three deep ſegments, the middle one longeſt. *Cor.* papilionaceous: ſtandard inverſely heart-ſhaped, reflexed, revolute at the ſides: wings ovate, erect, ſmaller than the ſtandard: keel divided at the baſe, bluntly rectangular, the length of the wings. *Stam.* Filaments in two ſets? anthers five of them oblong, five alternate ones globoſe. *Piſt.* Germen ovate; ſtyle awl-ſhaped, horizontal; ſtigma ſimple. *Peric.* Legume of ſeveral, roundiſh, compreſſed, ſingle-ſeeded joints, hiſpid with barbed prickles, not burſting. *Seeds* ſolitary, kidney-ſhaped.

Eſſ. Ch. Calyx bell-ſhaped, two-lipped; the upper lip abrupt. Standard revolute. Keel angular. Five alternate anthers oblong; five globoſe. Legume of ſeveral ſingle-ſeeded, cloſed, hiſpid joints.

Obſ. The habit of this genus is ſo peculiar, and ſo unlike HEDYSARUM, much more reſembling STYLOSANTHES, (ſee thoſe articles,) that we are very glad of any characters that may ſerve to keep it diſtinct, and we hope the above may ſuffice. The plants are herbaceous, with one or two pair of conjugate *leaves*, without an odd one. *Flowers* ſmall, in axillary *ſpikes*, with large leafy *bracteas*. The ſpecies have not yet been well diſcriminated. We ſhall endeavour to explain them, with the help of original ſpecimens.

1. Z. *anguſtifolia*. Narrow-leaved Zornia. (Hedyſarum diphyllum α; Linn. Sp. Pl. 1053. Willd. Sp. Pl. v. 3. 1178. Lamarck Dict. v. 6. 404, excluding the variety H. n. 291; Linn. Zeyl. 134, excluding Sloane's ſynonym, and the variety β. H. bifolium, ſiliquis articulatis echinatis; Burm. Zeyl. 114. Onobrychis maderaſpatana diphyllos minor, ſiliculis hirſutis; Pluk. Phyt. t. 246. f. 6. "Nelam-mari; Rheede Hort. Malab. v. 9. 161. t. 82." Raii Hiſt. v. 3. 404.)—Leaflets two, lanceolate, uniform. Bracteas ovate, ribbed, fringed, imperfectly reticulated, ſhorter than the legume, marked with glandular dots. Prickles of the legume rough.—Native of the Eaſt Indies, in a ſandy ſoil. *Root* annual, tapering, warty. *Stems* ſeveral, diffuſe, from four or five inches to a foot long, round, ſlender, zigzag, ſmooth, leafy, with ſhort alternate branches. *Leaves* ſimply conjugate, alternate; *leaflets* from half an inch to an inch long, elliptic-lanceolate, entire, bluntiſh, tipped with a ſmall point, unequal at the baſe, ſmooth on both ſides, not quite ſeſſile at the extremity of the common *footſtalk*, which is about the length of the leaflets, cylindrical, ſmooth, with a longitudinal furrow above. *Stipulas* half-arrowſhaped, ribbed, entire, pointed at each end. *Flowers* yellow, in axillary, ſolitary, ſtalked, lax, bracteated *ſpikes*, longer than the leaves, each ſpike of from three to eight alternate flowers. *Bracteas* one pair to every flower, twice as long, two-ranked, converging, flat, ovate, acute, entire, ſtrongly fringed, three or five-ribbed, beſprinkled with reſinous dots, elongated at the baſe into a ſhort oblique ſpur, permanent, their ſurface ſmooth. *Legume* near an inch in length, longer than the bracteas, of about four ſemi-orbicular joints, finely reticulated, and beſet with ſpreading, brown, barbed prickles, which are rough with minute reverſed hairs, but we cannot perceive that the ſurface of the legume itſelf is downy, at leaſt not invariably. The reſinous dots ſcattered over the *bracteas* ſeem peculiar to this ſpecies. Thoſe parts are full as much fringed in this as in the *H. conjugatum* of Willdenow, though his definitions indicate otherwiſe.

2. Z. *reticulata*. Reticulated Zornia. (Hedyſarum diphyllum β; Willd. Sp. Pl. v. 3. 1178. δ; Lamarck Dict. v. 6. 404. H. diphyllum; Swartz Obſ. 285. H. n. 10; Browne Jam. 301, excluding the ſynonyms. H. minus diphyllum, flore luteo; Sloane Jam. v. 1. 185.)—Leaflets two, lanceolate; the lower ones elliptical. Bracteas ovate, as long as the legume, ſtrongly reticulated and fringed, without glandular dots. Legume and its prickles downy.—Native of the dry ſandy parts of the ſavannahs of Jamaica. Our ſpecimens are from Browne himſelf. The *root*, though ſaid to be annual, is ſomewhat woody. *Herb* larger than the laſt, and moſt unqueſtionably ſpecifically diſtinct. The *ſtems* are ſtraight, a foot long, ſcarcely branched. *Leaflets* an

inch or an inch and a quarter in length; thoſe of the lower leaves half an inch broad. *Spikes* many-flowered, thrice as long as the leaves. *Flowers* yellow; the ſtandard ſometimes purpliſh. The *bracteas* afford a clear ſpecific diſtinction, in their ſtrongly-marked, elevated, veiny reticulations, and the total want of reſinous or glandular dots, though their whole ſurface is minutely granulated, as it were, like thoſe of the foregoing ſpecies. The *legumes* have three or four joints, and their ſurface, as well as their prickles, is downy. They are almoſt entirely covered by the *bracteas*.

3. Z. *conjugata*. Ovate Zornia. (Hedyſarum conjugatum; Willd. Sp. Pl. v. 3. 1178. H. diphyllum β; Linn. Sp. Pl. 1053. H. n. 291, β; Linn. Zeyl. 135. H. bifolium, foliolis ovatis, filiculis aſperis, geminis, inarticulatis; Burm. Zeyl. 114. t. 50. f. 1. Onobrychis maderaſpatana diphyllos, filiculis aſperis; Pluk. Phyt. t. 102. f. 1.) —Leaflets two, ovate, uniform. Bracteas ovate, ribbed, fringed, imperfectly reticulated, ſhorter than the legume, without glandular dots. Legume fringed; its diſk and prickles ſmooth.—Native of Ceylon and Tranquebar. This ſpecies approaches the laſt in ſize, but differs in many eſſential points. The *leaflets* are ovate, not near ſo long as their common *footſtalk*. *Bracteas* more pointed and elongated at the baſe, ribbed, but not ſtrongly reticulated; their ſubſtance quite deſtitute of pellucid dots, though ſome of them occaſionally bear little black opaque prominences, which ſeem the effect of injury, or are perhaps a minute paraſitical fungus. *Legumes* conſiderably longer than the bracteas, though each conſiſts of ſcarcely more than two orbicular joints, full twice the ſize of either of the preceding ſpecies, from which they differ in the ſmoothneſs of their diſk and prickles, though fringed at the edge. The *flowers* are yellow.

4. Z. *latifolia*. Broad-leaved Zornia. (Hedyſarum diphyllum; Aubl. Guian. 774, excluding all the ſynonyms.) —Leaflets two, roundiſh-ovate; the lower ones orbicular. Bracteas linear-lanceolate, ribbed, ſomewhat hairy, longer than the downy legumes.—Gathered in Guiana by Aublet, from whom we have ſpecimens, which abundantly ſhew his plant to be different from any of the foregoing, and juſtify him in ſaying that, with reſpect to it at leaſt, Plukenet's figures are bad. This has a woody, but perhaps annual, *root*, and ſeveral proſtrate *ſtems*, from ſix inches to a foot long, ſtraight, round, downy. *Footſtalks* alſo downy, rather longer than the *leaflets*, which in the lower *leaves* are about half an inch in length, nearly orbicular, obtuſe; in the upper gradually more elongated, ovate, or ovato-lanceolate, acute; all of them ſomewhat hairy or ſilky, eſpecially beneath, where alſo they are a little glaucous. The narrow *bracteas*, very differently ſhaped from any of the three preceding ſpecies, are the diſtinguiſhing characteriſtic of this: they have three very ſtrong crowded ribs, originating from their point of inſertion, below which is a blunt elongation downwards, moſt like that of *Z. reticulata;* they are ſomewhat hairy, as well as ſlightly fringed. *Corolla* yellow. *Legume* of only two joints, unleſs any have been broken off, which is not apparent; the prickles downy, and the diſk quite woolly. Willdenow ſpeaks of a ſuppoſed variety of *Hedyſarum diphyllum* from Portoricco, which is larger than the common kind, and whoſe *leaves* are "*ſtrigoſe beneath;*" by which expreſſion is probably meant briſtly, or hairy. This, if not our *Zornia latifolia*, muſt be a hitherto nondeſcript ſpecies, of which we have not materials to give a definition.

5. Z. *heterophylla*. Various-leaved Zornia. (Hedyſarum tetraphyllum; Thunb. Act. Nov. Upſal. v. 6. 44. t. 3. Prodr. 132. Willd. Sp. Pl. v. 3. 1203. Lamarck Dict. v. 6. 405, variety δ.)—Leaflets three or four, lanceolate. Stipulas half-arrowſhaped. Baſe of the bracteas elongated and acute.—Gathered by Thunberg in the interior part of the country, above the Cape of Good Hope, near Galgeboſch, flowering in November and December. The *ſtem* is herbaceous, decumbent, thread-ſhaped, ſmooth, a foot or more in length. *Footſtalks* rather longer than the *leaflets*, which are three or four together, elliptic-lanceolate, acute, entire, hardly an inch long. *Stipulas* much elongated at the baſe, acute at each end. *Spikes* axillary, many times longer than the leaves, (at leaſt the lower ſpikes,) and conſiſting of ten or twelve *flowers*, concealed by the ovate three-ribbed *bracteas*, each of which is elongated at the baſe into an ovate acute appendage, nearly half its own length. *Legume* longer than the bracteas, of four joints, ſaid by Thunberg to be rough, but in what manner, or degree, is not mentioned: his figure repreſents them ſmooth and globoſe, which is evidently an inaccuracy.

6. Z. *tetraphylla*. Four-leaved Zornia. Michaux Boreal.-Amer. v. 2. 76. t. 41. Purſh n. 1. (Z. bracteata; Gmel. n. 1. Anonymos bracteata; Walt. Carol. 181. Hedyſarum tetraphyllum; Lamarck Dict. v. 6. 405, α.)—Leaflets four, lanceolate. Stipulas ovate. Baſe of the bracteas ſomewhat elongated, obtuſe.—Native of ſandy fields in Lower Carolina. Perennial, flowering in July and Auguſt. About a foot high, much branched. *Flowers* yellow. *Purſh.* We have here ventured to diſtinguiſh this from the laſt-deſcribed ſpecies, by the characters afforded in the plates cited, without our having ever ſeen a ſpecimen of either. We are fully aware of the hazard of ſuch a proceeding; but as it is highly probable that a Cape plant will hardly prove, on compariſon, the ſame ſpecies as a Carolina one; and the ſpecies of this genus very nearly reſemble each other, and have been much confounded, we propoſe the above characters. If the figure of Michaux be exact, as to the *ſtipulas* and *bracteas*, there can be no doubt on the ſubject, and it was drawn by no leſs an artiſt than Redontè. The *ſtipulas* are there repreſented perfectly ovate, without any ſpur, or elongation, at the baſe, and not half the uſual ſize in this genus. Thoſe of Thunberg's plate are like the reſt of the ſpecies. This is the moſt important difference, though the ſhort and blunt ſpur of the *bracteas* is very ſtriking alſo. The *flowers* ſeem larger in theſe two laſt, than in any of the foregoing.

On reviewing the whole genus, we cannot but repeat that the abruptly-compounded *leaves* afford a moſt important mark of difference, compared with *Hedyſarum*, nor are the yellow *flowers*, in this caſe, entirely unworthy of conſideration. There is moreover ſo cloſe a reſemblance between all the ſpecies of *Zornia*, as to induce a perſuaſion of their conſtituting a very natural genus. The ſame may be ſaid of STYLOSANTHES, to which we have already referred the reader as being next akin to *Zornia*.

Which of the above ſix ſpecies, or rather which of the firſt four, is entitled to a place in the *Hortus Kewenſis*, we cannot preſume to determine. In v. 4. 340. of that work, Dr. Houſtoun is recorded as having ſent to Miller, before the year 1733, ſomething which has always paſſed for *Hedyſarum diphyllum*. This muſt have come from South America, or the Weſt Indies, and was therefore not *Nelam-mari* of Rheede, our *Zornia anguſtifolia;* nor the *conjugata*, a plant of Ceylon. It muſt have been either the Weſt Indian *reticulata*, or more probably perhaps the South American *latifolia*.

ZOROANDA, HAZOUR, in *Ancient Geography*, a place of Aſia, on a part of mount Taurus, called Nicephates, where the Tigris opened a ſubterranean paſſage, N.W. of Amida.

ZOROASTER, ZERDUSHT, or ZARDUSHT, in *Biography*, an eminent Eaſtern philoſopher, concerning whom, as well as the age in which he lived, learned writers have entertained very different opinions. Some have aſcribed this title, the derivation of which is uncertain, to many eminent perſons; whilſt others have maintained that there was but one Zoroaſter, and that he was a Perſian. Others have ſaid that there were ſix celebrated founders of philoſophy of this name. Ham, the ſon of Noah, Moſes, Oſiris, Mithras, and others, both gods and men, have by different writers been aſſerted to have been the ſame with Zoroaſter. Many different opinions have been alſo advanced concerning the time in which he flouriſhed. Ariſtotle and Pliny fix his date at ſo remote a period as 6000 years before the death of Plato: Hermippus ſays, that he lived 5000 years before the Trojan war; but theſe are idle tales, which ſhould, without doubt, be claſſed with the report of the Chaldæans, concerning the antiquity of their aſtronomical obſervations. According to Laertius, he flouriſhed 600 years before the Trojan war; according to Suidas 500. We ſhall in the ſequel of this article detail the opinions of ſome of our principal modern writers on this ſubject. According to Brucker, the moſt probable hypotheſis is, that there was a Zoroaſter, a Perſo-Median, who flouriſhed about the time of Darius Hyſtaſpes, and that beſides him there was another Zoroaſter, who lived in a much more remote period among the Babylonians, and taught them aſtronomy. The Greeks and Arabians are agreed concerning the exiſtence of the Perſian Zoroaſter; and the ancients unanimouſly aſcribe to a philoſopher, whom they call Zoroaſter, the origin of the Chaldæan aſtronomy, which is certainly of much earlier date than the time of Hyſtaſpes; ſo that it ſeems neceſſary to ſuppoſe a Chaldæan Zoroaſter diſtinct from the Perſian. Concerning this Zoroaſter, however, nothing more is known, than that he flouriſhed towards the beginning of the Babyloniſh empire, and was the father of the Chaldæan aſtrology and magic. (See CHALDÆAN *Philoſophy* and MAGI.) All the writings which have been aſcribed to the Chaldæan Zoroaſter are unqueſtionably ſpurious. The Perſian Zoroaſter was probably of Perſian extraction, and born in Media. Although much of what has been related concerning this Zoroaſter or Zerduſht, and the inſtruction which he received from the Jews, is fabulous; nevertheleſs it is not improbable that he might have learned ſome things from the Iſraelites who reſided in Babylon, that might enable him to correct the doctrine of the Perſian magi; but it is not eaſy to ſpecify particulars. Several miracles are aſcribed to Zoroaſter, but they are of ſuch a kind as an impoſtor would not find it very difficult to perform. (See MAGI.) To Zerduſht, or the Perſian Zoroaſter, many writings are aſcribed; particularly the Zend. (See ZENDAVESTA.) Fragments of a work, entitled "The Oracles of Zoroaſter," are ſtill extant. Several editions of them under the form of verſes have been publiſhed, and pains have been taken to explain them. Stanley has ſubjoined to his "Lives of the Philoſophers" a correct tranſlation of them. The philoſophers of the Alexandrian ſchool highly venerate them as genuine remains of Chaldæan wiſdom: but they have ſo many evidences in their ideas and language of their origin in that ſchool, as to render it probable that they were written by ſome Platoniſt, about the beginning of the ſecond century; a period in which ſpurious writings were produced in order to ſupport the ſinking credit of Gentile philoſophy.

The learned Dr. Hyde, and after him Dr. Prideaux and ſeveral others, are of opinion, that Zoroaſter was the ſame with the Zerduſht of the Perſians, who was a great patriarch of the Magians, and that he lived between the beginning of the reign of Cyrus, and the latter end of that of Darius Hyſtaſpes.

Dr. Warburton (Legation, vol. ii. part i. p. 8.) cenſures Hyde and Prideaux for making an early Bactrian law-giver to be a late Perſian falſe prophet, and ſays this whole ſtory of him is mere fable, contradicting all learned antiquity, and ſupported only by the romantic relations of later Perſian writers under the caliphs.

Dr. Baumgarten likewiſe (Anc. Un. Hiſt. Suppl. vol. ii. p. 365, &c.) repreſents it as doubtful, whether the Perſian Zoroaſter ever exiſted, calls in queſtion the credibility of the oriental writers who give his hiſtory, and makes the whole to be a forgery in later times by the fire-worſhippers of Perſia.

The learned Mr. Bryant (Anal. Anc. Mythol. vol. ii. p. 107.) obſerves, that there are more perſons than one ſpoken of under the character of Zoroaſter; though there was one principal to whom it more truly related. Of men, ſtyled Zoroaſter, he ſays, the firſt was a deified perſonage, reverenced by ſome of his poſterity, whoſe worſhip was called Magia, and the profeſſors of it Magi. This worſhip was tranſmitted from the ancient Babylonians and Chaldæans to the Perſians, who, ſucceeding to the ſovereignty of Aſia, renewed under their princes, and particularly under Darius, the ſon of Hyſtaſpes, thoſe rites which had been in a great degree effaced and forgotten. The Perſians, ſays this learned writer, originally derived their name from the deity Perez, or Parez, the ſun; whom they alſo worſhipped under the title of Zor-Aſter. On occaſion of the diſtreſs to which they were reduced upon the death of their laſt king Yeſdegerd, they retired into Gedroſia and India, where people of the ſame family had for ages reſided, and carried with them ſome ſhattered memorials of their religion in writing, whence the Sadder, Shaſter, Vedam, and Zendaveſta, were compiled; and upon theſe the religion of the Brahmins and Perſees is founded. The perſon who is ſuppoſed to have firſt formed a code of inſtitutes for this people is ſaid to have been one of the Magi, named Zerduſht; the ſame, as Hyde and others ſuppoſe, both in character and name, with Zoroaſter: but Mr. Bryant diſcovers no reſemblance between them. There were, indeed, many perſons of this name in different parts of the world, who were magi or prieſts, and denominated from the rites of Zoroaſter, which they followed. We read of an Aſſyrian, Medo-Perſian, Proconneſian, Bactrian, Pamphylian, Chineſe, &c. Zoroaſter, ſuppoſed by Dr. Hyde to have been one and the ſame. But Mr. Bryant thinks that their reſpective hiſtories furniſh evidence ſufficient of their being different perſons; and beſides, there ſeems to have been one perſon more ancient and celebrated than the reſt. As for the Zoroaſter or Zerduſht of Hyde, he lived in the reign of Darius, the father of Xerxes, about the time of the battle of Marathon, and conſequently not a century before the birth of Eudoxus, Xenophon, and Plato. This Zerduſht, who was the renewer of the Sabian rites, could not be the perſon ſo much celebrated by the ancients, and referred to the firſt ages. Xanthus Lydius makes him above 600 years prior to the reign of Darius; Suidas places him 500 years before the war of Troy; Hermodorus Platonicus, Hermippus, and Plutarch, refer him to 5000 years before that era; Eudoxus ſuppoſed him to have flouriſhed 6000 years before the death of Plato; and Pliny places him many thouſand years before Moſes. Upon the whole it appears, that no memorial upon record is placed ſo high as the ancient writers have carried this perſonage; and though their accounts are for the moſt part exaggerated, yet they fully aſcertain the antiquity of this perſon.

The title Zoroaſter, Mr. Bryant conceives, originally belonged to the ſun, and was metaphorically beſtowed on ſacred and enlightened perſonages. Some have thought, that the firſt among men to whom this title was applied was Ham; others have taken him for Chus, for Mizraim, and for Nimrod, and Huetius for Moſes. But Mr. Bryant, after examining the primitive characters given of him by different writers, ſuppoſes, that they concur only in Noah, who was the firſt deified mortal, and the prototype in the Magian worſhip. This writer ſuppoſes, that, as the object of the Perſic and Chaldaic worſhip was the ſun, and moſt of their titles were derived thence, Zoroaſter denoted Sol Aſterius; Zor being the ſun, and Aſter ſignifying ſtar.

The abbé Foucher, in a long ſeries of memoirs, inſerted in the 25th, 26th, 27th, 28th, 30th, and 31ſt vols. of the Hiſtoire de l'Academie Royale des Inſcriptions et Belles Lettres, &c. Paris, has given an ample account of the religion of the Perſians. This learned author maintains, on the authority of Pliny, that the moſt celebrated Zoroaſter was an ancient ſage, who lived under Cyaxares, king of the Medes, reſtored the worſhip of fire, was revered by the Perſians as a celeſtial prophet, and whoſe extacies, prodigies, and revelations, made a great noiſe in the world. See Zendavesta.

ZOROPASSUS, in *Ancient Geography*, a town of Aſia, in Leſſer Armenia, dependent on the prefecture of Murianne. Ptol.

ZORVI, in *Geography*, a town of Aſiatic Turkey, in the province of Diarbekir; 22 miles E. of Ana.

ZOSAWA, a river of Moravia, which runs into the Friſawa, 5 miles W. of Hohenſtadt.

ZOSIMA, in *Botany*, an umbelliferous genus, thus called by profeſſor Hoffmann, in compliment to three brothers, Anaſtatius, Nicholas, and Zoa Zoſima, diſtinguiſhed for their editions of numerous works of the Greek claſſics. This botanical commemoration ſeems chiefly owing to the great propenſity, ("*magna propenſio*,") of the latter of theſe brothers, for natural hiſtory. We preſume not to diſpute the claim, becauſe the author of this name is, doubtleſs, better able to judge of its propriety than we can poſſibly be.—Hoffm. Umbell. v. 1. 145. t. 1. B. f. 9.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbelliferæ*.

Gen. Ch. *General* and *partial Umbel* of many unequal rays. *General* and *partial involucrum* of many, linear-lanceolate, acute, unequal, villous, permanent leaves. *Perianth* of five unequal, very ſhort, permanent teeth. *Cor. Univerſal* nearly regular and uniform; *flowers* partly perfect and fertile; the central and lateral ones, in each umbel, male: *partial* of five, nearly equal, ſpreading, inverſely heart-ſhaped, deflexed petals; rather concave, on each ſide, at the keel; tapering at the baſe; obliquely inflexed at the point, which is linear-lanceolate, acute, involute, channelled. *Stam.* Filaments five, ſpreading or deflexed, ſtraight, longer than the involute corolla, dilated at the baſe; anthers verſatile, roundiſh, two-lobed. *Piſt.* in the perfect florets, Germen inferior, ovate, compreſſed, villous; ſtyles two, thread-ſhaped, channelled; their tumid baſe wavy and crenate at the margin; at length reflexed and permanent; ſtigmas ſimple, obtuſe. *Peric.* Fruit roundiſh-obovate, compreſſed, finely downy, bordered; the border externally tumid, and ſomewhat corrugated, internally ſtriated; emarginate at the ſummit, crowned with the ſtyles on their ſhort, nearly ſeſſile, criſped baſe; thickened at the bottom; the diſk elevated and ſtriated. *Seeds* two, of a ſimilar ſhape, convex in the middle, with three elevated, narrow, central ribs, and two marginal ones; their interſtices, in the upper half, occupied by four coloured ſtripes.

Eſſ. Ch. General and partial involucrum of many permanent leaves. Corolla uniform. Some flowers male. Calyx tumid, five-toothed. Petals nearly equal, obovate, inflexed. Fruit roundiſh-obovate, compreſſed, villous, with a *corrugated* border; the diſk ribbed.

1. Z. *orientalis*. Oriental Zoſima. Hoffm. n. 1. (Heracleum abſinthifolium; Venten. Choix de Pl. 7. t. 7. Marſch. a Bieberſt. Taur.-Caucaſ. v. 1. 224. Sphondylium orientale humilius, foliis abſinthii; Tourn. Cor. 22.)—Native of Perſia, Georgia, and other countries about Caucaſus, flowering in the early part of ſummer. The *root* is biennial, tap-ſhaped, milky. The whole herb when bruiſed ſmells like Smallage, *Apium graveolens*. *Stem* erect, near two feet high, cylindrical, furrowed, ſomewhat branched, and ſlightly leafy, about as thick as a ſwan's quill, rough to the touch with ſhort whitiſh hairs. *Leaves* oppoſite, ſtalked, thrice pinnate, hoary with ſhort pubeſcence; *leaflets* ſmall, wedge-ſhaped, lobed; entire at the edges. *Umbels* two or three inches in diameter, on long ſtalks, terminal: *partial* ones of from twelve to fifteen *flowers*, which, according to Ventenat, are milk-white, but Hoffmann deſcribes the *petals* of a yellowiſh-green. *Germen* downy. If the *flowers* are really white, we ſhould ſuſpect this plant to be nearly related to *Heracleum tomentoſum*, Sm. Prodr. Fl. Græc. Sibth. v. 1. 192, which will be exhibited in t. 281. of the Fl. Græca; but the ſhape of the *fruit* of the latter is very unlike Hoffmann's figure, nor does it better agree with the repreſentation in Ventenat's work. This laſt indeed is itſelf ſo unlike Hoffmann's t. 1. B. f. 9, (he himſelf erroneouſly cites f. 7,) that we cannot but ſuſpect ſome miſtake. Nor are we, after all, perſuaded that the plant under conſideration ought to form a ſeparate genus from *Heracleum*. In ſo natural a family, the ſkill of a botaniſt is ſhewn in combining, rather than dividing, which laſt is the moſt eaſy thing in the world, and the moſt pernicious to ſcience. We do not, however, pretend to decide in the preſent caſe; becauſe the generic diſtinctions of Umbellate plants are ſtill *ſub judice*.

ZOSIMUS, in *Biography*, a Greek hiſtorian, who held various civil offices under the younger Theodoſius, about the commencement of the fifth century, and left a hiſtory of Roman affairs in ſix books; the firſt of which furniſhes a ſlight view of the emperors, from Auguſtus to Diocletian; and the others detail the public events that occurred to the ſecond ſiege of Rome by Alaric, and the pontificate and depoſition of Attalus. Something ſeems to be wanting towards the end. The ſtyle of this hiſtorian is conciſe, perſpicuous, and pure; but his prejudices againſt the Chriſtian emperors have miſled him; and particularly in his account of Conſtantine the Great. Leunclavius has attempted to juſtify him; and it has been allowed that he has divulged ſome truths which other hiſtorians have ſuppreſſed. Gibbon ſays, "credulous and partial as he is, we muſt take our leave of this hiſtorian with regret." The firſt edition of his work was that of R. Stephens, in 1581; others have been publiſhed by T. Smith, Gr. and Lat. Oxon. 1679, 8vo.; and the Variorum by Cellarius, 8vo. 1679, 1712.

Zosimus, *Pope*, a native of Greece, was elevated to the pontifical throne in March 417, as ſucceſſor to Innocent I.; at the time when the Pelagian controverſy prevailed. Cæleſtius, the chief diſciple of Pelagius, preſented his confeſſion of faith to this pope, who approved it and admitted him to his communion. That of Pelagius was likewiſe approved. The African biſhops, however, who were hoſtile to the Pelagian doctrine, intereſted the emperor Honorius in their favour; and obtained from the pope an anathema of the doctrine of Pelagius and Cæleſtius, with a ſentence of excommunication if they refuſed to abjure their tenets. A council was aſſembled, in which other biſhops, who concurred in the Pelagian creed, were degraded from their epiſcopal dignity. The fluctuations and inconſiſtencies of Zoſimus's conduct depreciated the character of the pope, and furniſhed reaſon for queſtioning his infallibility. Other inſtances occurred, in which he was hardly able to maintain his authority. This pope died in December 418, leaving the character of an able man of buſineſs, but haſty, tenacious, and imperious. His thirteen epiſtles, that are extant, are written with ſpirit and elegance. He was canonized, as Bower ſays, by a miſtake of cardinal Baronius, who ſuppoſed him to be a St. Zoſimus in the martyrology of Bede. Dupin. Bower.

ZOSITERPUM, in *Ancient Geography*, a town of Thrace, in the province of Rhodope. Procopius.

ZOSSEN, in *Geography*, a town of Brandenburg, in the Middle Mark; 13 miles S.E. of Potzdam. N. lat. 52° 10′. E. long. 13° 17′.

ZOSTER, in *Ancient Geography*, a borough of Attica, upon the ſea-coaſt, with a promontory of the ſame name, extended into the Saronic gulf; but it is not known to what tribe it belonged. Minerva, Apollo, Diana, and Latona, were honoured here. As Zoſter bore ſome reſemblance to zone, or cincture, the inhabitants pretended that the borough bore this name, becauſe Latona, finding herſelf in this place, and feeling that her time was approaching, unlooſened her cincture. Pauſ. in Attic. c. 31.

ZOSTER, a word uſed by ſome to expreſs that kind of herpes, called by others *zona* and *zingilla*, and by us uſually known under the name of the ſhingles.

ZOSTERA, in *Botany*, ſo named by Linnæus from *ζωϛηρ, a girdle*, alluding to the ribband-like appearance of its long linear foliage.—Linn. Gen. 472. Schreb. 615. Willd. Sp. Pl. v. 4. 179. Vahl Enum. v. 1. 14. Mart. Mill. Dict. v. 4. Sm. Fl. Brit. 7. Prodr. Fl. Græc. Sibth. v. 1. 2. Purſh 2. Brown Prodr. Nov. Holl. v. 1. 338. Juſſ. 24. Poiret in Lamarck Dict. v. 8. 872. Lamarck Illuſtr. t. 737. Gærtn. t. 19. (Alga; Raii Syn. ed. 3. 52. Ruppia; Moehring in Phil. Tranſ. v. 41. 217.)—Claſs and order, *Monandria Monogynia*, Fl. Brit. and Vahl. (Gynandria Polyandria, *Linn.* Monoecia Monandria, *Schreb.* and *Willd.*) Nat. Ord. *Piperitæ*, Linn. *Aroideæ*, Juſſ. *Aroideis affine*, Brown.

Gen. Ch. *Cal.* Spadix linear, flat, ſheathed by the baſe of a leaf, bearing an indeterminate number of flowers on one ſide. Perianth none. *Cor.* none. *Stam.* Filament none; anther ſeſſile, erect, cloſely preſſed to the ſpadix, ſimple, cylindrical, a little wavy, tapering at each end. *Piſt.* Germen ſolitary, parallel to the anther, and of nearly a ſimilar ſhape; ſtyle one, obliquely curved, ſhorter than the germens; ſtigmas two, linear, acute, ſpreading. *Peric.* Capſule pendulous, elliptical, membranous, of one cell, not burſting. *Seed* ſolitary, oblong, ſtriated.

Eſſ. Ch. Spadix linear, ſheathed by the baſe of a leaf, bearing the flowers on one ſide. Perianth and Corolla none. Anther ſeſſile. Stigmas two, linear. Capſule with one ſeed.

Obſ. The above is the view of the genus in queſtion, firſt given by Gærtner, and confirmed from actual obſervation in the *Engliſh Botany* and *Fl. Brit.* Vahl adopts the ſame idea as ours of the place of this genus in the artificial ſyſtem. The *ſeed* has a large, oval, half divided *cotyledon*, as we would call it; Gærtner terms it a *vitellus*. (See the article YOLK *of the Seed*.) From this genus is to be ſeparated the *Z. oceanica* of Linnæus, which belongs to *Caulinia* of De Candolle and Brown; *Poſſidonia* of Konig in Ann. of Bot. v. 2. 95. t. 6; *Kernera* of Willd. Sp. Pl. v. 4. 947; but which is different from CAULINIA of Willdenow; ſee that article.

1. Z. *marina.* Common Graſs-wrack. Linn. Sp. Pl. 1374. Willd. n. 1. Vahl n. 1. Fl. Brit. n. 1. Engl. Bot. t. 467. Fl. Dan. t. 15. Purſh n. 1. Brown n. 1? (Zoſtera; Linn. It. W. Goth. 166. t. 4.)

β. Fucus marinus, ſeu Alga marina graminea mino; Raii Syn. 52. (Algoides; Mich. Ic. Ined. t. 60. f. 2.)

γ. Fucus, ſive Alga marina graminea anguſtifolia ſeminifera ramoſior; Raii Syn. 52. (Algoides; Mich. Ic. Ined. t. 59?)

δ. Potamogeiton marinum in utriculis epiphylloſpermon minus; Raii Syn. 53.

ε. Alga anguſtifolia vitrariorum; Raii Syn. 53.

Leaves entire, obſcurely three-ribbed. Stem ſlightly compreſſed. Native of the ſea-ſhore, or ſalt muddy ditches and creeks throughout Europe, poſſibly of New Holland and North America alſo, flowering towards autumn. The *root* is perennial, fibrous. *Stems* roundiſh, ſmooth, decumbent at the baſe, and trailing to a great extent, throwing out tufts of fibres here and there; their branches floating and leafy, ſimple, a little compreſſed. *Leaves* alternate, tapering at the baſe into a kind of ſheathing footſtalk, linear, a foot, or much more, in length, flat, ſmooth, bluntiſh, quite entire, ſplitting longitudinally a little above the baſe, on the upper ſide, and putting forth from that fiſſure a linear, obtuſe, flat *receptacle* or *ſpadix*, two inches long, covered in front with a ſeries of naked *flowers*. Each of theſe *flowers* conſiſts of a green *anther*, and a *piſtil* of the ſame hue, parallel to it; but in ſuch an alternate order, that the *anther* of each flower is contrary to that of its neighbour, and ſtands above the *piſtil* of the latter. The whole *herb* is flaccid and tender; yet Linnæus ſays it is uſed in ſome parts of Sweden to make a thatch, which is very durable, and likewiſe to ſtop up chinks in wooden buildings. It ſerves alſo for manure, as well as the various kinds of ſea-weed.

Whether the varieties above indicated may any of them prove diſtinct ſpecies, muſt be left for future inquiry. The β is a ſmall ſlender plant, differing in nothing but its leſſer dimenſions from the common kind. It is well repreſented in one of Micheli's unpubliſhed plates. γ is larger, more compact, and branched; we can ſcarcely doubt its being Micheli's t. 59. Of the others we know no more than can be gathered from Ray's *Synopſis*.

Z. oceanica of Linnæus is quite different from any of theſe ſuppoſed varieties, conſtituting a diſtinct genus, called *Poſſidonia Cavolini*, by Mr. Konig, in Ann. of Bot. v. 2. 95. t. 6; and well deſcribed by don Philip Cavolini of Naples, in a diſſertation on theſe plants. De Candolle has named it *Caulinia*, but it is not Willdenow's. In Micheli's unpubliſhed figures above cited, t. 58, is a good figure of this. We never met with any authority for its being a native of the Britiſh coaſt; but Mr. Horner, in a paper publiſhed by the Geological Society, in their Tranſactions, v. 3, mentions the ſubmarine remains of a foreſt, on the Suſſex coaſt, in the brown vegetable earth, accompanying which are found fragments of a plant, whoſe *leaves* were thought by Mr. Brown to reſemble *Zoſtera marina*, except that, being much broader than uſual, he ſuſpected they might belong to *Z. oceanica* above-mentioned. If theſe leaves were ſufficiently perfect to exhibit the three ribs, that queſtion might perhaps be determined. As to the breadth, or ſize, of the *leaves* in this whole tribe, nothing is more variable. We have *Z. ciliata* of Vahl; to which he attributes *leaves* an inch or more in breadth: whoſe *leaves*, in our different ſpecimens, are but one-third or one-fourth of an inch wide, and from three inches to eight inches long. *Z. marina* differs with us from one-eighth to one-fourth of an inch in width, and if the above ſynonyms be all right, its variations are ſtill greater.

2. Z. *uninervis*. Single-ribbed Graſs-wrack. Forſk. Ægypt.-Arab. 157. Vahl n. 2. Willd. n. 2.—"Leaves entire, ſingle-ribbed. Stem compreſſed; ſwelling at the joints."—Found by Forſkall on the coaſt of the Red ſea at Mocha, growing under water, and reſembling overflowed graſs. The *ſtem* is yellow, with bent joints. *Leaves* a ſpan long, or more, narrower than in *Z. marina*, with an obſcure mid-rib, unattended by lateral ones; and their baſe is ſheathing.

Z. ciliata, Vahl n. 3; and *ſtipulacea*, his n. 4; found by Forſkall at the ſame place as the laſt, with whoſe fructification Vahl was, in both inſtances, unacquainted, are referred by Mr. Konig, in Ann. of Bot. v. 2. 97, not without ſome doubt, to a new dioecious genus, denominated *Thalaſſia* in Dr. Solander's MSS., of whoſe fructification no figure has appeared, and of which the male flowers only have been obſerved. They are indeed ſufficiently remarkable, as the following characters evince. *Sheath* ſingle-flowered, of one leaf, in two oblong obtuſe ſegments. *Perianth* of three ovate-oblong, obtuſe leaves. *Cor.* none. *Filaments* none. *Anthers* nine, converging, linear-lanceolate, ſhorter than the calyx. The want of a ſlit in the *leaves* of theſe two laſt-mentioned plants proves them to be no *Zoſteræ*.

ZOTENBERG, in *Geography*, a mountain of Sileſia, in the principality of Schweidnitz, on which is a celebrated chapel; 20 miles W. of Breſlau.

ZOTHECA, among the *Ancients*, the place where the animals deſigned for ſacrifice were kept.

ZOUF, in *Geography*. See GAUR.

ZOUF, a river of Grand Bucharia, which runs into the Dehaſp, 45 miles S. of Balk.

ZOU-KEOU-KIAOU, a town of China, in Pe-tche-li; 5 miles S.W. of Peking.

ZOULNOUN, a town of Aſiatic Turkey, in the government of Sivas; 10 miles S.S.W. of Amaſreh.

ZOUR EL HAMMAN, or *Iſland of Pigeons*, a ſmall iſland in the Mediterranean, near the coaſt of Algiers. N. lat. 36° 26′. E. long. 12° 38′.

ZOUR, *Shahr e*. See SHAREZUR and SOLYMANIA.

ZOWAMORE, or ZIMBRA, an iſland in the Mediterranean, near the N.E. coaſt of Tunis, called by the ancients Ægimurus; 18 miles N.N.W. of Cape Bon. N. lat. 36° 50′. E. long. 11° 8′.

ZOWHAREEN, a town of Africa, in the kingdom of Tunis; 16 miles E.S.E. of Keft.

ZOW-WAN, or ZAGWAN, a town of Africa, in the kingdom of Tunis. It is a ſmall flouriſhing town, built upon the north-eaſt extremity of a conſpicuous mountain of the ſame name. It is in great repute for the dyeing of ſcarlet caps, and the bleaching of linen; great quantities of both being daily brought thither for that purpoſe from Tunis, Suſa, and other places. The ſtream which is employed at preſent for this uſe was formerly, together with the river Zungler, conveyed to Carthage; and over the fountains of it there was a temple erected, the ruins of which continue likewiſe to this day: upon this ancient gate, which regards the ſouth-eaſt, there is a ram's head, armed, in baſſo relievo, with AUXILIO, in large letters, below it. This may, perhaps, inſtruct us, that Zow-wan, or whatever was its former name, was under the immediate influence and protection of Jupiter Ammon; 36 miles S.W. of Tunis. N. lat. 36° 14′. E. long. 10° 6′.

ZOXO, a town of Aſiatic Turkey, in the government of Diarbekir; 20 miles S.S.E. of Kerkiſieh.

ZOYSIA, in *Botany*, was ſo named by the late profeſſor Willdenow, in honour of the baron Charles de Zoys, a dignified eccleſiaſtic, reſident in Carniola, who has long purſued with ardour the inveſtigation of the botanical treaſures of that country, and who is celebrated by Hoſt, Wulfen, Jacquin, and other eminent writers, for the aſſiſtance which he has at various times afforded them.—"Willd. in Nov. Act. Nat. Cur. Berol. v. 3. 440." Brown Prodr. Nov. Holl. v. 1. 208. ("Matrella; Perſ. Syn. v. 1. 73.")—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. *Cal.* Glume of one valve, ſingle-flowered, ovate-oblong, compreſſed, cartilaginous, ſmooth, rigid, keeled, incurved, gaping at the apex of one edge; convex on one ſide; flattiſh on the other. *Cor.* Glume of two thin, membranous valves, encloſed within the calyx, awnleſs. Nectary none. *Stam.* Filaments three, capillary, ſhort; anthers haſtate. *Piſt.* Germen ſuperior, linear, minute; ſtyles two, the length of the calyx; ſtigmas prominent, feathery. *Peric.* none, except the permanent glumes. *Seed* ſolitary, linear, inveſted with the calyx and corolla.

Eſſ. Ch. Calyx of one valve, ſingle-flowered, compreſſed, cartilaginous. Corolla of two membranous valves, within the calyx. Stigmas feathery. Seed linear, inveſted with the glumes.

1. Z. *pungens*. Sharp-pointed Zoyſia. Willd. as above. Brown n. 1. (Agroſtis Matrella; Linn. Mant. 185. Willd. Sp. Pl. v. 1. 366. "Matrella juncea; Perſ. Syn. v. 1. 73.")—Gathered in ſandy ground, on the coaſt of Malabar, by Koenig; and near Port Jackſon, New South Wales, by Mr. Brown. This is a ſmall perennial graſs, with a creeping *root*, enveloped in ſheathing furrowed ſcales. *Stems* alternate, aſcending, ſlender, thread-ſhaped, ſimple, leafy, three or four inches high. *Leaves* two-ranked, ſpreading, involute, ſharp-pointed, ſmooth, an inch or an inch and a half long, with pale, furrowed, cloſe *ſheaths*, concealing the joints of the ſtem. *Stipula* of ſeveral ſpreading hairs. *Cluſters* terminal, ſolitary, quite ſimple, of ten or twelve nearly ſeſſile, alternate, erect *flowers*, remarkable for their ſmooth ivory-like *glumes*, about two lines in length, out of which, at the tip, project the feathery *ſtigmas*.

Linnæus was inclined to make this a diſtinct genus by the name of *Matrella*; derived from *matrix*, and alluding to an anatomical reſemblance, too obſcure to be very inſtructive, if it were liable to no other objection. Such alluſions were allowable enough while botany remained the abſtruſe ſtudy of philoſophers and phyſicians; but in proportion as it becomes general and popular, they are either uſeleſs or cenſurable. This graſs might be forced into *Agroſtis* as the definition of that genus ſtood in Linnæus, but has certainly no natural habit, nor any preciſe character, in common therewith. Mr. Brown remarks, that the *corolla*, (his *perianthium*,) is inverted, or contrary to the ſingle-valved *calyx*; on which account, added to the nearly ſpiked *infloreſcence*, he ranges *Zoyſia* near *Rottböllia*. We cannot but think it rather more related to *Panicum Dactylon* of Linnæus, Haller's *Digitaria*; though in fact ſo diſtinct in its nature, as not to aſſociate well with any thing.

ZOZONISIUS, in *Natural Hiſtory*, a name of one of the gems of the ancients, but of which our accounts are ſo ſhort, that we can make no conjecture of what it was. Pliny only tells us, that it was found in the river Indus, and uſed by the magi.

ZRATSCHE, in *Geography*, a town of Bohemia, in the circle of Czaſlau; 16 miles S.W. of Czaſlau.

ZRIN, a town of Croatia, near the river Unna; 40 miles E.S.E. of Carlſtadt. N. lat. 45° 16′. E. long. 16° 55′.

ZSCHOPA. See Tschopa.

ZSCHORLAU, a town of Saxony, in the circle of Erzgebirg; 10 miles S.S.E. of Zwickau.

ZSOKEN, a town of Saxony, in the circle of Erzgebirg; 8 miles N.W. of Grunhayn.

ZUAQUI, a town of New Mexico, in the province of Sonora; 8 miles S.S.E. of Pitquin.

ZUATA, a town of New Grenada; 45 miles N.N.E. of Tunja.

ZUBETH, a town of Perſia, in the province of Chuſiſtan; 105 miles N.W. of Suſter.

ZUBIA, a town of Spain, in the province of Grenada; 4 miles S.E. of Grenada.

ZUBTZOV, a town of Ruſſia, in the government of Tver, on the Volga; 68 miles S.W. of Tver. N. lat. 55° 46′. E. long. 34° 50′.

ZUCARELLO, a town of Genoa; 7 miles N.N.W. of Albenga.

ZUCCAGNIA, in *Botany*, ſo named by the late abbé Cavanilles, in honour of Dr. Attilius Zuccagni, ſuperintendent of the garden at Florence.—Cavan. Ic. v. 5. 2. Poiret in Lamarck Dict. v. 8. 875.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coloured; tube turbinate; limb in five deep, oblong, obtuſe, permanent ſegments, the lower one a little the longeſt. *Cor.* Petals five, obovate, inſerted into the calyx; the uppermoſt broadeſt, vaulted. *Stam.* Filaments ten, awl-ſhaped, aſcending, hairy in their lower part, about as long as the corolla; anthers roundiſh, of two lobes, divided by a furrow. *Piſt.* Germen ſuperior, roundiſh, compreſſed; ſtyle capillary, of the length and poſition of the ſtamens, ſmooth; ſtigma funnel-ſhaped. *Peric.* Legume ovate, oblique, compreſſed, hairy, of one cell and two valves. *Seed* ſolitary, ovate, compreſſed, attached by its ſtalk to the ſummit of the legume. *Cavanilles.*

Eſſ. Ch. Calyx bell-ſhaped; its limb in five permanent ſegments. Petals five, obovate; the upper one broadeſt, vaulted. Legume of one cell and two valves. Seed ſolitary.

1. Z. *punctata.* Dotted Zuccagnia. Cavan. as above, t. 403. Poiret n. 1.—Native of hills in Chili, between *Portillo* and the ſprings commonly called *Manantiales*, bearing flowers, as well as ſeed, in January. It was communicated to the author by Louis Née, to whoſe diſcoveries in South America and New Holland his *Icones* are ſo much indebted. The *ſtem* is ſhrubby, four or five feet high, with numerous, twiſted, glutinous *branches*. *Leaves* alternate, abruptly pinnate, of numerous, alternate, ſeſſile, elliptical, entire, glutinous *leaflets*, each one-third of an inch long, marked on both ſides with blackiſh reſinous dots. *Cluſters* terminal, ſolitary, ſimple, of ſeveral rather ſmall *flowers*. *Partial ſtalks* one-third of an inch long, each with a little acute *bractea* at its baſe. *Calyx* ſmooth, reddiſh-brown, rather ſhorter than the corolla. *Petals* a line and a half long, ſaffron-coloured, with darker veins. *Anthers* deep orange. *Legume* about three lines in length, clothed with long ruſty hairs. *Seed* of a ſhining brown. This pretty ſhrub does not appear to have been raiſed in the gardens of Europe.

ZUCCARO, or Zucchero, Tadeo, in *Biography*, was a painter of conſiderable renown, born at S. Agnolo in Vado, in the duchy of Urbino, in 1529. His father Ottaviano Zuccaro was alſo a painter, but of moderate talents; and Tadeo was principally indebted to Pompeo de Fano for initiation in the art. Having, as he imagined, exhauſted the ſtore of information to be derived from his preceptor, animated by love of his art and a deſire to free his father from further charge on his account, he, at the age of 14, went to Rome, unknowing and unknown. His relation Franceſco d'Agnolo was then engaged painting, with Pierino del Vaga, the groteſques of the Vatican, and he had ſome hope of aſſiſtance from him; but his application was vain, and he was obliged to earn his daily bread by grinding colours in different ſhops, wherever he could find employment. He divided his time between this labour and copying from the works of Raphael, in the Palazzo Ghigi particularly, and was often compelled to ſleep under the loggie of the palace, being unable to procure better accommodation. Weary at length of ſo much miſery, he returned to his father, but ſoon left him to reviſit the great emporium of art. Fortune now began to ſmile upon him; he became known to an artiſt named Giacomone, and having improved much with him, and acquired ſome credit, his relation Franceſco d'Agnolo noticed him, and for a time they worked together. Afterwards he was engaged by Daniello da Parma, a ſcholar of Corregio and Parmegiano, to aſſiſt him in painting a chapel of Santa Maria, in a church at Vitto, in Abruzzo. The work was in freſco, and Zuccaro, according to Vaſari, painted a large portion of the ſubjects required. When this was done, he returned to Rome, and was employed by G. Mattie to paint a façade of the Palazzo Mattei in freſco, where he executed, in chiaro oſcuro, nine hiſtorical pieces relative to the hiſtory of Furio Camillo. He was then only 18, and the execution of them was a matter of ſurpriſe to all who ſaw them. By this his firſt public work he gained ſo much reputation, that he ſoon acquired conſiderable employment. The duke d'Urbino, hearing of his fame, ſent for him to Urbino, and gave him a commiſſion to paint in freſco the chapel of the Duomo there, which was delayed by various cauſes, and he returned to Rome in the time of Julius III., who employed him, under Vaſari, in the Vatican, to paint in a frieze the labours of Hercules, which were afterwards deſtroyed by pope Paul IV. to make room for other works. Hitherto he had been principally employed upon ornamental ſubjects, but now a ſerious one was entruſted to his pencil; and he painted in freſco, for the church of Santa Maria della Conſolazione, ſeveral ſubjects of the paſſion of the Saviour, which are regarded as among his beſt productions. He was afterwards called upon to exert his ſkill, by the cardinal Farneſe, in the Palazzo Caprarola. This is his greateſt work, and is that whereon his reputation moſt depends. He was liberally paid by the cardinal. The whole ornamental part of the building was entruſted to his care, and he laboured with great earneſtneſs to make it honourable to himſelf and pleaſing to his employer. It has been engraved by Prenner in a ſet of 45 plates. Tadeo Zuccaro died at Rome in 1566.

Zuccaro, Federigo, was a younger brother of Tadeo juſt mentioned, and born in 1543. He received his inſtruction from his brother, with whom he was placed at Rome, when very young, and who paid him the moſt affectionate attention. He ſoon rendered himſelf uſeful to Tadeo in his great works, and engaged alſo in ſome labours for himſelf. Pope Pius IV. employed him, in conjunction with F. Barrocio, in the Palazzo Belvidere, where he gained great reputation. The brothers continued to work together without rivalry, and co-operated at the Vatican and the

Villa Farneſe. He was invited to Florence by the grand duke to finiſh the cupola, left imperfect by Vaſari, and ſucceeded in pleaſing his employer.

Gregory XIII. engaged him to paint the vault of the Capella Paolina; but having ſome diſpute with the officers of his holineſs, he avenged himſelf by a ſatirical picture which he exhibited. By this the pope was offended, and Zuccaro was obliged to fly, and leave his great work unfiniſhed. He took refuge in France, where he was ſometime employed by the cardinal of Lorrain; and from thence he went to Flanders, where he painted cartoons for tapeſtries.

In 1574 he viſited England, and was received very favourably. Here he painted portraits. The queen ſat to him, and many of the nobility. How long he remained here is not exactly known. When he returned to Italy, he went to reſide at Venice, where the patriarch Grimani employed him in his chapel to finiſh the freſco ornaments begun by Battiſta Franco, and he added ſome deſigns of his own to them. He alſo painted there a large picture of the Adoration of the Magi. In conjunction with the great maſters then living in Venice, he was employed in the hall of the grand council of that city, and he obtained as his reward the honour of knighthood. He ſoon after returned to Rome, and the pope not only overlooked his indiſcretion, but allowed him to complete the work he had begun in the Capella Paolina.

On the acceſſion of Sixtus V. he was invited to Madrid by Philip II. to adorn the walls and ceilings of the Eſcurial; but though he painted with his uſual ſkill, and covered immenſe quantities of ſpace, he had not his uſual ſucceſs in affording pleaſure to his patron. Philip was not gratified with his works, and Zuccaro was diſmiſſed; not, however, without being munificently rewarded for his labours. The works he left behind him were afterwards covered over by others from the hand of Pellegrini Tibaldi. On his return to Rome he eſtabliſhed the academy of St. Luke, for which he received letters patent from Gregory XIII., and to which, at his death, which happened in 1609, he bequeathed all his property.

The talents of the Zuccaros were more ſplendid than great. They deſigned and executed with facility; but aiming at grandeur, fell into manner; and the vice of manneriſm touches alſo the colour and chiaro oſcuro of their productions. Sometimes happy in all parts, but more frequently defective in the principal one of expreſſion and feeling, their works pleaſe without gratifying; and though they attract, do not abſorb the ſpectator.

ZUCCHABARI, Chadara, in *Ancient Geography*, a town of Mauritania Cæſarienſis, ſituated on the left bank of the river Chinalaph, and towards the north-eaſt of mount Zalacus. This is very probably the Succabar and Colonia Auguſta of Pliny.

ZUCCHARA, Zung-gar, an ancient town of Africa, and the moſt northerly of thoſe which lay between Zingitania and Biracium. Its magnificent ruins and its temple are the coverts of Arabs.

ZUCCHERELLI, Francesco, in *Biography*, a very pleaſing landſcape painter, was born at Pitigliano in Tuſcany, in 1702. He for ſome time attempted hiſtory, but abandoned it, and adhered ſolely to landſcapes, which he adorned with very agreeably compoſed groups of figures. In 1752 he viſited England, where he was much encouraged; but our greateſt debt to him is due for his having perſuaded Wilſon to adopt landſcape for his object, inſtead of portrait. For this liberal act what adequate thanks can be offered to his memory? At the foundation of the Royal Academy he was choſen an original member. After remaining here twenty years, he returned to Italy, and ſettled at Florence, where he had the misfortune to be reduced to indigence, by the ſuppreſſion of a monaſtery where he had lodged the money he had acquired. He again reſumed the pencil to ſupport himſelf, and died at Florence in 1788, aged 86.

ZUCCO, in *Geography*, a town of Italy, in the county of Friuli; 5 miles N.W. of Friuli.

ZUCCORA, a river of European Turkey, which runs into the Morava, near Niſſa.

ZUCHABARUS, in *Ancient Geography*, a mountain of Africa Propria, in which the river Cyniphus and the fountain Acaba have their ſource. Herodotus called it "Charitum Mons."

ZUCHIS, a lake of Africa Propria, which is, according to Strabo, 400 ſtadia in circuit; and on the bank of the lake is a town of the ſame name.

ZUCHOW, in *Geography*, a town of Poland, in Volhynia; 32 miles E. of Lucko.

ZUCKMANDEL, a town of Sileſia, in the principality of Neiſſe, the ſee of a biſhop; 17 miles N.N.W. of Jagerndorf. N. lat. 50° 8′. E. long. 17° 16′.

ZUCKTOK, a town of Mexico, in the province of Yucatan; 80 miles S. of Campeachy.

ZUDA, a town of Arabia, in the province of Yemen; 12 miles W. of Chamir.

ZUDISHTIRA, in *Hindoo Mythology*, is one of the heroic ſons of Pandu, whoſe wars and adventures occupy a conſiderable portion of the Mahabarat, an epic poem of great celebrity in the Shanſcrit language. See Mahabarat and Shanscrit.

ZUEECA, in *Geography*. See Giuducca.

ZUEELA, Zuila, or *Zawila*, a conſiderable town of Africa, in the kingdom of Fezzan, ſaid to have been anciently the capital, containing many rich merchants, ſituated in a fertile country. The remains of ancient buildings in this town, the number and ſize of the ciſterns, and the conſtruction of the vaulted caves, intended perhaps as repoſitories for corn, exhibit ſuch veſtiges of ancient ſplendour, as will probably attract, and may highly reward, the attention of the future traveller; 60 miles E.N.E. of Mourzouk. N. lat. 27° 35′. E. long. 16° 45′.

ZUENGA, a town of Thibet; 176 miles W.S.W. of Laſſa. N. lat. 28° 32′. E. long. 88° 10′.

ZVENIGOROD, a town of Ruſſia, in the government of Moſcow, on the Moſkva; 28 miles W. of Moſcow. N. lat. 55° 40′. E. long. 35° 34′.

ZUENZIGA, a deſert diſtrict of Africa, in the country of Sahara, ſituated to the ſouth of Tafilet.

ZVERINOGOLOVSKAIA, a fort of Ruſſia, on the Tobol; 52 miles S. of Okunevſk.

ZUEVA, a town of Ruſſia, in the government of Irkutſk, at the union of the Kotoi and the Angara; 60 miles N.N.W. of Irkutſk.

ZUF, a town of the country of Candahar; 50 miles N.W. of Candahar.

ZUFFERABAD, a town of Hindooſtan, in the ſubah of Moultan, near the Rauvee; 25 miles N.E. of Moultan.

ZUFFIRWAL, a town of Hindooſtan, in Lahore; 10 miles N.N.E. of Sealcot.

ZUFFOLO, in the *Italian Muſic*, a little flute or flageolet, having a very ſhrill ſound, like the whiſtling of ſmall birds.

ZUF-FOONE, or *Mers el Fulom*, in *Geography*, a ſea-port of Algiers; 36 miles W.N.W. of Boujeiah.

ZUG, a canton of Switzerland, bounded on the north and eaſt by Zuric, on the ſouth by Schweitz, and on the weſt by Lucerne; only about ten miles long, and nearly as much in breadth. The paſtures here are excellent, and it produces alſo a ſufficiency of grain, with plenty of fruit, and ſome wine. On one ſide of the Zug lake, the country is covered with cheſnut-trees, which form a very profitable branch of trade, by the ſale of the nuts to the neighbouring countries. This diſtrict, on the extinction of the counts of Lenzburg, devolved to thoſe of Kyburg, which latter alſo failing, it came to the counts of Habſburg, and in them to the houſe of Auſtria, towards which it always manifeſted an inviolable attachment; but in the year 1351, the town of Zug being beſieged by the Helvetian confederacy, and not only neglected by the archduke, but even recommended by him to ſurrender, it followed his advice, and was admitted into the confederacy, to which its territory had previouſly acceded. The generoſity of the conquerors rivalled the courage of the vanquiſhed; for, in conſequence of their ſubmiſſion, the canton of Zug was reſcued from the yoke of a foreign maſter, obtained liberty and independence, and was admitted into the Helvetian confederacy upon equal terms. This canton is the ſeventh in rank, and among the leſſer ones the fifth; beſides which, it is in a particular manner connected with Lucerne, Uri, Schweitz, and Underwalden, commonly called the five territorial confederates. The government of this little canton is exceedingly complicated; and the inhabitants of the town have ſomewhat more influence, and enjoy a greater ſhare in the adminiſtration of affairs, than thoſe of the capital burghs in the five other democratical cantons. The ſupreme power reſides in the inhabitants of Zug, Bar, Egeri, and Meutzingen, who aſſemble yearly to enact laws, and chooſe their magiſtrates. The landamman, reciprocally elected from each of the four diſtricts, continues three years in office when taken from Zug, and but two years when choſen from each of the three other diſtricts. The general adminiſtration of affairs is entruſted to the council of regency, compoſed of forty members, of whom thirteen are ſupplied by the diſtrict of Zug, and twenty-ſeven ſelected equally from the three remaining communities. This council, as well as the landamman, reſides always in the capital. Zug was the only one of the ſmall cantons which did not ſend its contingent to the army, but made a ſhew of reſiſtance to the impoſition of the new conſtitution. On the 29th of April, Zug was inveſted by French troops, ſurrendered on the 30th, and on the 1ſt of May accepted the new conſtitution. The people of this canton are reckoned the moſt reſtleſs of Switzerland: their general aſſemblies are often tempeſtuous, though ſeldom attended with bloodſhed.

Zug, a town of Switzerland, and capital of the above deſcribed canton, is beautifully ſituated at the north-eaſt extremity of a lake, in a fertile valley, abounding with corn, paſture, and wood. It contains two churches, a convent, a town-houſe, arſenal, corn-magazine, a college, hoſpital, &c. The titular ſaint of this place is Oſwald, king of Northumberland in the ſeventh century, who was defeated and ſlain in 624 by Peuda, king of the Mercians. In the church is his ſtatue, with this inſcription: "Sanctus Oſwaldus Rex Angliæ Patronus hujus Eccleſiæ." This king was much renowned for his chaſtity, piety, and power of working miracles; 15 miles S. of Zurich. N. lat. 47° 6′. E. long. 8° 16′.

Zug, a lake of Switzerland, eight miles long, and two wide, abounding in fiſh. It receives its name from the town on its coaſt.

ZUGANA, in *Ancient Geography*, a town in the interior of Arabia Felix. Ptol.

ZUGAR, a town of Africa Propria, between the rivers Bagradas and Triton.

ZUGARI, in *Geography*, a town of Naples, in Calabria Ultra; 6 miles N. of Nicotera.

ZUGLIANO, a town of Italy, in Friuli; 4 miles S. of Udina.

ZUHREE, a diſtrict of the province of Balouchiſtan, or Ballagiſtan, which is conſidered by ſome as a province diſtinct from Mekran or Mecran, and by others as the northern diviſion of it. However this be, Balouchiſtan is a confuſed maſs of tremendous mountains, affording paſture neverthelefs for numerous flocks of ſheep and herds of cattle, and producing great quantities of wheat. The territories of its chief comprehend all the countries that lie between 20° 30′ and 30° N. lat., and from 65° to 69° E. long.; and Balouchiſtan is divided into the two mountainous provinces of Ihalawnam and Sarawan, the low country of Cutch Gandava to the eaſt, and the provinces of Zuhree and Anund Dajal, to which may be added the ſmall diſtricts of Shat and Muſtung, lying north of Kelat. Zuhree, though it is entirely ſubject to the khan of Kelat, pays very little to him, as its revenues are enjoyed by Zadir Bukſt, of the Zuhree tribe of Balouches. The chief town is Zuhree, which contains from one to two thouſand houſes. The ſecond town, nearly as large, is Dadur; beſides which, there are many populous villages; and upon the whole, this is ſpoken of as the moſt civilized part of Balouchiſtan, the capital of which is Kelat.

ZUIA, a river of Spain, which runs into the Guadiana, a little above Medellin.

ZUICK, a town of Pruſſia, in Natangen; 8 miles N.W. of Lick.

ZUILA. See Zueela.

ZUINGLE, or Zwingle, Ulric, in *Biography*, the *Swiſs Reformer*, was born January 1, 1484, at the village of Wildhauſen, in the county of Tockenburg; and having diſcovered in his youth a ſtudious diſpoſition, was intended by his father for the church. Accordingly he was ſent for education firſt to Baſil, and then to Berne, where attempts were made to fix him in the convent of the Dominicans; but in order to prevent their taking effect, his father removed him to the univerſity of Vienna, which was then in high reputation. Returning from thence to Baſil, he was choſen claſſical tutor in his 18th year, where he made very conſiderable advances in knowledge, and particularly in that of the profeſſion to which he was deſtined, whilſt he taught others; availing himſelf of the lectures of Thomas Wyttembach, who, without renouncing the ſyſtem of the ſchools, allowed his pupils to think freely for themſelves. After a reſidence of about four years at Baſil, Zuingle took the degree of M.A., and being choſen paſtor of Glarus, was ordained by the biſhop of Conſtance. Having commenced a courſe of liberal inquiry, he indefatigably purſued it, critically examining the New Teſtament as the directory of his faith, and conſulting a variety of writers who had incurred the cenſure of the church of Rome. The conſequence of this mode of ſtudy was a diſcovery of the deviation of the eccleſiaſtical ſyſtem, generally adopted and eſtabliſhed, from that of Chriſtianity, both in doctrine and practice. But he was ſlow in publiſhing the theological ſentiments which he had imbibed, and for ten years purſued a courſe of practical inſtruction at Glarus, which ſecured to him the reſpect and affection of his pariſhioners, ſo that the bigotted clergy could not ſucceed in their attempts to do him injury. From Glarus he removed to the celebrated abbey of Einſidlin, where he accepted the office of preacher, and where he had an opportunity of aſſociating with perſons of learning, and of contributing to the education of candidates for the miniſtry. Whilſt he was at Glarus he expoſed ſeveral ſuperſtitions of the church of Rome; and at Einſidlin he gained additional reputation by preaching againſt vows, pilgrimages, and offerings. Here he employed his influence ſo effectually, that he ordered the inſcription over the abbey-gate, "Here plenary remiſſion of ſins is obtained," to be effaced, and the relics to be buried; and, among other rules which he eſtabliſhed in a convent of females under his direction, he introduced one for obliging the nuns to read leſſons in the New Teſtament, inſtead of reciting their hours. He was alſo intrepid and zealous in propagating rational ſentiments of religion, and with this view he availed himſelf of a public occaſion, when a crowd was aſſembled, to deliver a ſermon deſigned to ſhew that no ſuperior ſanctity reſided in any place ſo as to confer peculiar merit on vows addreſſed from it, but that their acceptance depended upon the purity of the heart and life of the worſhipper. Declarations of this kind, whilſt they gained the approbation of ſome of his auditors, excited the indignation of others, and alarmed the monks of this and neighbouring convents. Although he was regarded with jealouſy and terror by thoſe whoſe intereſt led them to oppoſe reformation, he was ſo much reſpected, that his eccleſiaſtical ſuperiors manifeſted no diſpleaſure againſt him; and by his correſpondence with Eraſmus, Glareanus, Hedio, Rhenanus, and other learned perſons, he eſtabliſhed a reputation which enabled him to encourage liberal ſtudies. In 1518 he was invited to occupy the vacant poſt of preacher in the cathedral of Zurich, and before he was inſtalled he announced his propoſed plan of preaching, which differed from that which had been before practiſed, and which gave him an opportunity of explaining the books of the New Teſtament in an uninterrupted ſeries, without regard to texts that were marked for each Sunday and Saint's-day in the year. This plan was approved by the majority of the chapter, and drew together a crowded auditory, who expreſſed in high terms their admiration of the preacher. A circumſtance occurred which afforded him a complete victory over an emiſſary of pope Leo X., who was employed in the ſale of indulgences, inſomuch that he was obliged to quit the city and retire into Italy. Some writers, eſpecially among the Catholics, have referred the origin of the reformation, and of the oppoſition of both Zuingle and Luther to the papal authority, to the diſputes about indulgences; but, although this quarrel might have contributed to the promotion of it, the people were previouſly prepared for the event by the preaching and conduct of Zuingle, and by the judgment and prudence with which he had planned and purſued his meaſure for this purpoſe. Luther proceeded very ſlowly to that exemption from the prejudices of education, which Zuingle, by the force of an adventurous genius, and an uncommon degree of knowledge and penetration, eaſily got rid of. And we learn from the moſt authentic records of hiſtory, that he had explained the Scriptures to the people, and called in queſtion the authority and ſupremacy of the pope, before the name of Luther was known in Switzerland. In proceſs of time, after Luther had taken up arms againſt Rome, Zuingle, being then miniſter of the chief church in Zurich, concurred with him; preaching openly againſt indulgences, then againſt the interceſſion of the ſaints, then againſt the maſs, the hierarchy, the vows and celibacy of the clergy, abſtinence from fleſh, and alſo many things which Luther was diſpoſed to treat with toleration and indulgence; ſuch as images, altars, wax-tapers, the form of exorciſm, and private confeſſion, &c. Zuingle, at an early period of his miniſtry, had declared his decided diſapprobation of all wars, excepting thoſe that were undertaken for the defence of the country; and ſuch was the influence of his opinion, that the canton of Zurich refuſed to concur with the other cantons in a ſubſidiary treaty with the French king. The reſult of his arguments and remonſtrances to this effect was a law paſſed by the aſſembly of the canton in 1522, aboliſhing all alliances and ſubſidies for the term of 25 years. He laboured at the ſame time to enforce a regard to the rules of the goſpel in preference to the reſpect that was generally manifeſted to thoſe of eccleſiaſtical diſcipline. Accordingly he defended thoſe perſons who had been denounced to the magiſtrate for infringing on the "faſt of Lent" without a diſpenſation; and publiſhed on this occaſion his treatiſe "On the Obſervation of Lent," which contained ſome free opinions on the obligation of faſting and keeping particular days. When the biſhop of Conſtance remonſtrated againſt his proceeding, and endeavoured by his charge and letters to excite apprehenſions among the people, and in the council and chapter of Zurich, that he would ſpread through Switzerland ſuch a flame as Luther had kindled in Germany, Zuingle obtained permiſſion to reply; and compoſed a tract to prove that the goſpel alone is authority from which there is no appeal, and that the deciſions of the church are binding only inaſmuch as they are founded on Scripture. When the biſhop of Conſtance had prevailed with the deputies of the Helvetic diet to order the arreſt of a paſtor accuſed of preaching the "new doctrine," Zuingle, who had now adopted and openly avowed the principles of the reformation, addreſſed to the heads of the cantons, in his own name and that of his friend, a ſummary of his doctrine, annexing an intreaty that they would allow liberty for the preaching of the goſpel. In a conference before the deputies of the biſhop of Conſtance, in the preſence of the great council of Zurich, held in 1523, Zuingle gave an account of his doctrine; and the colloquy terminated in the following declaration of the council: "That Zuingle, having been neither convicted of hereſy, nor refuted, ſhould continue to preach the goſpel as he had already done; that the paſtors of Zurich and its territory ſhould reſt their diſcourſes on the words of Scripture alone; and that both parties ſhould abſtain from all perſonal reflections." Zuingle, having been thus ſupported by the magiſtrates, and having obtained a public ſanction of the principles of the reformation in this canton, has been charged, both by Catholics and Proteſtants, with allowing to the ſecular power an undue degree of authority in eccleſiaſtical matters; however it has been urged in his defence, that he did not intend to transfer to government the abſolute power over conſciences claimed by the popes; but that, for the preſervation of order and tranquillity, he thought that the depoſitories of lawful authority ought to have a ſhare in the direction of eccleſiaſtical affairs. Zuingle, though thus ſupported, proceeded with caution in promoting alterations in the ceremonies and modes of public worſhip, and was principally anxious to lay a proper foundation of change by enlightening the underſtanding and convincing the judgment of the people. When ſome zealous reformiſts inſtigated a mob to pull down a crucifix that had been erected at the gate of the city, and the culprits were brought before the council to be tried and puniſhed, Zuingle interpoſed; and whilſt he vindicated the offenders from the charge of ſacrilege, he gave it as his opinion, that they deſerved ſome puniſhment for having pulled down the crucifix without the authority of the magiſtracy. This diſpute led to a general colloquy, which was held in October 1523; and the reſult was, that all the culprits, except Hottinger their ring-leader, and the perſon who had actually

tually committed the offence, were ſet at liberty; but Hottinger was baniſhed from the canton for two years; and he was afterwards put to death for hereſy, in conſequence of a ſentence pronounced by the deputies of ſeven cantons at Lucerne, notwithſtanding the interceſſion of Zurich. The queſtion of the celibacy of the clergy was agitated in theſe colloquies, and though no deciſive opinion was given by the council, ſeveral clergymen married, and among them was Zuingle himſelf, who had expreſſed his ſentiments againſt the queſtion, at the age of 40. In 1524, the council of Zurich proceeded to the reformation of public worſhip according to the plan propoſed by Zuingle. They began with cauſing all pictures and ſtatues to be removed by thoſe whoſe anceſtors had conſecrated them; and of theſe ſeveral were deſtroyed. Theſe meaſures occaſioned alarm and complaint in the other cantons; and acts of hoſtility were meditated. Without entering into a detail of the various circumſtances that occurred on one ſide and on the other, we ſhall content ourſelves with obſerving, that fanaticiſm and bigotry were engaged in oppoſition to each other, and produced in Switzerland effects ſimilar to thoſe that have attended innovation and reformation in other countries. At Zurich, the total ſubverſion of the Romiſh worſhip was accompliſhed, by prohibiting proceſſions and other ceremonies, and by the abolition of the ſacrifice of the maſs. The latter event took place by the activity of Zuingle in 1525; and on Eaſter Sunday the Lord's Supper was celebrated according to his idea of this rite, which was that of a merely commemorative and ſymbolical ſervice. Our reformer diſplayed in another inſtance a diſintereſted ſpirit, which reflects great honour on his memory. Although he was one of the canons who compoſed the chapter of the cathedral, and this body was independent of the council, and poſſeſſed its own juriſdiction and property, he prevailed with the majority of his colleagues to conſecrate the large revenues of the chapter to eſtabliſhments for public inſtruction, and to transfer its temporal power to the government. In the conduct of this event he manifeſted no leſs wiſdom and moderation than diſintereſtedneſs; for the chapter charged itſelf with the payment of as many paſtors as were neceſſary for the public worſhip of the city, to which ſervice thoſe canons who were capable of ſervice were devoted. Thoſe who were old and infirm were allowed to preſerve their benefices for life; and their revenues, as they became vacant, were to be employed in founding profeſſorſhips for lectures, to which admiſſion was to be gratuitous. Theſe liberal conditions were religiouſly obſerved, and the regulations thus framed are ſtill continued at Zurich. The orders of mendicants, and other religious houſes, were aboliſhed; and their revenues were appropriated to the ſupport of hoſpitals, and other charitable inſtitutions, as the old members dropped off. Zuingle was afterwards commiſſioned to organize a ſyſtem of public inſtruction, in which he diſplayed a cultivated and liberal mind.

The reputation which Zuingle had acquired, and the ſucceſs which had crowned his plans and labours in the cauſe of reformation, were not ſufficient to ſecure him againſt the prejudices of fanatics, and the hoſtile attacks of malignity. Attempts were made to aſſociate him with Munzer, one of the leaders of the Anabaptiſts; but he happily avoided the ſnare that was laid for him, and inſtead of taking part in thoſe violences which called forth the interpoſition of the civil power, and which terminated in the death of one of the perſons concerned, he did all that lay in his power to prevent them; and though he could not preſerve the life of one diſturber of the public peace, he compoſed the tumult occaſioned by the intemperate zeal of others. Notwithſtanding the ſingular prudence and moderation which influenced his whole conduct, his reputation excited envy, and a conſpiracy was formed againſt his life. Under the protection of the magiſtracy of Zurich he was ſafe; but his enemies inſidiouſly propoſed a conference at Baden, in Argovia. His friends, however, were not unappriſed of his danger, and well knowing that the cantons were actuated by inveterate hoſtility againſt his perſon as well as his doctrines, they would not conſent to his leaving Zurich. At the conference, which he prudently declined to attend, enmity was avowed both againſt him and his adherents. Some of the cantons, however, withheld their concurrence; and this was particularly the caſe with reſpect to the canton of Berne. In this canton, the reformation had made conſiderable progreſs, ſo that in 1527 ſeveral of its municipalities addreſſed the ſenate for the abolition of the maſs, and the introduction of the form of worſhip eſtabliſhed at Zurich. The reformers at Berne ſummoned a convocation, to which the clergy of the other Helvetic ſtates, and the neighbouring biſhops, were invited. Zuingle's attendance was alſo requeſted; and he thought it his duty to appear in that aſſembly, profeſſedly convened for the advancement of the reformation. Haller was the leader of the party in this canton, and in connection with Zuingle and other coadjutors the cauſe to which they were devoted obtained a complete triumph; ſo that the grand council of that canton fully adopted the meaſures of that of Zurich. Upon this, five of the cantons which were attached to the old religion entered into a ſolemn engagement not to ſuffer the doctrines of Zuingle and Luther to be preached among them. At length the hoſtilities that ſubſiſted between the Catholic and reformed cantons were amicably terminated by the treaty of Cappel in 1529. The animoſity, however, between theſe cantons was not extinguiſhed. It broke out again with greater violence than ever; and the ſenate of Zurich has been charged with the firſt aggreſſion, by arbitrary acts in favour of the reformed preachers in the common bailiages. Its project of ſecularizing the abbey of St. Gall, which belonged to the Helvetic confederacy, was a greater grievance; and on the other hand, the five aſſociated Catholic cantons refuſed to concur with the others in expelling the Spaniards from the Valteline, and perſecuted the reformed in their juriſdictions with the greateſt ſeverity. The ſufferers ſought the protection of Zurich, and the eloquence of Zuingle was employed in recommending their caſe to the ſenate. The breach widened, and a majority of the Proteſtants agreed in ſtopping the tranſit of proviſions to the five cantons, which depended upon foreign ſupplies. Zuingle in vain remonſtrated againſt this cruel act; and the five cantons took up arms, and having publiſhed a manifeſto, marched into the field in October 1531. A detachment was ordered to prevent the junction of the forces of Berne with thoſe of Zurich, and the main body advanced towards Cappel. This intelligence alarmed the people of Zurich; and they could only ſpare 700 men for the relief of their countrymen at Cappel. Zuingle was appointed to accompany them. A battle enſued; and though the Zurichers, animated by his exhortations, defended themſelves valiantly, they at length were compelled to yield to ſuperiority of numbers, and were entirely routed. Some died at their poſts; others fled: and Zuingle received a mortal wound at the commencement of the action, and fell ſenſeleſs to the ground. As ſoon as he had recovered ſufficiently to raiſe himſelf up, he croſſed his arms on his breaſt, and lifted his languid eyes to heaven. In this condition he was found by ſome Catholic ſoldiers, who, without knowing him, offered to bring a confeſſor;

but as he made a ſign of refuſal, the ſoldiers exhorted him to recommend his ſoul to the holy virgin. On a ſecond refuſal, one of them furiouſly exclaimed, "Die then, obſtinate heretic!" and pierced him through with a ſword. His body was found on the next day, and the celebrity of his name drew together a great crowd of ſpectators. One of theſe, who had been his colleague at Zurich, after intently gazing on his face, thus expreſſed his feelings: "Whatever may have been thy faith, I am ſure thou wert always ſincere, and that thou lovedſt thy country. May God take thy ſoul to his mercy!" Among the ſavage herd ſome voices exclaimed, "Let us burn his accurſed remains!" The propoſal was applauded; a military tribunal ordered the execution, and the aſhes of Zuingle were ſcattered to the wind. Thus, at the age of 47, he terminated a glorious career by an event deeply lamented by all the friends of the reformation, and occaſioning triumph to the partiſans of the Romiſh church.

"In the character of Zuingle," ſays one of his biographers, "there appears to have been united all that makes a man amiable in private ſociety, with the firmneſs, ardour, and intrepidity that are indiſpenſible in executing the great taſk of reformation. By nature mild, his earneſtneſs was the reſult of his ſenſe of the importance of the cauſe he engaged in to the beſt intereſts of mankind, not of a dogmatic or dictatorial ſpirit. His views were large and generous, and his opinions roſe above the narrow ſcale of ſect or party. It was no ſmall proof of liberality in that age that he ventured to aſſert his belief of the final happineſs of virtuous heathens, and of all good men who act up to the laws engraven on their conſciences. His temper was cheerful and ſocial, ſomewhat haſty, but incapable of harbouring reſentment, or indulging envy and jealouſy. As a reformer he was original; for he had proceeded far in emancipating himſelf from the ſuperſtitions of Rome by the ſtrength of his own judgment, and had begun to communicate the light to others, whilſt Luther ſtill retained almoſt the whole of the Romiſh ſyſtem, and long before Calvin was known in the world. He was more learned and more moderate than the firſt of theſe divines, and more humane and kind-hearted than the laſt. He wrote many works of utility in their day; and the reform, of which he was the author, ſtill ſubſiſts unchanged among a people diſtinguiſhed by their morals and mental cultivation." Life of Zuingle, by J. G. Heſs. Moſheim's Eccl. Hiſt. Coxe's Travels in Switzerland, vol. i. See Zuinglians.

ZUINGLIANS, in *Eccleſiaſtical Hiſtory*, a branch of ancient Reformers or Proteſtants; denominated from their author Ulric or Huldric Zuinglius. See Zuingle.

As to the euchariſt interpreting *hoc eſt corpus meum*, by *hoc ſignificat corpus meum*, he maintained, that the body and blood of Chriſt were not *really* preſent in the euchariſt; and that the bread and wine were no more than external *ſigns* or *ſymbols*, deſigned to excite in the minds of Chriſtians the remembrance of the ſufferings and death of the divine Saviour, and of the benefits which ariſe from them. This opinion was embraced by all the friends of the reformation in Switzerland, and by a conſiderable number of its votaries in Germany. On the other hand, Luther held his doctrine, which was *conſubſtantiation*, with the utmoſt obſtinacy; and hence aroſe, in 1524, a tedious and vehement controverſy, which terminated, at length, in a fatal diviſion between thoſe who had embarked together in the ſacred cauſe of religion and liberty. From this time, Zuingle propagated his doctrine concerning the euchariſt in a public manner by his writings, after having entertained and taught it privately before that period. His "Commentary on true and falſe Religion," containing his ſentiments on this ſubject, was publiſhed in 1525, and followed by a learned treatiſe of Œcolampadius on the ſame ſubject.

With a view of bringing this controverſy, which reflected much diſcredit on the Proteſtant cauſe, to an amicable iſſue, Philip, landgrave of Heſſe, invited, in 1529, to a conference at Marpurg, Luther and Zuingle, together with ſome of the other principal leaders of their reſpective parties; who diſputed, during four days, in preſence of the landgrave. Luther attacked Œcolampadius, and Melancthon diſputed againſt Zuingle. Before they parted, the Swiſs and German theologians ſigned their mutual aſſent to 14 articles, containing the eſſential doctrines of Chriſtianity, and expreſſed a hope that their difference with reſpect to the real preſence would not interrupt their harmony. The landgrave required from the two leaders a declaration that they would regard one another as brothers. Zuingle readily conſented; but Luther would engage no farther than that, ſpeaking of the Swiſs, he would for the future moderate his expreſſions. In this conference Zuingle was accuſed of hereſy, not only on account of his explication of the nature and deſign of the Lord's Supper, but alſo in conſequence of the falſe notions he was ſuppoſed to have adopted relating to the divinity of Chriſt, the efficacy of the divine word, original ſin, and ſome other parts of the Chriſtian doctrine. But though he cleared himſelf to the ſatisfaction even of Luther from the greateſt part of theſe accuſations, their diſſenſion concerning the manner of Chriſt's preſence in the euchariſt ſtill remained. Nor did it terminate with the death of Zuingle in 1531, nor with that of Luther in 1546. Melancthon and Calvin made ſeveral attempts towards promoting a reconciliation between the contending parties. With this view Calvin propoſed a ſyſtem, with reſpect to the euchariſt, more conformable to the doctrine of the Lutheran church than that of Zuingle. He acknowledged a ſpiritual preſence of Chriſt in this ſacrament, and ſuppoſed that a certain divine virtue or efficacy was communicated by Chriſt with the bread and wine to thoſe who approached this holy ſacrament with a lively faith, and with upright hearts; and to render this notion ſtill more ſatisfactory, he expreſſed it in almoſt the ſame terms which the Lutherans employed in inculcating their doctrine of Chriſt's real preſence in the euchariſt. But whilſt the followers of Zuingle aſſerted, that all Chriſtians, without diſtinction, whether regenerate or unregenerate, might be partakers of the body and blood of Chriſt, Calvin confined this privilege to the pious and regenerate believer alone. Beſides, the ſentiments of the Zuinglians, with regard to the divine decrees, differed very little from that of the Pelagians; nor did they heſitate in declaring, after the example of Zuingle himſelf, that the kingdom of Heaven was open to all who lived according to the dictates of right reaſon; whereas Calvin maintained, that the everlaſting condition of mankind in a future world was determined from all eternity by the unchangeable order of the Deity, and that this abſolute determination of his will and good pleaſure was the only ſource of happineſs or miſery to every individual. Moreover, Zuingle and Calvin differed in their notions of eccleſiaſtical government. The former aſcribed an abſolute and unbounded power, in religious matters, to the civil magiſtrate; allowing at the ſame time of a certain ſubordination among the miniſters of the church, and placing at their head a perpetual preſident or ſuperintendent, with a certain degree of inſpection and authority over the whole body; but Calvin, on the contrary, reduced the power of the magiſtrate, in religious matters, within narrow bounds; declaring the church a ſeparate and independent body, endowed with the power of legiſlation for itſelf, and maintaining that it was to be governed, like the primitive church, only by preſbyters and ſynods, *i. e.* by aſſemblies of elders, compoſed both of the clergy and laity, and leaving to the civil magiſtrate little elſe than the privilege of protecting and defending the church, and providing for what related to its external exigencies and concerns. Theſe and other circumſtances prevented the union of the Lutheran and reformed churches; though in proceſs of time almoſt all the latter churches adopted the theological ſyſtem of Calvin. Moſh. Eccl. Hiſt. Eng. ed. 8vo. vol. iii. and vol. iv.

ZULAUF, in *Geography*. See SULAU.

ZULE, a town of South America, in the new kingdom of Grenada; 5 miles S. of Pamplona.

ZULIANA, a town of the republic of Raguſa; 30 miles W.N.W. of Raguſa.

ZULLICHAU, a town of the New Mark of Brandenburg, formerly in the duchy of Croſſen. This town is the capital of a diſtrict, or circle, and the ſeat of an eccleſiaſtical inſpection, ſituated in a low plain, half a German mile diſtant from the Oder, and about the ſame diſtance from the Ober. The town itſelf conſiſts only of 250 houſes, one pariſh-church, and a grammar-ſchool; but it has four large ſuburbs: without the walls is a ſeat belonging to the king of Pruſſia, fortified with walls and moats, which ſerves for the reſidence of the king's receiver of the prefecturate; in this part alſo ſtands the Calviniſt church. Zullichau contains a good woollen manufacture; 37 miles S.E. of Francfort on the Oder. N. lat. 52° 8′. E. long. 15° 45′.

ZULPHA, or JULFA, a town of Perſia, in the province of Irak, on the S. ſide of the Zenderoud, about a mile and a half from Iſpahan, to which it is conſidered as a kind of ſuburb: it was built by Abbas I. after he had deſtroyed Zulpha, in Armenia. In the year 1722 this town was taken by the Afghans, under Maghmud, who demanded of the inhabitants the ſum of 70,000 tomans. This ſuburb has been reduced from 12,000 to 600 families, which is the caſe with reſpect to moſt of the others; and a perſon may ride for miles amidſt the ruins of the immenſe capital, Iſpahan, which neverthelеſs ſtill boaſts of 200,000 ſouls. In the ſuburb of Julfa, there ſtill remain nine churches, in which weekly ſervice is performed.

ZULPHA, or *Julfa*, a town of Perſian Armenia, on the Aras or Araxes, ſuppoſed to be the ancient Arriammene. This town was taken and deſtroyed by Abbas I., who removed the inhabitants to Iſpahan, where they built a fauxbourg, called *Zulpha*, containing 4000 houſes; ſome families, neverthelеſs, returned back to their native place, and took up their reſidence among the ruins; 60 miles N. of Tauris.

ZULPICH, or ZULCH, a town of France. This town contains three churches, and ſeveral cloiſters. In the year 406, Klodwig, king of the Franks, overcame the Alemanni near this place; 18 miles S.W. of Cologn. N. lat. 50° 43′. E. long. 6° 34′.

ZULTZ, or BIALA, a town of Sileſia, in the principality of Oppeln, and capital of a circle; 20 miles S.S.W. of Oppeln.

ZULUCK, a ſmall river of Ruſſia, in the country of the Coſſacks, which runs into the Kardai, near Baberezovſkaia.

ZULZ, a town of the Griſons, in Upper Engadine, on the Inn; 31 miles N.N.E. of Chiavenna.

ZUM BOIRS, a town of Germany, in the county of Bregentz, on the river Bregentz; 18 miles S.S.E. of Bregentz.

ZUM *Cloſterlin*, a town of Germany, in the county of Pludentz, on the river Alfens; 9 miles E. of Pludentz.

ZUM *Hofs*, a town of Germany, in the county of Bregentz, on the river Bregentz; 15 miles S.S.E. of Bregentz.

ZUM *Stein*, a town of the duchy of Berg; 3 miles N.E. of Blankenberg.

ZUM *Vogelſang*, a town of France, in the department of the Roer; 3 miles S.E. of Juliers.

ZUM *Zontags*, a town of Germany, in the county of Bregentz; 24 miles S.S.E. of Bregentz.

ZUMAIA, or CUMAIA, a town of Spain, in the province of Guipuſcoa, near the coaſt of the bay of Biſcay; 14 miles W. of St. Sebaſtian. N. lat. 43° 17′. W. long. 1° 51′.

ZUMAMPA, a town of South America, in the government of Tucuman, in the Rio Dolce; 90 miles S. of St. Yago del Eſtero.

ZUMELLA, a town of Italy, in the Treviſan; 10 miles N.W. of Ceneda.

ZUMIC ACID, in *Chemiſtry*, a name given by Dr. Thomſon to a peculiar acid principle lately obtained by M. Braconnot from rice, and which that gentleman had abſurdly called *Nanceic acid*, from *Nancy*, the name of the city where he reſided.

This acid was obtained by fermenting rice in water by the application of a gentle heat. An acid liquor was obtained, which on evaporation to dryneſs left a gummy maſs, having a very ſour taſte. This was digeſted in alcohol, which on evaporation let fall cryſtals compoſed of the peculiar acid and lime. The lime was thrown down by barytes, and the barytes afterwards ſeparated by ſulphuric acid, and thus the acid obtained in a ſeparate ſtate.

Zumic acid is colourleſs, has a very acid taſte, and does not cryſtallize. It precipitates none of the metals from their ſolutions, except zinc from very concentrated ſolutions of its ſalts.

With potaſh and ſoda it forms incryſtallizable deliqueſcent ſalts, ſoluble in alcohol. With ammonia it forms a cryſtallizable ſalt.

The neutral zumate of lime cryſtallizes confuſedly in a form ſomewhat reſembling a cauliflower. It is opaque, very white, has little taſte, and has the appearance of having effloreſced.

We do not think it neceſſary to detail the properties of the other compounds of this acid, which have been but little examined, and appear to be totally devoid of intereſt.

Dr. Thomſon thinks the zumic acid is the ſame with the lactic acid, the latter being probably diſguiſed as uſually obtained, by the preſence of ſome animal matter.

ZUMPANGO, in *Geography*, a town of Mexico; 90 miles S. of Mexico.

ZUMPANO, a town of Mexico; 20 miles N. of Mexico.

ZUNAC, a town of South America, in the audience of Quito; 30 miles N.W. of Macas.

ZUNAPA, a ſmall iſland in the Adriatic. N. lat. 43° 7′. E. long. 17° 7′.

ZUNCOLO, a town of Naples, in Principato Ultra; 17 miles S. of Conza.

ZUNDEL, a town of Sileſia, in the principality of Neiſſe; 5 miles S.S.E. of Grotkau.

ZUNGER, a town of Pruſſia, in Pomerelia, at the mouth of the Nogat; 8 miles W.N.W. of Elbing.

ZUNG-GAR, a town of Tunis, anciently called *Zuchara*. Here are the ruins of a temple, and an aqueduct erected for the purpoſe of conveying water to Carthage; 48 miles S.W. of Tunis.

ZVORNICK. See Zwornick.

ZUPU, a town of Circaſſia; 160 miles E. of Theodoſia.

ZUR Gugel, a town of Pruſſian Pomerelia; 20 miles S.S.E. of Marienburg.

Zur *Oſa*, a town of the duchy of Bremen; 5 miles S.S.W. of Bremervorde.

ZURA, a town of European Turkey, in Moldavia, on the Dnieſter; 22 miles E. of Orhei.

ZURARA, a town of Portugal, in the province of Entre Duero e Minho, at the mouth of the Ave, oppoſite Villa de Conde.

ZURBARAN, Francisco, in *Biography*, was a Spaniſh painter, born at Triente da Cantos, near Seville, in 1596. He was a diſciple of Pablo Roclas, under whoſe tuition he acquired very conſiderable talent, and ſoon enjoyed a good reputation as an artiſt. He adopted the ſtyle of M. A. Caravagio, painting with great boldneſs, force, and truth. His firſt public work was painted for the convent of La Merced Calzada, from the hiſtory of S. Pedro Nolaſco, by which he added much to his fame. There are many other works of his in the public edifices at Seville and Cordova, particularly in the Collegio di San Pablo. He was invited to Madrid about 1630, and was appointed principal painter to the king, and employed in the Buen Retiro, where he painted the Labours of Hercules. His productions may alſo be found in the Caſa da Campo, and other royal palaces, as well as in private collections. Zurbaran died in 1662, aged 63.

ZUREITA, in *Geography*. See Zuweita.

ZURIC, or Zurich, a canton of Switzerland, and the firſt in rank, bounded on the N. by Swabia and the canton of Schaffhauſen, on the E. by the Thurgau and the county of Toggenburg, on the S. by the cantons of Schweitz and Zug, and on the W. by the county of Baden. This canton is not unaptly called an epitome of all Switzerland, as containing in it hills, valleys, plains, corn-lands, vineyards, lakes, rivers, vegetables of all kinds, and whatever elſe is neceſſary to the ſupport of life. Grain is cultivated all over the country; but it ripens later in the mountainous parts, where the air is coldeſt, than in the levels or ſunny valleys. The hilly grounds in the E., W., and S. borders, afford a ſpecimen of the fertile Alps, as abounding in cattle, milk, butter, and cheeſe; at firſt the wines have a tartneſs attending them, yet they improve by keeping; and, after lying ſome years in the caſk, become ſmooth, pleaſant, and wholeſome. Fruits alſo are every where found in great plenty, and very good. The moſt remarkable minerals and foſſils are, chalk, potters' earth of ſeveral ſorts and colours, ſulphur, and pit-coal; ſome mineral ſprings are likewiſe found. The proportion of grain to the other productions of the earth will appear from the following calculation: there are 217,424 acres, of 36,000 ſquare feet each, laid out in grain, 14,466 in vines, 94,553 in meadows, 42,549 in paſturage, and 103,772 in foreſts. As ſufficient corn is not produced for the interior conſumption, the deficiency is chiefly ſupplied from Swabia. In order to prevent a ſcarcity of this material article, a public granary is maintained, at the expence of government, for grain at the common price; but in ſeaſons of ſcarcity, it is ſold conſiderably cheaper than it can be purchaſed at the market. The wine is moſtly conſumed in the country, and little of it is ſpared for foreign commerce. The canton contained, in 1784, 174,572 ſouls, including 10,500 in the capital: this large population, in proportion to the ſize of the canton, is owing to the trade of Zuric; as at leaſt two-thirds of the inhabitants derive their livelihood by ſpinning thread and ſilk, and making linen for the manufactures of the town. The ſovereign power reſides excluſively in the burgeſſes of the town, conſiſting of about 2000; but a contracted diſpoſition prevails in moſt of the ſtates of Switzerland, ſo that they ſeldom confer the burgherſhip. In Zuric, it is ſaid, a new citizen has not been admitted for the laſt 150 years.

The burghers, beſide the advantage of electing their magiſtrates, and of aſpiring to the adminiſtration of affairs, enjoy the ſole right of commerce; all ſtrangers, and even ſubjects, being excluded from eſtabliſhing manufactures in the city, or in any part of the canton.

The burghers of Zuric are divided into thirteen tribes; one of which is called Conſtaffel, or the tribe of nobles, although at preſent not abſolutely confined to perſons of that deſcription: it enjoys the privilege of giving eighteen members to the Sovereign Council, and ſix to the Senate, whereas each of the other tribes only ſupply twelve to the former, and ſix to the latter.

The legiſlative authority is veſted by the burghers in the Sovereign Council of two hundred; conſiſting, however, of two hundred and twelve members drawn from the thirteen tribes, and compriſing the Senate, or Little Council. This Senate, compoſed of fifty members, including the two burgomaſters, has juriſdiction in all cauſes civil and criminal: in civil caſes, when the demand is of a certain importance, an appeal lies to the Council of two hundred; but in criminal affairs, their ſentence is final, and, when once paſſed, there is no reverſal or mitigation.

It is to be regretted, that in this republic, as in moſt other ſtates of Switzerland, there is no preciſe code of criminal law. The Caroline, or code of Charles V., is oſtenſibly followed; but on account of its obſolete uſages and extreme ſeverity, the ſentence is ultimately left to the diſcretion of the magiſtrates.

The power of the Senate, conſidered in a collective capacity, is very conſiderable: it judges finally in all criminal cauſes, has the care of the police, and ſupplies the principal magiſtrates. But as too great a power of individuals is dangerous in a republic, the members of this aſſembly are liable to be changed, and a reviſion or confirmation is annually made, in ſome inſtances by the Sovereign Council, in others by the particular tribes to which the ſenators belong. This annual reviſion is a great check to mal-adminiſtration, and at the ſame time prevents the Senate from gaining ſo great an influence as to be detrimental to the liberties of the people. A burgher is qualified to vote at twenty; is eligible into the Sovereign Council at thirty; and into the Senate at thirty-five. The canton of Zuric is divided into diſtricts or bailiages, which are governed by bailiffs nominated by the Sovereign Council, exerciſing an authority ſubject to certain reſtrictions. The reformation was begun by Zuinglius, in the year 1517, in the town of Zuric; and in 1524, gained footing in the whole canton.

The militia of the canton amounted, in 1781, to 25,718 infantry, 1025 artillery, 886 dragoons, and 406 chaſſeurs; in all 28,235 effective men. The arſenal is well ſupplied with cannon, arms, and ammunition; and contains a reſerve of muſkets for 30,000 men. This canton had formerly a regiment and ſome companies in the ſervice of France, a regiment in that of Holland, and ſome companies in the ſervice of the king of Sardinia.

In eccleſiaſtical affairs the Senate is ſupreme: the canton is divided into fourteen diſtricts, each governed by a dean, choſen by the ſynod, from three candidates propoſed by the clergy of the dioceſe. The ſynod, compoſed of the whole clergy, and ſeveral aſſeſſors on the part of the Little Council, meets twice a year. The principal miniſters and profeſſors in the town conſtitute, in conjunction with ſeveral magiſtrates and other aſſeſſors, deputed by the civil power, an eccleſiaſtical and academical council: to this committee the deans recur in all concerns, which ſeem to exceed their juriſdiction: it determines leſſer affairs, and refers caſes of importance to the Senate.

During the French revolution, the canton of Zuric, after a feeble reſiſtance, ſurrendered to the arms of the invaders; and the national aſſembly, which had been convoked, acceded to the new organization of the Helvetic conſtitution.

Zuric, a city of Switzerland, and capital of a canton of the ſame name, ſituated on a large lake, where the river Limmat is diſcharged, which divides it into two parts; ſuppoſed to have been built on the ſcite of the ancient Tigurum, which was deſtroyed by the Allemanni.

The environs are very delightful; an amphitheatre of hills gradually ſloping to the borders of the water, enriched with paſture and vines; dotted with innumerable villages, cottages, and hamlets; and backed on the W. by the Utliberg, a bold and gloomy ridge ſtretching towards the Albis, and that chain of mountains which riſes gradually to the Alps. Of the two parts into which the town is divided, the old part is ſurrounded with the ſame ancient battlements and towers which exiſted in the thirteenth century, and the ſuburbs are ſtrengthened by fortifications in the modern ſtyle, but too extenſive. The ditches, inſtead of being filled with ſtagnant water, are moſtly ſupplied with running ſtreams. The public walk is pleaſantly ſituated in a lawn, at the junction of the Limmat and the Sil, an impetuous and turbid torrent, which deſcends from the mountains of Einſidlin: two rows of lime-trees planted by the ſide of the Limmat, and following its ſerpentine direction, afford an agreeable ſhade in the heat of ſummer. The inhabitants are very induſtrious; and carry on with ſucceſs ſeveral manufactures: the principal are thoſe of linens and cottons, muſlins, and ſilk-handkerchiefs. The manufacturers do not in general dwell within the walls; but the materials are moſtly prepared, and the work is completed in the adjacent diſtricts. For this reaſon, Zuric does not exhibit the activity and numbers of a great commercial city. The environs, on the contrary, are ſo extremely populous, that perhaps few diſtricts in the neighbourhood of a town, whoſe population ſcarcely exceeds 10,000 inhabitants, contain within ſo ſmall a compaſs ſo many ſouls. The ſtreets are moſtly narrow; the houſes and public buildings accord more with plainneſs and convenience, than with the elegance and ſplendour of a capital. In 1780 the town contained 10,559 ſouls; but the population had decreaſed from the difficulty of obtaining the burgherſhip; whereas luxury and opulence had very conſiderably increaſed. In general, however, the manners of the inhabitants are ſimple. Dinner is uſually ſerved at twelve: in the afternoon the gentlemen aſſemble in clubs, or ſmall ſocieties, in the town during winter, and at their reſpective villas in ſummer. They frequently ſmoke, and partake of wine, fruit, cakes, and other refreſhments. The women, for the moſt part employed in their domeſtic occupations, or devoted to the improvement of their children, are not fond of viſiting. This reſerve, however, has much abated, and gives place to a more ſociable intercourſe. Such, however, is the prevalence of national habit, that a few families, which form a more agreeable mixture of company, are conſidered as differing from the eſtabliſhed cuſtoms, and are ſtill known by the name of the French Society. Sumptuary laws are well obſerved. Amongſt theſe, the uſe of a carriage in the town is prohibited to all ſorts of perſons except ſtrangers; and it is almoſt inconceivable, that in a place ſo commercial and wealthy, luxury ſhould ſo little prevail.

Zuric was formerly an imperial city, and obtained from the emperor Frederick II. very conſiderable privileges; which were acknowledged and augmented by ſeveral of his ſucceſſors. The civil war between the magiſtrates and the people in 1335 nearly reduced the city to ruins; but the former being baniſhed, the citizens, in 1337, eſtabliſhed a new form of government, which was confirmed by the emperor Louis of Bavaria. The exiles, after ſeveral fruitleſs attempts, were at length re-admitted; but engaging in a conſpiracy againſt the citizens, were diſcovered and put to death. In conſequence of this execution, the nobles in the neighbourhood took up arms; and Zuric, after having ineffectually applied for aſſiſtance to the emperor Charles IV., formed an alliance with Lucerne, Uri, Schweitz, and Underwalden, and was admitted a member of their confederacy. This event happened in the year 1351. The four cantons yielded the pre-eminence to Zuric: a privilege it enjoys at preſent; being the firſt canton in rank, and the moſt conſiderable in extent, both of territory and power, next to Berne. In the ſame year, Zuric was aſſiſted by the four cantons againſt Albert, duke of Auſtria, who beſieged the town, and was repulſed with great loſs.

Zuric was the firſt town in Switzerland that ſeparated from the church of Rome, being converted by the arguments of Zuingle.

The charitable eſtabliſhments at Zuric are, the orphan-houſe, which is regulated with extreme attention and care; an alms-houſe for poor burghers; an hoſpital for incurables, and that for the ſick of all nations, which uſually contains between ſix or ſeven hundred patients; and the Allmoſen-Amt, or foundation for the poor: this excellent inſtitution puts out children as apprentices; and diſtributes money, clothes, and books of devotion to poor perſons, as well in the town, as in different parts of the canton, at the recommendation of the reſpective miniſters. Here is alſo a chirurgical ſeminary, formed by voluntary ſubſcriptions, to the ſupport of which, Dr. Rhan, an eminent phyſician, was a liberal contributor.

At Zuric public education is a concern of the ſtate, and under the immediate protection of government. The office of a profeſſor gives rank and eſtimation, and is often held by a member of the Senate and of the Great Council. The principal literary eſtabliſhments for the inſtruction of youth are, the Caroline college for ſtudents in divinity; *Collegium Humanitatis*, or the college for polite literature; and the ſchool of arts: the firſt has twelve profeſſors, the ſecond two, and the laſt ſeven. The learned languages, divinity, natural hiſtory, mathematics, and in ſhort every ſpecies of polite learning, as well as abſtruſe ſcience, is taught at a ſmall expence in theſe reſpective ſeminaries.

In conſequence of the peculiar attention paid by government, ſince the reformation, to the education of youth, Zuric has produced many perſons, who have diſtinguiſhed themſelves in all departments of literature: among theſe we may reckon Zuingle and Bullinger, Conrad Geſner, Hottinger, Simler, Spon, Scheutzer, Heidegger, Breitinger, Bodmer, Hirtzel, Solomon Geſner, and Lavater. For each of theſe diſtinguiſhed perſons, ſee our biographical articles.

Dr. Hirtzel was a learned phyſician, and deſervedly ſtyled the Swiſs Plutarch: he diſtinguiſhed himſelf, among various publications, by the Socrate Ruſtique, and by the lives of Sultzer and Heidegger. Leonhard Meiſter, profeſſor of hiſtory and morality in the ſchool of arts, deſerves mention, on account of his numerous and valuable publications, in all which he has diſplayed great zeal for the promotion of literature, correctneſs of taſte, liberality of ſentiment, and extenſive hiſtorical and biographical knowledge. In his obſervations on fanaticiſm and intolerance, he has forcibly evinced their dreadful effects on government and civil ſociety by hiſtorical facts, and approved himſelf an able writer in combating perſecution, and in repreſſing the prevalent ſpirit of fanaticiſm.

The public library at Zuric contains about 25,000 volumes, and a few curious MSS., of which latter are; the original MS. of Quintilian, the Pſalms in the Greek tongue, written on parchment dyed of a violet colour, the letters being ſilver and golden, and the marginal reference red, ſomewhat ſimilar to the "Codex Argenteus" of Upſal, and ſuppoſed to have once formed a part of the "Codex Vaticanus," and ſeveral MSS. of Zuingle. Zuric is a diſtrict 41 miles S.E. of Bâle, and 36 S.W. from Conſtance. N. lat. 47° 18′. E. long. 8° 25′. Coxe's Travels in Switzerland, vol. i.

Zuric, a lake of Switzerland, ſituated in the canton to which it gives name, about 10 leagues in length, and one in breadth, of an oblong form; and though not ſo large as that of Conſtance, more thickly ſtudded with villages and towns. The adjacent country is finely cultivated, and well peopled; and the ſouthern part of the lake appears to be bounded with the high ſtupendous mountains of Schweitz and Glarus. The ſcenery is pictureſque, lively, and diverſified.

ZURIMACZOW, a town of Auſtrian Poland; 22 miles S. of Luckow.

ZURITA, a town of Spain, in New Caſtile, on the left bank of the Tagus; 48 miles N.E. of Toledo.

ZURITO, a town of Peru, in the dioceſe of Cuſco; 12 miles N.W. of Cuſco.

ZURLINDEN, a town of Pruſſia, in the palatinate of Culm; 18 miles E.N.E. of Thorn.

ZURMENTUM, in *Ancient Geography*, a town in the interior of Africa Propria, S. of Adrumetum. Ptol.

ZURNAPA, in *Zoology*. See Camelopardal.

ZURUPALCA, in *Geography*, a town of Peru; 44 miles S. of Potoſi.

ZURZACH, a town of Switzerland, in the county of Baden, on the Rhine, chiefly celebrated for its fairs, at which great quantities of goods are ſold by the merchants from Germany, France, and Italy; 25 miles E. of Bâle.

ZURZONZA, a town of Mexico, in the province of Mechoacan, ſituated on an iſland in a lake; 20 miles W. of Mechoacan.

ZURZURA, in *Ancient Geography*, a town of Aſia, in the Greater Armenia. Ptol.

ZUSAM, in *Geography*, a river of Bavaria, which runs into the Danube, oppoſite Donauwert.

ZUSCHEN, a town of Germany, in the county of Waldeck; 4 miles N.W. of Fritzlar.

Zuschen, or *Zuchenau*, a town of Germany, in the duchy of Weſtphalia; 5 miles S.W. of Medebach.

ZUSEL, a river of France, which runs into the Roer, at Suſteren.

ZUSMERSHAUS, a town of Bavaria, in the territory of Augſburg; 13 miles N.W. of Augſburg.

ZUSNIN, a town of Iſtria; 11 miles N.N.E. of Pedena.

ZUTPHEN, a city of Holland, and capital of a county to which it gives name, ſituated on the river Berckel, which paſſes through the middle of it, fills its ditches, and immediately joins the Iſſel. It takes its name from the two Flemiſh words "Zudt Vunen," which ſignify Southern Meadows. The principal buildings are, the church of St. Walburge, the town-houſe, the college of the deputies of the comté, and an ancient building, which they call "s'Graven-Hof," or Palace of the Comté. Otho I. of Naſſau, acquired this country in the 11th century, by his marriage with the heireſs of Gerlach, count of Zutphen, ſince which it has ever been annexed to Guelderland; 7 miles S. of Deventer. N. lat. 52° 10′. E. long. 6° 5′.

Zutphen *Iſlands*, a group of ſmall iſlands, in the ſtraits of Sunda. S. lat. 5° 50′. E. long. 105° 42′.

ZUTZ, a town of Switzerland, in the league of the Griſons, on the Inn. This town, though not the largeſt, is reckoned the principal place of Upper Engadine, becauſe it contains the criminal court of juſtice. This court conſiſts of the landamman of Sotto, one of the two communities of Upper Engadine, who is preſident, and ſixteen jurymen, called Trouadors, taken equally from each diſtrict. Juſtice is ſaid to be more equitably adminiſtered in this court than in any other throughout the Griſons, excepting at Coire. The vicinity of Zutz, and alſo of Scampf, is the fineſt part of the valley of Engadine; it there produces ſome rye and barley, and the mountains are clothed with verdure to their very ſummits.

ZUURE-VELDT, a diviſion of Graaf Reynet, which is an extenſive plain country, ſtretching from the Sunday river, in Zwartkop's bay to the great Fiſh river, and is the ſame kind of good arable or paſture land as the plains of the Autiniequas diviſion in Zwellendam; but it is now excluſively in the poſſeſſion of the Kaffers, from whom it was originally taken by the Boors. The great chaſms towards the ſea-coaſt, that are filled with thickets, abound in elephants and buffaloes; and in the great Fiſh river are, occaſionally at leaſt, found a few of the hippopotamus, or river-horſe.

ZUWEITA, or Zureita, a town of the Arabian Irak; 35 miles S.E. of Helleh.

ZUYDER-ZEE, or Zuider-See, a great gulf or bay of the German ocean, which extends from ſouth to north, in the United Provinces, between Frieſland, Overiſſel, Guelderland, and Holland. It is ſo called from its ſituation towards the ſouth, and is ſaid formerly to have been a lake, and that the land is ſwallowed up that united North Holland with Frieſland.

ZUZAN, a town of Perſia, in that part of Khoraſſan which extends from N. lat. 32° 30′ to 34° 40′, and from 56° to 62° of E. long. It is the ancient "Suſa," now an inconſiderable place, ſituated at the ſame diſtance from Puſhing as the latter is from Herat.

ZUZON, a town of Spain, in Old Caſtile; 22 miles N.E. of Siguença.

ZUZYGIUM, in *Botany*. See Syzygium and Calyptranthes, to which latter genus belongs the original *Suzygium* of Browne.

ZWAMMERDAM, or Zwadenburgerdam, in *Geography*, a town of Holland, on the Rhine, which was pillaged and burned by the French, in the year 1762; 6 miles N. of Gouda.

ZWARTE-BERG, as well as *Cango* and *Trada*, are diviſions of Zwellendam, which are the Karroo plains, ſituated between the firſt and ſecond chains of mountains, but being well watered by the mountain ſtreams contain fertile patches of ground. Their great diſtance, however, from the Cape, and very bad roads, prevent an extenſive tillage. In theſe plains are numerous oſtriches, and herds of quachas, zebras, and hartebeeſts. Behind the firſt chain of mountains, in theſe diviſions, are two hot ſprings of chalybeate water.

Zwarte-berg is alſo a diviſion of Graaf Reynet, which
is

is a portion of the mountain of the ſame name, in the diſtrict of Zwellendam, to which it ought properly to belong. Sheep and horned cattle are the chief produce of the farmers.

Zwarte-kop's *River* is a fertile and extenſive diviſion of Graaf Reynet, lying to the ſouthward of Zwarte-Ruggens, and capable of producing an abundant ſupply of grain, convenient to be delivered at a trifling expence at the bay. About 15 miles to the weſtward of the bay are large foreſts of timber-trees, near which is an appearance of a rich mine of lead. Near the bay is alſo a ſalt lake, which yields a plentiful ſupply of that article. Wax from the myrica cerifera and aloes might be furniſhed by this diviſion as articles of commerce.

Zwarte-ruggens, a diviſion of Graaf Reynet, which is a ſtony tract of country to the ſouthward of Camdeboo, another diviſion lying at the foot of the ſnowy mountains. It is very ſcantily ſupplied with water, and produces little except ſucculent plants, among which are two or three ſpecies of euphorbia. Few families are found in this diviſion, but here and there in the neighbourhood of the Sunday river, which runs through it. The cattle and ſheep are ſmall, but generally in good condition.

ZWARTKOP's Bay. See Algoa *Bay*.

ZWARTLAND, East, and *Twenty-four Rivers*, are two diviſions of the diſtrict of Stellenboſch and Drakenſtein, conſiſting of widely-extended plains, ſtretching, in breadth, from the Berg river to the great chain of mountains, and to the Picquet Berg, in length, to the northward. Theſe are conſidered as the granaries of the colony. The crops, however, in Zwartland, are as uncertain as the rains, on which their ſucceſs almoſt entirely depends. In the Twenty-four rivers, the grounds may be irrigated by the innumerable ſtreamlets that iſſue from the great chain of mountains, in their courſe to the Berg river. Theſe form ſwamps, that have been productive of very fine rice. Wheat, barley, and pulſe, are the principal articles that are cultivated in thoſe two diviſions; but they have alſo plenty of fruit, and make a little wine for family uſe.

ZWELLENDAM, a tract of country in ſouthern Africa, which lies upon the ſea-coaſt between Breede river on the W., and Camtoos river on the E., and extends northerly to the ſecond chain of mountains, called the Zwarte-Berg, or Black mountains. The length is about 380 and breadth 60 miles, comprehending an area of 19,200 ſquare miles, which is occupied by 480 families, ſo that each family has, on an average, 40 ſquare miles of land. The population of Zwellendam, aſcertained on oath in the year 1798, conſiſted of 3967 Chriſtians, and 2696 ſlaves and Hottentots, making a total of 6663. The ſtock and produce comprehended 9049 horſes, 52,376 horned cattle, 154,992 ſheep, 220½ leggers of wine made, 16,720 muids of wheat reaped in 1797, and 10,554 muids of barley and rye.

Zwellendam, *Droſdy*, or village of, a diviſion of Zwellendam, ſituated at the foot of the firſt chain of mountains that runs E. and W., or parallel to the ſea-coaſt, and diſtant from Cape Town about 140 miles. It is compoſed of about 30 houſes, ſcattered irregularly over a ſmall but fertile valley, down the middle of which runs a plentiful ſtream of water. At the head of the valley ſtands the houſe of the landroſt, to which is annexed a large garden well ſtocked with a variety of fruits, and a ſpacious vineyard; the whole encloſed and planted with oaks and other trees. In the middle of the village a large church has been lately erected, which is the only place of worſhip in the whole diſtrict. The other diviſions of Zwellendam are, the country between the droſdy and Gauritz river, named according to the rivers that croſs it, Cango, Zwarte-Berg, Trada, Moſſel bay, Autiniequas land, Plettenberg's bay, Olifant's river, Kamnaaſic, Lange-Kloof, and Sitſikamma. Barrow's Southern Africa, vol. ii.

ZWENCKAU, a town of Saxony, in the principality of Merſeburg, on the Elſter. In the year 1429, this town was burned by the Huſſites; 5 miles S. of Leipſic. N. lat. 51° 14′. E. long. 12° 18′.

ZWENTENDORFF, a town of Auſtria; 6 miles W. of Tulln.

ZWERCHBACHLEIN, a river of Wurtemberg, which runs into the Nagold, near the town of Nagold.

ZWERNITZ, a town of the principality of Culmbach; 10 miles S.W. of Culmbach.

ZWERNTLDORFF, a town of Auſtria; 6 miles E. of Weikendorff.

ZWETHAN, a town of Saxony; 20 miles S.E. of Wittenberg.

ZWETL, a town of Auſtria, at the conflux of the Zwetl and the Kamp; 26 miles W.N.W. of Crems. N. lat. 48° 33′. E. long. 15° 7′.

Zwetl, a river of Auſtria, which riſes about four miles weſt from Weitra, and runs into the Kamp, at Zwetl.

ZWETZEN, a town of Thuringia; 3 miles N. of Jena.

ZWETZEY, a town of Croatia, on the river Mreſnitza; 12 miles S. of Sluin.

ZWEYBRUCKEN. See Deux-Ponts.

ZWEYDRITTELSTUCK, or *Piece of Two-thirds*, in *Commerce*, a ſilver coin in Germany, worth two-thirds of a rix-dollar of account.

ZWIAHEL, in *Geography*, a town of Ruſſian Poland; 90 miles E. of Luckow.

ZWICKAU, a town of Saxony, in Erzgebirg, on the Mulda. It has a citadel, three churches, and a Latin ſchool, in which is a good library: here is a manufacture of cloth, and another of cards, for the uſe of wool-combers; with a conſiderable inland trade; 38 miles S.S.E. of Leipſic. N. lat. 50° 39′. E. long. 12° 25′.—Alſo, a town of Bohemia, in the circle of Boleſlau; 4 miles W. of Gabel.

ZWIELAUKA, a town of Moravia, in the circle of Olmutz; 26 miles W. of Olmutz.

ZWIFALTEN, a princely abbey founded in the year 1089. In 1802, it was given among the indemnities to the duke of Wurtemberg; 58 miles W. of Augſburg. N. lat. 48° 17′. E. long. 8° 30′.

ZWINGENBERG, a town of Heſſe Darmſtadt, ſituated on the Bergſtraſſe. In 1693, the greater part of this town was deſtroyed by the French, ſince which it has been rebuilt in a better manner; 10 miles S. of Darmſtadt.

ZWINGENDORFF, a town of Auſtria; 2 miles S. of Laab.

ZWINGERA, in *Botany*, a genus taken from Aublet, dedicated under this name to the memory of ſeveral Swiſs botaniſts of the family of Zwinger, who for three generations have cultivated this ſcience at Baſil, chiefly, indeed, with a reference to the medical qualities of plants. Theodore Zwinger, profeſſor of anatomy and botany in that univerſity, who died in 1724, aged 67, publiſhed in 1696 a folio German Herbal, of 995 pages, with wooden cuts, borrowed from Geſner and Camerarius, which is little known out of his own country. Some botanical diſſertations alſo appeared under his preſidency. His ſon Frederick gave an enlarged edition of the above Herbal in 1744; and has publiſhed in the *Acta Helvetica*, v. 1. 50, a plate and deſcription of a very remarkable fungus, apparently belonging to

Peziza, but of which we find no notice taken by Perſoon. The NOLANA of Linnæus, (ſee that article,) was once publiſhed under the name of *Zwingera humifuſa*, by John Hofer, in *Act. Helvet.* v. 5. 267. t. 1, but this plant has had many names beſides.—Schreb. Gen. 802. Willd. Sp. Pl. v. 2. 569. Mart. Mill. Dict. v. 4. (Simaba; Aubl. Guian. 400. Juſſ. 373.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Terebintaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, ſmall, in five deep, ovate, acute ſegments. *Cor.* Petals five, oblong, obtuſe, ſpreading. *Stam.* Filaments ten, capillary, dilated and hairy at the baſe, ſhorter than the corolla; anthers ovate. *Piſt.* Germen ſuperior, ſeated on a glandular receptacle, roundiſh, with five deep furrows; ſtyle longer than the ſtamens, thread-ſhaped, ſtriated; ſtigmas five, ſimple. *Peric.* Capſules five, coriaceous, ovate, ſpreading, of one cell. *Seeds* ſolitary, ovate.

Eſſ. Ch. Calyx in five deep ſegments. Petals five. Filaments dilated and hairy at the lower part. Capſules five, coriaceous, ſeated on a fleſhy receptacle. Seeds ſolitary.

Obſ. The flowers are ſaid to be occaſionally only four-cleft and octandrous. This genus is not much akin, as Willdenow thought, to QUASSIA, but rather to CNESTIS (ſee thoſe articles); differing from the latter in having one *ſtyle* inſtead of five. How far their *fruits* correſpond, we know not enough of the ſeed-veſſel of *Zwingera* to determine.

1. Z. *amara*. Bitter Zwingera. Willd. n. 1. (Simaba guianenſis; Aubl. Guian. 400. t. 153.)—Native of the woods of Orapu in Guiana, bearing flowers and fruit in June. A *ſhrub*, not more than ſeven or eight feet high, whoſe *ſtem* is three or four inches in diameter, with a white ſoft wood. *Branches* numerous, alternate. *Leaves* alternate, ſtalked, either ternate, or pinnate, of two or three pair, with an odd one, of elliptic-lanceolate, pointed, emarginate, entire, ſmooth *leaflets*, the largeſt of which are three and a half inches long, and an inch, or more, in breadth. *Flowers* five or ſix together, in little axillary cluſters. *Petals* whitiſh, ſurrounding the green *diſk*. *Fruit* yellow; the inner rind green and bitter. Nothing is recorded concerning the qualities or uſes of this ſhrub.

ZWISEL, in *Geography*, a town of Bavaria, on the Regen; 42 miles E. of Ratiſbon.

ZWITTAU, or Zwittawa, a town of Moravia, in the circle of Olmutz; 30 miles N.W. of Olmutz. N. lat. 49° 43′. E. long. 16° 16′.

Zwittau, a river of Moravia, which riſes in the ſouth-eaſt part of Bohemia, and joins the Swarta, near Brunn.

ZWOL, or Swol, a town of Holland, in the department of Overiſſel, ſituated on the river Aa, between the Iſſel and the Vecht, in the country of Zallant. It is a ſtrong place, well fortified, and ſurrounded with a double ditch, filled with the waters of the Aa. Its ſituation is very advantageous, on an eminence which commands the country, and is the ordinary paſſage from Holland to the provinces of Frieſland, Groningen, and Overiſſel. It was formerly a free and imperial city, and ranked among the Hanſe towns. The magiſtracy is compoſed of eight echevins, and eight common-council. The celebrated Thomas à Kempis, otherwiſe called Hamerken, was a regular canon in a priory of Auguſtines in this place, and died here in 1471, aged 91; 28 miles S.W. of Covorden. N. lat. 52° 32′. E. long. 6° 1′.

ZWOLFAING, a town of Auſtria; 8 miles S.S.E. of Vienna.

ZWONIGRAD, a town of Dalmatia, and capital of a diſtrict; 60 miles S.E. of Segna.

ZWONITZ, a town of Saxony, in the circle of Erzgebirg; 4 miles N.N.W. of Grubenhagen.

ZWORNICK, a town of Boſnia; 68 miles S.W. of Belgrade. N. lat. 44° 37′. E. long. 18° 50′.

ZWOTA, or Tzwoda, a river of Bohemia, which runs into the Egra, near Falckenau.

ZYDACZOW, a town of Auſtrian Poland, in Galicia; 30 miles W.N.W. of Halicz.

ZYGÆNA, in *Ancient Geography*, an iſland in the northern part of the Arabic gulf. Ptolemy.

Zygæna, in *Ichthyology*, a ſpecies of *ſqualus*, which ſee; called by Willughby *balance-fiſh*. See alſo SHARK.

ZYGASTICUM, Ζυγαςικον, formed of ζυγος, *a balance*, among the *Ancients*, money paid for weighing things.

ZYGER, in *Geography*, a river of Hungary, which runs into the Kyros, 5 miles W. of Boros Jeno.

ZYGES, in *Ancient Geography*, a people of exterior Libya, towards the coaſt of the Mediterranean ſea, W. of the Mareotide Nome. Ptolemy.

ZYGI, a people of Aſia, of the number of thoſe who inhabited the Cimmerian Boſphorus, between the Athæi and Heniochi. Strabo.

ZYGIA, in *Botany*, ζυγια of Theophraſtus, the ſecond kind of his σφενδαμνος, or Maple, remarkable for its yellow and veiny wood, is ſpoken of as a mountain-tree, but botaniſts have not aſcertained the preciſe ſpecies. Pliny's account of this matter is extracted and abridged from the above Greek author, but is not made at all more clear. He however ſeems to have been acquainted with a beautiful wood, of the Maple kind, which he ſays was compared to a peacock's tail, and grew chiefly in Iſtria and Rhœtia. Can this have been the *Acer Opalus* of modern authors? (See Willd. Sp. Pl. v. 4. 990.) Anguillara has long ago ſuſpected that tree, which Linnæus and many other botaniſts have ſtrangely overlooked, to have been the ζυγια of Theophraſtus. Its native country, and veined yellow wood, ſometimes very beautiful, are in favour of this opinion. De Theis, following Bodæus a Stapel, and other commentators on Theophraſtus, who are led by the obvious derivation of the name from ζυγος, *a yoke*, take the tree in queſtion for our *Carpinus*, whoſe hard and tough wood ſerves to make yokes for oxen. He ingeniouſly ſupports this opinion by the Celtic origin of *Carpinus*, from *car*, *wood*, and *pin*, *head*; and further by its Engliſh ſynonym, *Hornbeam*, oxen being yoked by their horns. The wood of the Carpinus, however, is neither yellow nor beautifully veined, and it is moſt probable ζυγια had ſome other origin, or alluſion. Robert Conſtantine, cited by Bodæus a Stapel, ſeems to confound the *Acer Opalus* with *Viburnum Opulus*, which he terms "the *Opulus* of Columella, a French ſhrub, uſed for bowers." This laſt has nothing in common with the hiſtory of the ζυγια.

Whatever may have been the ancient *Zygia*, Dr. Patrick Browne, finding this name unoccupied, has applied it to a Jamaica ſhrub, which appears to belong to *Mimoſa*; ſee Browne Jam. 279. t. 22. f. 3. Nor is this application ſo unſuitable as may ſeem at firſt ſight; for the author had evidently in his mind the yoked leaflets, to which he alludes in his ſpecific definition. We do not find that Linnæus, except in manuſcript, or any other author, has adopted this as a *Mimoſa*. Juſſieu, in his Gen. Pl. 366, ranges Browne's *Zygia*, with a few other genera, at the end of his *Leguminoſæ*, adding a reference to *Mimoſa Bourgoni*, Aubl. Guian. t. 358, as a ſimilar plant or genus. We do not ſee why it was not placed near *Mimoſa*, in the firſt ſection of that natural order. Swartz, Ind. Occ. 980, ſpeaks of Browne's figure of the flower of *Zygia*, as exactly like his own *Mimoſa comoſa*, Prodr. 85; but he adds that the plants are different, without any further elucidation of the former. There is no ſpecimen of *Zygia*, amongſt the plants in the Linnæan herbarium, collected by Browne, and ſent by Solander to Linnæus. In a manuſcript catalogue of Jamaica plants, in Dr. Browne's own hand, given to the writer of this article by A. B. Lambert, eſq., *Mimoſa Zygia* ſtands between *fagifolia* and *Unguis Cati*, with this remark, which is not in the author's Hiſtory of Jamaica, "*folia bijugata, ſive ſuſtentaculis bipartitis, ſingulis diphyllis.*" This plant is there called Yoke-wood. In the printed work it is denominated Horſe-wood, or Hoop-wood, the wood being "pretty tough, and ſometimes cut for hoops. The ſhrub is very common in St. Mary's, growing chiefly in low moiſt lands; but is ſometimes found in the mountains, where it commonly riſes to the height of ten or twelve feet, or better." Theſe are all the particulars we can gather relative to Browne's *Zygia*.

Zygia, in the *Inſtrumental Muſic of the Ancients*, a flute peculiar to weddings, according to Apuleius. (Metam. lib. iv.) The word *zygia* is a Greek adjective, which implies *nuptial*. The zygia was probably a double flute; for Julius Pollux (Onomaſt. lib. iv. c. 10.) ſays, "there was alſo a flute air for the wedding; executed on two flutes, one longer than the other."

Zygia, in *Entomology*, a genus of inſects belonging to the order of coleoptera, the characters of which are, that the antennæ are moniliform, the palpi unequal and filiform, the lip elongated and membranaceous, and the jaw unidentated. There is one ſpecies, *viz.*

Oblonga. Found in the Eaſt, oblong, red, with head and wing-ſheaths cyaneous.

ZYGIANA, in *Ancient Geography*, a country of Aſia Minor, in Bithynia. Ptolemy.

ZYGIS, in *Botany*, the ſpecific name of a ſpecies of Thymus, (ſee that article, n. 9,) ſuppoſed to be the ζυγις of Dioſcorides. De Theis, who writes this word ζιγις, without any authority that we can find, derives it from ζιγγος, *the hum of bees*, which is confirmed, apparently without his knowledge, by the modern Greek name of the ſame plant, σμαζι, *the delight of bees*. Such an appellation is peculiarly ſuitable to a plant well known to be highly grateful to thoſe inſects, and which is ſuppoſed to give its aromatic flavour to the famous honey of mount Hymettus, a ſpot where this *Thymus* abounds. Undoubtedly there are other ſpecies of the ſame genus, as well as of *Thymbra*, *Satureia*, &c., found in the ſame neighbourhood, which contribute to produce this flavour, in as powerful a degree perhaps as the above.

ZYGITÆ, in the *Roman Galleys*, a term uſed to expreſs thoſe rowers in the triremes, or three-rowed galleys, who ſat on the ſecond row, that is, above the thalamitæ, and below the thranitæ.

ZYGOMA, Ζυγωμα, in *Anatomy*, a bone of the head, otherwiſe called os jugale; or, it is the bony arch under which the temporal muſcle paſſes.

The word is formed from ζευγνυμι, *I join*; ſo that zygoma, properly ſpeaking, is the juncture of two bones. See Cranium.

ZYGOMATIC Process of the temporal bone and os melæ: the parts contributing to form the zygoma.

ZYGOMATICUM, Os, the cheek-bone, ſo called becauſe it contributes largely to the formation of the zygoma. See Cranium.

ZYGOMATICUS, *Major and Minor*, muſcles of the face, connected to the corner of the mouth. See Deglutition.

Zygomaticus is alſo an epithet given to the ſuture that binds the two proceſſes of the zygoma together.

ZYGOPHYLLUM, in *Botany*, ſo named by Linnæus, from ζυγος, *a yoke*, and φυλλον, *a leaf*, each leaf, of moſt of the ſpecies, being compoſed of a pair of leaflets, yoked, as it were, together, and ſomewhat reſembling the foliage of the garden bean, *Vicia Faba*; whence this genus obtained, from Dodonæus and Tournefort, the name of *Fabago*. Hence alſo aroſe its Engliſh appellation of Bean-Caper, given by Gerarde. *Fabago* was properly deemed inadmiſſible, being compounded of another name, though of one no longer in uſe as generic. We may obſerve moreover, that it conveys an erroneous idea; for the plant in queſtion does not "bear beans," but leaves, reſembling bean leaves.—Linn. Gen. 212. Schreb. 288. Willd. Sp. Pl. v. 2. 560. Mart. Mill. Dict. v. 4. Ait. Hort. Kew. v. 3. 39. Sm. Prodr. Fl. Græc. Sibth. v. 1. 273. Juſſ. 296. Lamarck Dict. v. 2. 441. Illuſtr. t. 345. Gærtn. t. 112. (Fabago; Tourn. t. 135.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Gruinales*, Linn. *Rutaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five ovate, obtuſe, concave, erect leaves. *Cor.* Petals five, dilated upwards, obtuſe, emarginate, rather longer than the calyx. Nectary of ten converging, pointed leaves, or ſcales, ſometimes divided, embracing the germen, each of them attached to one of the filaments near its baſe. *Stam.* Filaments ten, awl-ſhaped, attached to the outſide of the nectary, ſhorter than the corolla; anthers oblong, incumbent. *Piſt.* Germen ſuperior, oblong, tapering at the baſe; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma ſimple. *Peric.* Capſule oblong, or roundiſh, with five angles and five intermediate furrows, five cells and five valves, the partitions linear, from the middle of each valve. *Seeds* ſeveral, roundiſh kidney-ſhaped, inſerted alternately, in two rows, into the middle of the valves.

Obſ. Linnæus remarks, that the ſeed-veſſel differs in ſhape in the different ſpecies, and that in ſome the flowers are four-cleft and octandrous. Schreber records an obſervation of Reichard, merely taken from the *Mantiſſa* of Linnæus, that *Z. album* has five *ſtigmas*; but we do not find this to be correct. Our fifteenth ſpecies is ſaid to have five diſtinct *ſtyles*.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectary of ten ſcales, embracing the germen, and bearing the ſtamens. Capſule of five cells, ſuperior.

The plants of this genus are, for the moſt part, ſhrubby, with ſimple or twin *leaves*, (rarely ternate or pinnate,) which are oppoſite, moſtly ſtalked, entire, often fœtid, of a thick or ſucculent texture, accommodated to the dry and ſunny ſituations where the greater part of the ſpecies grow. A very few are found in South America, or Guinea; the reſt are natives of Syria, Arabia, Siberia, and eſpecially of ſouthern Africa, about the Cape of Good Hope. The *flowers* are ſolitary, axillary, yellow, white, or reddiſh, often brilliant and rather handſome. The *ſeed-veſſel*, though anſwering in general to the above deſcription, which is made from *Z. Fabago*, is variouſly ſhaped in the different ſpecies, and in ſome appears to be lined with a ſort of horny elaſtic coat, analogous to the tunic of the *ſeeds*, ſo remarkable in the genuine *Rutaceæ*. Such is the caſe in *Z. microphyllum*, the edges of whoſe inflexed valves ſeem to conſtitute the partitions; yet the cells do burſt at the outer margin, as well as at the inner. Willdenow defines fourteen ſpecies, which we ſhall find a neceſſity of extending to ſixteen.

1. Z. *ſimplex.* Cylindrical-leaved Bean-Caper. Linn. Mant. 68. Willd. n. 1. (Z. portulacoides; Forſk. Ægypt.-Arab. 88. Ic. t. 12. f. B.)—Leaves ſimple, ſeſſile, cylindrical.—The moſt common of all plants in the drieſt parts of the deſerts of Arabia, where it is known by the name of *Garmal*, and eſteemed by the Arabs very good for removing ſpecks in the eyes, for which purpoſe the bruiſed leaves are applied, mixed with water. For this we have the authority of Forſkall, who ſent ſeeds to Linnæus. Theſe vegetated at Upſal, but the plants did not live to produce flowers. The *root* is ſimple, tapering, apparently annual. *Stem* proſtrate, repeatedly forked, round, ſmooth. *Leaves* ſeſſile at each joint, ſpreading, an inch long, obtuſe, ſomewhat dotted. *Flowers* yellow, quarter of an inch in diameter, almoſt ſeſſile. *Petals* round, with long claws.

2. Z. *cordifolium.* Heart-leaved Bean-Caper. Linn. Suppl. 232. Willd. n. 2. Thunb. Prodr. 80. Ait. n. 1.—Leaves ſimple, ſeſſile, oppoſite, roundiſh, ſomewhat heart-ſhaped.—Gathered by Thunberg, at the Cape of Good Hope, from whence it was ſent by Mr. Maſſon to Kew garden, in 1774. This is a green-houſe *ſhrub*, flowering in October. We have ſeen no ſpecimen.

3. Z. *Fabago.* Common Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 3. Ait. n. 2. (Capparis Fabago; Dod. Pempt. 747. Ger. Em. 897. Beſl. Eyſt. æſtiv. ord. 10. t. 1. f. 1. C. leguminoſa; Lob. Ic. v. 2. 58. Fabago Belgarum; Dalech. Hiſt. 456. Telephium Dioſcoridis; Column. Ecphr. 132. t. 131. Morgſani; Rauw. It. t. 113.)—Leaves conjugate, ſtalked; leaflets obovate. Calyx ſmooth. Petals entire. Capſule oblong. Stem herbaceous.—Native of Syria, Perſia, Barbary, &c. A hardy, but not common, herbaceous perennial in our gardens, flowering in autumn, cultivated by Gerarde, in 1596, and ſeen a few years afterwards, in the garden of cardinal Aldobrandini, at Rome, by Fabius Columna, who took this plant for the *Telephium* of Dioſcorides, and has left us a moſt faithful repreſentation of it, too much neglected by Linnæus and recent authors, who only refer to Dodonæus. Whether Columna erred or not with reſpect to the name, the reader will judge by conſulting the article TELEPHIUM. The *root* is tapering, fleſhy, producing from its crown ſeveral ſpreading, alternately branched, leafy, round, herbaceous, ſmooth *ſtems*, one and a half or two feet high. *Leaflets* an inch long, entire, ſmooth, green, unequal at the baſe, furniſhed with a principal rib, and one or two ſmaller ones. *Footſtalks* rather ſhorter than the leaflets, ſwelling upwards, ſmooth, channelled, crowned with a ſmall, intermediate, awl-ſhaped point, like an abortive leaflet. *Stipulas* between the footſtalks, in pairs, membranous, ovate, pointed, oblique. *Flowers* yellow, on ſimple, axillary, oppoſite, nearly upright ſtalks, hardly ſo long as the footſtalks. *Calyx-leaves* concave, quarter of an inch long, green, even, with a membranous edge. *Petals* rather longer, obtuſe. *Nectaries* jagged, almoſt pectinate. Five of the *ſtamens* deflexed, five aſcending. *Capſule* above an inch in length. *Seeds* numerous.

4. Z. *fœtidum.* Fœtid Bean-Caper. Schrad. Sert. Hannov. 17. t. 9. Willd. n. 4. Ait. n. 3. (Z. inſuave; Curt. Mag. t. 372.)—Leaves conjugate, ſtalked; leaflets obovate. Calyx downy. Petals jagged. Capſule roundiſh. Stem ſhrubby.—Native of the Cape of Good Hope, from whence it was introduced in 1790, by Mr. Maſſon. This is a hardy green-houſe ſhrub, flowering all ſummer long, but rendered undeſirable by the ſtrong fox-like ſcent of its *leaves*, reſembling that of the Crown Imperial, and peculiarly offenſive when the houſe is either ſhut up, or warmed by the ſun. The ſhrubby *ſtem* diſtinguiſhes this ſpecies from the laſt; but the ſhort, roundiſh, or obovate, *fruit*, and jagged *petals*, which are five times the length of the calyx, and marked with a red ſpot at the baſe of their limb, afford eſſential marks of difference. *Z. retrofractum* of Thunberg, cited with a mark of doubt by Willdenow, has no reſemblance to either.

5. Z. *maculatum.* Spotted-flowered Bean-Caper. Ait. ed. 1. v. 2. 60. ed. 2. n. 4. Willd. n. 5.—"Leaves conjugate, ſtalked; leaflets linear-lanceolate."—Native of the Cape of Good Hope, from whence it was introduced, in 1782, by George Wynch, eſq. A green-houſe ſhrub, flowering in October and November. The *petals* are yellow, with a red heart-ſhaped ſpot, at the baſe of each, above which, in the three upper ones only, is a tranſverſe red line. *Aiton.*

6. Z. *coccineum.* Scarlet-flowered Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 6. (Z. deſertorum; Forſk. Ægypt.-Arab. 87. Ic. t. 11. Fabago arabica teretifolia, flore coccineo; Shaw Afric. n. 231. f. 231.)—Leaves conjugate, on a fleſhy ſtalk; leaflets cylindrical, ſmooth. Capſule oblong.—Plentiful in the arid valleys of the deſert, between Cairo and Suez. The Arabs call this plant *Rottræjt.* All kinds of cattle, even the camel, refuſe to eat it. *Forſkall.* The *ſtem* is ſhrubby, aſcending, much branched, often a foot and a half high. *Leaflets* half or three-quarters of an inch long, obtuſe, thick and ſucculent, quite ſmooth, ſupported in pairs on a club-ſhaped *footſtalk*, ſomewhat more in length. *Petals* red, pointed. *Capſule* near an inch long. The ſhape of the *capſule* and *leaflets*, not to mention the colour of the *flowers*, diſtinguiſhes this ſpecies from the following.

7. Z. *album.* White Bean-Caper. Linn. Sp. Pl. 551. Mant. 379. Willd. n. 7. Ait. n. 5. Linn. fil. Dec. 1. 11. t. 6. Sm. Fl. Græc. Sibth. t. 371, unpubliſhed. (Z. proliferum; Forſk. Ægypt.-Arab. 87. Ic. t. 12. f. A.)—Leaves conjugate, on a fleſhy ſtalk; leaflets obovate, downy and hoary. Capſule roundiſh, five-lobed.—Native of Egypt, Cyprus, Barbary, &c. Forſkall found it very abundantly about Alexandria; and Deſfontaines near Tripoli, as mentioned by Shaw. Mr. Maſſon met with it in the Canary iſlands, and ſent plants or ſeeds to Kew, in 1779, where this ſpecies is ſaid to be kept in the dry ſtove, but not yet to have flowered. The *ſtem* is woody, diffuſe, much branched, and very leafy. *Leaves* oppoſite, or aggregate, being accompanied by axillary tufts of ſmaller ones. The *leaflets*, as well as their *footſtalk*, are thick, round, and juicy, both hoary, like the young *branches*, with fine, ſhort, denſe pubeſcence: the former are obovate, or almoſt globular, ſeldom a quarter of an inch long: the *footſtalk* twice as much, and club-ſhaped. *Flowers* a third of an inch broad. *Calyx* reddiſh. *Petals* white, obtuſe, crenate. *Germen* roundiſh, depreſſed, downy, with five rounded lobes. *Capſule* of the ſame ſhape; its coat, according to Forſkall, pulpy, and there are only two *ſeeds* in each cell. The *ſtigma* is repreſented, in Mr. Ferdinand Bauer's drawing, rather ſlightly notched, not ſimple, as deſcribed by the younger Linnæus; but ſtill leſs can we diſcern the five acute *ſtigmas*, mentioned in the *Mantiſſa*.

8. Z. *Morgsana.* Four-leaved Bean-Caper. Linn. Sp. Pl. 551. Willd. n. 8. Ait. n. 6. (Fabago capenſis fruteſcens major; Dill. Elth. 142. t. 116. f. 141. F. triphylla et tetraphylla, flore quadripetalo, fructu membranaceo quadrangulari; Burm. Afric. 7. t. 3. f. 2. Planta africana

fruteſcens, portulacæ folio, *Morgsani* ſyrorum, ex brevi pediculo binis; Pluk. Amalth. 173. t. 429. f. 4.)—Leaves conjugate, nearly ſeſſile; leaflets obovate, flat, ſmooth. Stem ſhrubby. Capſule roundiſh, tumid, five-lobed.—Native of the Cape of Good Hope. A green-houſe ſhrub in England, flowering moſt part of the ſummer. *Aiton.* The *branches* are ſomewhat quadrangular, very ſmooth. *Leaflets* an inch long, ſucculent, but not tumid; their common *footſtalk* very ſhort, or altogether wanting. *Stipulas* in pairs, lanceolate, pointed, reflexed. *Flower-ſtalks* the length of the leaves, unilateral, in pairs, declining. *Flowers* large, yellow, turning white in decay; their *petals* obovate, entire, ſtreaked with purple at the baſe. *Nectaries* jagged or fringed, as in n. 3, 4, and perhaps ſome other ſpecies. *Capſule*, as repreſented by Burmann, an inch in diameter, globoſe, with five large, rounded, prominent lobes. We find the *petals* uniformly five, and entire; Linnæus ſays four, rarely five, and ſomewhat emarginate. There is reaſon to believe he confounded more than one ſpecies under the preſent. He has applied a ſpecific name, which properly belongs to *Z. Fabago.*

9. Z. *ſeſſilifolium.* Seſſile-leaved Bean-Caper. Linn. Sp. Pl. 552. Willd. n. 10. Ait. n. 7. (Fabago capenſis fruteſcens minor; Dill. Elth. 142. t. 116. f. 142. F. humilis quadrifolia glabra, flore albido fructu rotundo; Burm. Afric. 4. t. 2. f. 1. F. africana arboreſcens, flore ſulphureo, fructu rotundo; Commel. Rar. 10. t. 10.)—Leaves conjugate, ſeſſile; leaflets obovate, flat, ſmooth. Stem ſhrubby. Capſule globoſe, undivided.—Native of the Cape of Good Hope. A green-houſe ſhrub, flowering in July and Auguſt, which appears to have been known in our gardens for above a century. Its ſize is inferior to the laſt, from which, according to Dillenius and Burmann, this ſpecies is eſſentially diſtinguiſhed by the *fruit.* The *capſule* is either exactly globular, or, as Dillenius ſays, depreſſed like a Dutch cheeſe, its diameter not half an inch, nor is it furrowed, nor parted into large tumid lobes, like *Z. Morgsana.* The *leaves* too are ſmaller, and more perfectly ſeſſile. Linnæus defines them "rough-edged," which we can find nothing to countenance, even in his own ſpecimen. The *flowers* are drooping, orange-coloured, turning white as they fade; the *petals* crenate at the end, not much ſpreading. The *nectaries* are ſmaller, and much leſs conſpicuouſly jagged than in the preceding.

10. Z. *fulvum.* Tawny Bean-Caper. Linn. Sp. Pl. ed. 1. 386. (Z. ſeſſilifolium β; Linn. Sp. Pl. ed. 2. 552. Willd. n. 10, β. Fabago flore luteo, petalorum unguibus rubris, fructu ſulcato oblongo acuto; Burm. Afric. 6. t. 3. f. 1.)—Leaves conjugate, ſeſſile; leaflets obovate, flat, ſmooth. Stem ſhrubby. Capſule ovate, five-angled, acute.—Native of the Cape of Good Hope. Linnæus latterly conſidered this as a variety of the laſt, but we cannot diſcover on what his opinion was founded, there being nothing in his herbarium to repreſent *Z. fulvum.* There is indeed a ſpecimen, referred by him at one time to *Z. Morgsana*, and at another to *coccineum*, on which, having no affinity to the latter, we are led to ſuſpect he wrote *coccineum* by accident for *fulvum.* In this the *leaves* have ſomething of a common *footſtalk*, though very ſhort. The *nectaries* are long and jagged, as in *Morgsana.* There is unluckily no *fruit.* Burmann's figure of the *capſule* is ſo preciſe, that, conſidering the analogy of other ſpecies, ſo well diſtinguiſhed by this part, we can have no heſitation in re-eſtabliſhing *Z. fulvum*, as eſſentially differing from *ſeſſilifolium*, whether our ſpecimen be what Linnæus intended or not. The *capſule* of the real plant is above an inch long, with five acute angles, and as many deep intermediate channels, and terminates in a point, being equally unlike *ſeſſilifolium* on one hand, and *Morgsana* on the other.

11. Z. *ſpinoſum.* Spinous Bean-Caper. Linn. Sp. Pl. 552. Mant. 380. Willd. n. 11. (Fabago tenuifolia ſpinoſa, fructu rotundo; Burm. Afric. 5. t. 2. f. 2.)—Leaves conjugate, ſeſſile; leaflets linear, fleſhy, ſmooth; flat above. Stem ſhrubby. Permanent ſtipulas hooked, ſpinous.—Native of the Cape of Good Hope. The *ſtem* is buſhy, ſhrubby, about a foot high, branched from top to bottom; the branches acutely quadrangular. *Leaves* numerous, fleſhy like thoſe of a *Sedum;* the *leaflets* acute, ſcarcely an inch long, blunt, with a ſmall point; their under ſide convex, or hemiſpherical. *Stipulas* in pairs, ſmall, lanceolate, ſpreading, at length becoming hardened, hooked, and pungent, ſo as to form two, three, or four prickles at every joint. *Flowers* drooping, large and handſome, on longiſh, ſolitary, lateral ſtalks. *Calyx* reddiſh. *Petals* yellow, fading to white, nearly or quite entire. *Nectaries* entire, not fringed. *Capſule*, according to Burmann, "round, ſmooth, compreſſed, terminating in the very acute *ſtyle.*"

12. Z. *microphyllum.* Small-leaved Bean-Caper. Linn. Suppl. 232. Willd. n. 9. Thunb. Prodr. 80.—Leaves conjugate, ſomewhat ſtalked; leaflets inverſely heart-ſhaped, ſmooth. Stem ſhrubby, with aſcending branches. Capſule roundiſh, abrupt, of five compreſſed lobes. Style permanent.—Gathered by Thunberg, at the Cape of Good Hope. This is one of thoſe hard, rigid, ſmall-leaved, much branched *ſhrubs*, ſo characteriſtic of the botany of its native country. The *branches* are round, knotty, ſpreading, ſlightly hoary, or glaucous. *Leaflets* from one to three lines long, thick, oblique, ſometimes obovate, but more frequently cloven, ſo as to become inverſely heart-ſhaped; they are ſupported on a manifeſt, though ſhort, thick *footſtalk.* *Stipulas* minute. *Flower-ſtalks* thread-ſhaped, ſolitary, longer than the leaves, from the ſame buds. *Flowers* drooping, rather ſmall, yellow. *Calyx* reflexed. *Capſule* the diameter of a pea, conſiſting of five rounded, vertical, compreſſed lobes, crowned with the ſpinous ſtyle, their ſurface rather reticulated: each of them burſts at the inner, as well as outer, edge into two elaſtic, or cartilaginous, valves, coated with a thin ſkin.

13. Z. *retrofractum.* Recurved Bean-Caper. Thunb. Prodr. 80.—Leaves conjugate, ſtalked; leaflets obovate, ſmooth. Stem ſhrubby, with ſpreading recurved branches. Flower-ſtalks ſhorter than the leaves.—Gathered at the Cape of Good Hope, by profeſſor Thunberg, from whom we have a ſpecimen. His ſhort ſpecific character was Willdenow's only guide, when the latter reduced this plant to *Z. fœtidum*, to which it has no affinity, and very little reſemblance. The preſent, though a very diſtinct ſpecies, is moſt allied to *Z. microphyllum*, but the long, ſpreading, deflexed *branches* afford a characteriſtic difference of habit. The *leaflets* too are ſmaller, and ſeem to be always obovate, not obcordate. *Flowers* very ſmall, their little thick *ſtalks* hardly ſo long as the *calyx.* *Nectaries* lanceolate, entire. *Germen*, after the other parts of the flower are fallen, elliptic-oblong, deeply five-lobed, acute, crowned with the ſtyle; but we have none in an advanced ſtate, to enable us to judge whether the lobes ever extend into a rounded ſemi-orbicular ſhape, like the laſt, as may very probably be the caſe.

14. Z. *æſtuans.* Surinam Bean-Caper. Linn. Sp. Pl. 552. Willd. n. 12.—Leaves conjugate, ſeſſile; leaflets obovate, abrupt. Stems herbaceous, diffuſe. Stipulas five at each joint.—Gathered in Surinam by Rolander, who ſent ſeeds to Linnæus; but the plants raiſed from them

died without flowering. The *ſtems* are a foot long, ſmooth, roundiſh, except a flatneſs on the upper ſide. *Leaves* oppoſite, without veins. *Stipulas* reflexed; two between each pair of leaves, at the uppermoſt ſide of the ſtem; one between the ſame pair, on the lower ſide; one between the leaflets of each leaf. *Linnæus.* This laſt ſeems to anſwer to the little point, or rudiment of a leaflet, which occurs in ſeveral others of the broad-leaved ſpecies.

15. Z.? *lanatum.* Woolly-jointed Bean-Caper. Willd. n. 13.—"Leaves ternate; leaflets papillary beneath. Styles five. Stem zigzag, woolly at the joints."—Native of Sierra Leone. A plant of a doubtful genus, ſeen by the above author in a dried ſtate only. The *ſtem* appears herbaceous, round and ſmooth, except the joints, which are remarkably woolly. *Leaves* oppoſite, ſmall, on *footſtalks*. *Leaflets* three, on very ſhort partial *footſtalks*, roundiſh, tapering at the baſe, pointed at the end; ſmooth on the upper ſide; beſet underneath with prominent points. *Flower-ſtalks* axillary, ſolitary, ſingle-flowered, erect; drooping after flowering. *Calyx* of five linear, obtuſe leaves; downy on the inſide, and at the edges. *Corolla* not preſent; perhaps fallen. *Filaments* but little dilated at the baſe. *Germen* club-ſhaped. *Styles* five, long, and thread-ſhaped. *Stigmas* obtuſe. *Capſule* ovate, with five angles, five cells, and five valves with keel-like edges, burſting at the baſe. *Seeds* ſolitary. *Willdenow.* The ternate *leaves* afford a ſtrong preſumption againſt this being a *Zygophyllum*, and the want, as it ſeems, of *nectaries*, with the five *ſtyles*, decide the queſtion, in our judgment. Not having ſeen the plant, we leave it here for further inquiry.

16. Z. *arboreum.* Tree Bean-Caper. Jacq. Amer. 130. t. 83. Linn. Sp. Pl. 1673. Willd. n. 14.—Leaves abruptly pinnate. Stem arboreous.—Native of South America. Found by Jacquin, in uncultivated valleys about Carthagena, as well as in woods on the ſandy ſea-ſhore, flowering in July. A very handſome *tree*, forty feet high; the *trunk* being about ſix feet; the *head* denſe, widely ſpreading, and extremely ornamental; the *branches* oppoſite, or forked. *Leaves* very numerous, oppoſite, four inches long, of about ſeven pair, without a terminal one, of alternate, ſeſſile, elliptic-oblong, obtuſe, entire, ſmooth, ſhining *leaflets*, an inch or more in length. *Cluſters* axillary and terminal, ſhorter than the leaves, compound, lax, generally forked. *Flowers* large and handſome, without ſcent. *Calyx* yellowiſh-green, ſmooth. *Petals* orange-coloured, roundiſh, emarginate; their claws as long as the calyx. *Nectary* fringed; its ſcales gradually larger towards the upper ſide of the flower. *Stamens* erect, converging. *Germen* tapering at the baſe, into a long, thick, five-furrowed ſtalk. *Capſule* with five large membranous lobes. When it bloſſoms this tree affords a moſt magnificent ſpectacle, from the innumerable flowers, covering the bright green leafy head. Before the infloreſcence appears, the leaves might incautiouſly be ſuppoſed doubly pinnate. The inhabitants give the name of *Guay-acan* to this tree, which is a general appellation for all kinds of hard wood that is uſeful for cabinet or other work. The trunk is reported to become changed into ſtone by lying in the earth, being incapable of corruption. *Jacquin.*

Zygophyllum, in *Gardening*, compriſes plants of the herbaceous and woody ſucculent exotic kind, among which the ſpecies are, the common bean-caper (Z. Fabago), the African bean-caper (Z. ſeſſilifolium), the purſlain-leaved Ethiopian bean-caper (Z. Morgſana), the thorny bean-caper (Z. ſpinoſum), and the white Egyptian bean-caper (Z. album).

The firſt has a deep fleſhy root, and ſoft herbaceous ſtalks, which decay in the winter.

The ſecond is of a ſhrubby growth, and there are varieties, with yellow flowers, with ſulphur-coloured flowers, with white flowers, with copper-coloured flowers, having moſtly a reddiſh or brown ſpot near the baſe of each petal.

The third has alſo a ſhrubby ſtem, and there is a variety with flame-yellow-coloured flowers.

And the fourth has an under ſhrubby growth.

Method of Culture.—The firſt ſort is raiſed from ſeeds, which ſhould be ſown in the ſpring in pots filled with light ſandy mould, or on a hot-bed. When the plants have a few inches growth, they ſhould be removed into ſeparate pots, plunging them into a hot-bed, admitting air ſo as gradually to harden them to the open ground. They ſhould be protected for a winter or two, and then be turned out into borders, or other parts, where the ſituation is warm, and the ſoil dry and rubbiſhy, as they are of a ſucculent nature.

The other ſorts are capable of being increaſed by cuttings and ſeeds; the cuttings ſhould be planted out in the ſpring or ſummer in pots filled with light ſandy mould, and plunged in a hot-bed, being occaſionally watered, when they quickly emit roots, and ſhoot at top; and when ſown in the ſummer months, they may be planted in a ſhady place, or in pots placed in the ſhade, giving frequent waterings, when they will alſo take good root. In either method, they ſhould be potted off ſeparately towards autumn, in order to be moved into the green-houſe or glaſs-caſe in the beginning of autumn.

The ſeed ſhould be ſown in the ſpring in pots of light earth, and be plunged in a hot-bed, where they ſoon come up: when a little advanced in growth, they ſhould be pricked out in ſeparate ſmall pots, being watered and re-plunged into the hot-bed till well-rooted, when they ſhould be gradually hardened to the full air, and in June ſet out to remain till the autumn, when they ſhould be placed in the green-houſe, or ſome other place, where they may have protection for the winter.

The firſt ſort affords variety in the borders, as well as among other potted plants; and the others in collections of the green-houſe kind.

ZYGOPOLIS, in *Ancient Geography*, a town of Aſia, in the Colchide, near the town of Trapezunte.

ZYGOSTATES, among the *Ancients*, an officer who was the overſeer of weights, and was to take care that tradeſmen uſed none but what were juſt.

ZYGRIS, in *Ancient Geography*, a town on the coaſt of the nome of Lybia; and *Zygritæ* are the people who inhabit this nome.

ZYMAR, a name given by ſome of the chemical writers to verdigriſe.

ZYME, a word uſed by many authors to expreſs ferment or leaven.

ZYMOLOGY, in *Chemiſtry*, a term uſed by ſome writers to expreſs a treatiſe on fermentation, or the doctrine of fermentation in general.

Mr. Sympſon has written a treatiſe on this ſubject, in which he refers the whole to the internal conflicts of acid and ſulphur in bodies, and ſeems to think that the phenomena of hot-baths, the generation of minerals, and the production of mineral waters, the grand appearances of light, heat, and fire, and the generality of the ſubterranean phenomena of damps, earthquakes, and fiery eruptions, and the appearance of meteors, may be all explained by the doctrine of fermentation, eſtabliſhed on this baſis. Sympſon's Zymol. Chym.

ZYMOSIMETER, formed from ζυμωσις, *fermentation*, and μετρον, *meaſure*, an inſtrument propoſed by Swammerdam, in his book "De Reſpiratione," wherewith to meaſure the degree of fermentation occaſioned by the mixture of different matters; and the degree of heat which thoſe matters acquire in fermenting; as alſo the heat, or temperament, of the blood of animals.

ZYMOSIS, a word uſed by ſome to expreſs fermentation, and by others for a flatulent tumour of the liver, or other of the viſcera.

ZYMUM, in *Botany*, apparently from ζυμη, *a ferment*, a name which, De Theis ſays, is given to a plant of the Mauritius, by Norôna, a Spaniſh botaniſt, but without any explanation of its meaning, or application. This name is, nevertheleſs, retained by Aubert du Petit-Thouars, in his *Plantes des Iſles d'Afrique*, faſc. 4.

ZYORY, in *Geography*. See Sohrau.

ZYPE, a kind of iſland of North Holland, formed by canals cut from the Zuyder Zee to the German ocean. It was formerly a moraſs, but is now converted into rich meadow land. On this ſpot the duke of York was poſted, when he made terms with the French general Brune to evacuate Holland; having it in his power, by taking up the ſluices, to inundate the country.

ZYRAS, in *Ancient Geography*, a river of Thrace, which watered the town of Dionyſiopolis. Pliny.

ZYRMA, a town of Thrace, near which ran the river Hebrus. Ptolemy.

ZYTHOGALA, formed of ζυθος, *cereviſia*, and γαλα, *lac*, *beer poſſet*, a drink recommended by Sydenham, as good to be taken after a vomit, for allaying the acrimonious and diſagreeable taſte it has occaſioned, as well as to prevent gripes. Syden. Obſerv. de Morb. acut. p. 39.

ZYTHUM, or Zythos, a ſort of malt liquor, in uſe among the ancient Germans.

Matthiolus repreſents the ancient *zythum*, and *curmi*, as the ſame with our beer and ale.

ZYTOMIERS, in *Geography*, a town and fortreſs of Ruſſian Poland; 65 miles W. of Kiev. N. lat. 50° 16'. E. long. 28° 54'.

ADDENDA & CORRIGENDA.

VOL. I.

AAM. To that article ſubjoin, ſee STEKAN and VAT.

AARON, or HARUN. See BAGDAD. Add, and ALMANSOR.

AARON *Aariſchon*. Inſert in the third line, after probably, as ſome ſay, but according to others, not, &c.

ABACUS, in *Architecture*, l. 23, *dele* CORINTHIAN and COMPOSITE.

ABADIOTS. See CANDIA.

ABANDONMENT, in *Commerce*, the act of relinquiſhing or ſurrendering goods to creditors and underwriters, either in lieu of a debt, or to avoid the payment of charges.

ABANDONMENT, in *Marine Inſurance*. See RISK and RECAPTURE.

ABASCIA and ABASSA. In the reference *r*. ABKHAS for ABHKAS.

ABASSI. For GOMBROON *r*. GAMBRON.

ABBEVILLE, l. 4 and 5, *r*. containing, in 1811, 21,156 inhabitants, of whom 6672 are ſlaves.

ABBEYBOYLE. After abbey, inſert ſee BOYLE, and *dele* lat. and long.

ABBOT, GEORGE, 2d col. l. 4 from the bottom, inſtead of 1723-4 *r*. 1623-4.

ABBUTALS. See ABUTTALS.

A, B, C, DARIA, in *Botany*, a name given by Rumphius, Herb. Amboin. v. 6. 145. t. 65, to the *Verbeſina Acmella* of Linnæus, ſee SPILANTHUS, n. 3. The above appellation is deſigned to expreſs the uſe made of this plant by the black ſchool-maſters at Amboyna, who cauſe their young pupils to chew the flowers or the root, either alone or with Betle-nut, in order that they may more eaſily pronounce ſome of the difficult Arabic letters, ſuch as *Tſcha* and *Ze*, both which they commonly confound with *S*. The Malay name, *Daun murit*, School-boy's herb, given to this *Spilanthus*, as well as to *Bidens piloſa* of Linnæus, has the ſame alluſion. Such plants agree with Pellitory of Spain, *Anthemis Pyrethrum*, in a peculiar property of ſtimulating the mouth, accompanied by a ſenſe of coolneſs, and a ſlight ſaline taſte, all which together cauſe a great flow of ſaliva. Hence they are beneficial in tooth-ache ariſing from cold rheum, but the ſlight numbneſs and tingling of the nerves, which attend their uſe, ſhould ſeem rather unfavourable to preciſe enunciation. The recent flowers of *Spilanthus oleracea*, ſlightly rubbed upon the gums, are perhaps the beſt of the whole tribe for producing the above effects.

ABDALLAH, EBN-ZOBEIR, l. 4, Heg. 63.

ABDAS, in *Biography*, a Perſian biſhop of the fifth century, who deſerves to be exhibited in the page of hiſtory as a cautionary example of the folly of ſupporting any cauſe by perſecution. Having deſtroyed a pagan temple belonging to the worſhippers of fire, the king of Perſia, inſtigated by the Magi, ordered him to rebuild it at his own charge; but as he refuſed to comply with this order, a dreadful perſecution was commenced againſt the Chriſtians, which laſted 30 years; and in this perſecution Abdas loſt his life. Bayle.

ABDOMINAL RING. For OBLIQUI, &c. *r*. OBLIQUUS.

ABELICEA, in *Botany*, Ἀβελικέα in modern Greek, ſee our ninth ſpecies of ULMUS.

ABERAERON, in *Geography*, a ſmall town and port of Cardiganſhire, much frequented by ſmall coaſting-veſſels, which convey the corn and other produce of the diſtrict to the Engliſh markets. The harbour has been lately much improved by the conſtruction of a pier. A market has been lately eſtabliſhed here.

ABEREMOA, in *Botany*, altered by Aublet from the Caribbean appellation of the ſame plant, Aubl. Guian. 610. t. 245; ſee GUATTERIA hereafter.

ABERPORTH, in *Geography*, a little fiſhing-town of Cardiganſhire, pleaſantly ſituated at the entrance of the river which flows by Blaenporth. The craft belonging to this port are chiefly employed in bringing lime-ſtone from Pembrokeſhire and other parts, which are burnt here, to ſupply the neighbourhood with manure, and for other purpoſes.

ABILDGARDIA, in *Botany*, a genus of Profeſſor Vahl's, dedicated by him to the memory of the late Peter Chriſtopher Abildgaard, a native of Denmark, formerly profeſſor of the veterinary art, who contributed much information to Profeſſor Rottböll on the ſubject of Graſſes. Mr. Brown retains this genus, not without a hint of its too near affinity to FIMBRISTYLIS; ſee that article. We truſt the barbariſm of the double *a* may be diſpenſed with, and we have ventured to make that alteration.—Vahl Enum. v. 2. 296. Brown Prodr. Nov. Holl. v. 1. 229.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ. *Cyperaceæ*, Brown.

Gen. Ch. *Cal.* a ſingle ſcale to each flower, ovate, pointed, concave, compreſſed, forming a ſpike, imperfectly two-ranked. *Cor.* none. *Stam.* Filaments three, rarely but one, inſerted beneath the germen, gradually elongated by age, anthers linear, longer than the filaments. *Piſt.* Germen ſuperior, acutely triangular, rather contracted at the ſummit; ſtyle bulbous and pyramidal at the baſe, the bulb triangular, broader than the germen, permanent, the upper part briſtle-ſhaped, deciduous; ſtigmas three, ſhorter than the ſtyle. *Peric.* none. *Seed* one, ſnow-white, nearly pear-ſhaped, with three angles, contracted at the baſe, crowned at the ſummit with the pointed baſe of the ſtyle, convex at the ſides, and rough with minute dots, without any ſurrounding briſtles. *Recept.* thread-ſhaped, gradually elongated, minutely cellular, dotted with brown, the edges of the cells membranous, from the permanent baſes of the ſcales.

Eſſ. Ch. Glumes chaffy, imbricated, imperfectly two-ranked. Corolla none. Style three-cleft, with a triangular, pointed, permanent baſe. Seed ſolitary, pear-ſhaped, triangular, without any briſtles at its baſe.

The *ſtems* of this genus are angular, ſlender, without joints; leafy at the bottom. *Leaves* narrow, channelled, ſheathing. *Spikes* ovate-oblong, acute, compreſſed, often twiſted; their *ſcales* cloſely imbricated, keeled, very ſmooth and poliſhed, white, dotted with purple, the green keel of each elongated into a little point; the two lowermoſt narrower than the reſt. *Vahl. Brown.*

Mr. Brown remarks, that the ſtyle is certainly deciduous, and the ſpike, when in ſeed, by no means perfectly two-ranked; circumſtances which bring the preſent genus very near to *Fimbriſtylis.* The following are the only deſcribed ſpecies.

1. A. *monoſtachya.* Single-ſpiked Abildgardia. Vahl n. 1. Br. n. 1. (Cyperus monoſtachyos; Linn. Mant. 180. Willd. Sp. Pl. v. 1. 271. Swartz Obſ. 29. Rottb. Gram. 18. t. 13. f. 3. Gramen cyperoides minimum, ſpicâ ſimplici compactâ, radice tuberoſâ odoratâ; Sloane Jam. v. 1. 120. t. 79. f. 2.)—Spike ſolitary. Scales uniform, nearly all fertile.—Gathered, by Kœnig, in ſhady ſituations in the Eaſt Indies; in the paſtures, and ſea marſhes, of Jamaica and Hiſpaniola, by Sloane and Swartz; and in the tropical part of New Holland, as well as at Port Jackſon, by Mr. R. Brown. The *root* appears to be perennial, with many long ſimple fibres. *Herb* ſlender, ſmooth and glaucous, forming tufts, about a foot high, with linear, very narrow, *leaves*, which ſometimes break off, as Vahl remarks, at a ſort of joint, below the middle of each. *Stem* ſimple, ſlender, angular, and ſtriated, taller than the leaves. *Spike* half an inch long, two-ranked, ſubtended by a linear rough-edged leaf, ſometimes, in the Linnæan ſpecimen, exceeding its own length. The *glumes*, or *ſcales*, have a green keel, accompanied by two white ribs, next to which is an aſſemblage of purple dots, the reſt being cream-coloured. Two or three of the lower *glumes* are ſmall, and apparently barren. There is ſaid to be but one *ſtamen* to each *flower*. Sloane's ſynonym ſeems, to us, doubtful.

2. A. *ſchoenoides.* Ruſhy Abildgardia. Br. n. 2.—"Spike ſolitary, naked. Outer ſcales ſhorter and barren; terminal ones narrower, with ſpreading points."—Gathered by Mr. Brown, in the tropical part of New Holland. We have ſeen no ſpecimen of this or the next.

3. A. *vaginata.* Sheathing Abildgardia. Br. n. 3.—"Spikes about three together; the middle one ſeſſile. Scales pointed. Stem briſtle-ſhaped, angular, leafleſs; ſheathed at the baſe."—Found by Mr. Brown, in the tropical part of New Holland.

4. A. *triſtachya.* Three-ſpiked leafy Abildgardia. Vahl n. 2. (Cyperus triflorus; Linn. Mant. 180. Willd. Sp. Pl. v. 1. 272. Schoenus cyperoides; Retz. Obſ. faſc. 4. 8.)—Spikes about three together; the middle one ſeſſile. Stem ſemi-cylindrical; round, bulbous, and leafy, at the baſe.—Native of the Eaſt Indies, in hard dry ground. *Kœnig.* The *ſtems* are from one to two feet high, ruſhy and rigid, erect; according to Vahl, bulbous at the bottom, and wrapped with dry brown ſheaths among the foliage. The *leaves* are ſmooth, channelled, not ſo tall as the ſtem. *Spikes* two, three, or four, twice the ſize of the firſt ſpecies, tumid, ovate, acute, twiſted, of a dirty but poliſhed white; three of them generally ſpringing from one ſhort leafy ſheath, the two lateral ones elevated on long, flattened, ſtriated, ſmooth ſtalks. *Stamens* three; *Vahl. Stigmas* long and downy.

ABINGTON, in *Geography*, a town of Maſſachuſetts, in Plymouth county, containing 1704 inhabitants.—Alſo, a townſhip of Pennſylvania, in Montgomery county, having 1236 inhabitants.—Alſo, a townſhip of Pennſylvania, in Luzerne county, having 511 inhabitants.

ABLATIVE ABSOLUTE. Subjoin, See Lowth's Grammar, p. 134.

ABOU HANNES. *Dele* See *Plate* I. *Birds.*

ABOU *Hanifah.* See HANIFAH.

ABOU-*Rihan*, in *Biography*, a geographer and aſtrologer, was born at Beroun, in the province of Khovarezm, at the commencement of the 11th century, and on account of his ſkill in ſciences, denominated *Al Mohakabad*, the very ſenſible philoſopher. He wrote a "Treatiſe on Geography," a "Theory of the Fixed Stars," a "Treatiſe on the Sphere," and an "Introduction to Judicial Aſtrology." D'Herbelot Bib. Orient.

ABRAHAM. Line 25, inſert *Ante* A.D. 1921. Col. 2, l. 56, inſtead of A.D., and col. 3, l. 34, inſtead of A.D. inſert B.C.

ABRONIA, in *Botany*, Juſſ. Gen. 448. See TRICRATUS.

ABSCESS *under the Cranium*, inſert *and.*

ABUCCO. Subjoin, See WEIGHT.

ABUSCHÆHHR. See Busheer.

ABUTA, in *Botany*, a Braſilian name, firſt publiſhed by Barrere, adopted by Aublet, and recently by De Candolle, as well as Juſſieu. It may remain for the preſent, till the characters of the genus are known. Theſe are hitherto involved in great uncertainty, the flowers not having been obſerved by any botaniſt.—Barr. Hiſt. Nat. de la France Equinoxiale, 1. Aubl. Guian. 618. Juſſ. 286. De Cand. Syſt. v. 1. 542.—Claſs and order, *Dioecia Dodecandria?* (Polyandria Polygynia, *Aubl.*) Nat. Ord. *Meniſperma*, Juſſ.

Eſſ. Ch. Male, unknown.

Female, Fl. unknown. Berries two or three, ovate, ſomewhat compreſſed, dry, ſingle-ſeeded.

Lamarck and Willdenow have conſidered this genus as not diſtinct from Meniſpermum, ſee that article; but Profeſſor De Candolle reckons the large, dry, ovate, not kidney-ſhaped, *berries*, ſo termed, we preſume, becauſe of the brittle ſhell of their ſeed, as affording a ſufficient character, even without the flowers. He is more inclined to refer *Abuta* to his own genus of *Cocculus*, ſeparated by him from *Meniſpermum*; but their habits are ſomewhat different. Two ſpecies of *Abuta* are defined by this writer, but *A. amara* of Aublet, Guian. 620. t. 251, is referred, on the authority of Richard, to *Ariſtolochia*. Theſe are large twining ſhrubs, with ovate *leaves*, whoſe pinnate ribs ſpring nearly from one point at the baſe.

1. A. *rufeſcens*. Reddiſh Abuta, or Falſe Pareira-brava. Aubl. Guian. 618. t. 250. De Cand. n. 1. (A. ſcandens, ampliſſimo folio cordiformi, ſubtus tomentoſo; Barr. Fr. Equin. 1. Meniſpermum Abuta; Lamarck Dict. v. 4. 100. Willd. Sp. Pl. v. 4. 828.)—Leaves ovate, acute, entire; downy beneath.—Native of woods in Braſil, Cayenne, and Guiana. Aublet found it in almoſt every foreſt of the laſt-mentioned country, that he examined, bearing fruit in January. The Portugueſe confound this plant with the true *Ciſſampelos Pareira*, and conſider its root of equal efficacy in jaundice, diſorders of the kidneys and bladder, as well as internal abſceſſes, and menſtrual ſuppreſſions. The climbing *ſtem*, and downy branches, reach to the tops of trees, and bear large, alternate, ſtalked, coriaceous, veiny, entire *leaves*, from four inches to a foot long; ſmooth above; covered beneath with prominent, reticulated, downy veins, ſpringing copiouſly from five principal ribs, which radiate from nearly the baſe of the leaf. The *footſtalks* are about half the length of the leaves, round, finely and denſely downy. *Berries* elliptical, downy, an inch long, three upon each receptacle, and forming large axillary branches. There is ſaid to be a variety whoſe woody parts, as well as the pubeſcence of the foliage, is reddiſh. The Creoles make a decoction of the branches of the red and white varieties indifferently, to cure obſtructions of the liver, to which they are very ſubject. *Aublet.*

2. A. *candicans*. Whitiſh-leaved Abuta. De Cand. n. 2. Richard MSS.—"Leaves ovate, pointed, ſomewhat crenate, or minutely lobed; ſmooth and whitiſh beneath."—Gathered in Cayenne by M. Richard, who unluckily did not meet with the flowers. The *branches* are round and ſmooth. *Footſtalks* four inches long, round and ſmooth likewiſe. *Leaves* five to ſeven inches long, three or four broad, nearly entire, or ſlightly criſped, or toothed, in the margin; even and ſmooth above; pale or nearly white underneath, but, as it ſeems, quite ſmooth; the ribs pinnate, the two lower lateral ones cloſe together. The inhabitants of Cayenne call this plant *Liane amère*, Bitter Vine. *De Candolle.*

ABYSSINIAN Music. See Music.

ACACIA, in *Botany*, an ancient Greek name, derived from *ακαζω*, *to point* or *ſharpen*, in reference to its thorny habit. De Theis deduces all words of this etymology from the Celtic, *ac*, a point. The ακακια of Dioſcorides, book i. chap. 133, was a ſort of Egyptian thorn, "of a diffuſe or ſpreading mode of growth, with a white flower, and a pod reſembling lupines." Its expreſſed juice, dried in the ſhade, was an aſtringent medicine much in uſe, and the ſhrub yielded alſo a clear white gum. This may very well have been a plant of the preſent genus. Willdenow, who eſtabliſhed this genus, firſt ſeparated it from the Linnæan Mimosa (ſee that article), which has become inconveniently numerous in ſpecies, and unqueſtionably is capable of diviſion by the characters of the fruit, of which Willdenow has very well taken advantage. He leaves in *Mimoſa* ſuch ſpecies as have a *lomentum*, or legume ſeparating into ſingle-ſeeded joints. Of theſe he defines 32, having a five-toothed corolla, and only eight ſtamens; and to many of them, being ſenſitive, the name *Mimoſa* is properly appropriated. For his other genera taken from hence, ſee Desmanthus, Inga, and Schrankia. We muſt obſerve however that the *Acacia* of Tournefort is not analogous to what is now before us.—Willd. Sp. Pl. v. 4. 1049. Ait. Hort. Kew. v. 5. 459. Purſh 305.—Claſs and order, *Polygamia Monoecia*, or rather perhaps *Polyandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-toothed. Corolla five-cleft. Stamens indefinite, from four to an hundred. Piſtil one. Legume of two valves. Some flowers male.

Obſ. The flowers, ſometimes four-cleft, have, in ſome inſtances, a corolla which ſeparates into four or five diſtinct petals. We have not had an opportunity of examining a ſufficient number of ſpecies to give a full generic character. Willdenow reckons up 102, in ſeven ſections; to which Mr. Brown has made numerous additions from New Holland, partly deſcribed in *Ait. Hort. Kew.* above cited. We ſhall give ſome examples of each ſection.

Sect. 1. *Leaves ſimple.* Sixteen ſpecies in Willdenow, to which ten are here added, nine of them from *Hort. Kew.*—Of this ſingular tribe, firſt diſcovered by our Britiſh circumnavigators, all the ſpecies, as far as hitherto known, bear, in a ſeedling ſtate, compound pinnate *leaves*, ſoon replaced by leafy or ſpinous ſimple footſtalks, which latter conſtitute the only foliage of the adult plant. There are no proper thorns or prickles in theſe. Their *ſtem* is ſhrubby, or arboreous, as well as throughout the whole genus. We have ſlightly adverted to this ſection at the end of our article Mimosa.

A. *verticillata*. Whorl-leaved Acacia. Willd. n. 1. Ait. n. 1. (Mimoſa verticillata; L'Herit. Sert. Angl. 30. Curt. Mag. t. 110. Venten. Malmaiſ. t. 63.)—Leaves whorled, linear-awlſhaped, rigid, ſpinous-pointed. Spikes ſolitary, cylindrical.—Gathered in Van Diemen's iſland, by the late Mr. David Nelſon, who ſent ſeeds to ſir Joſeph Banks in 1780. Hence this ſingular ſhrub became known in the Engliſh green-houſes, where it flowers in the ſpring, and ripens ſeed. The firſt two or three *leaves* of ſeedling plants are conjugate and pinnate, with elliptical obtuſe entire *leaflets*: the reſt are accurately whorled, ſimple, pungent, flattiſh thorns rather than leaves, ſix or eight in each whorl, about half an inch long, ſomewhat unequal, ſpreading horizontally. *Flowers* in denſe, yellow, thick, obtuſe *ſpikes*, which are an inch, more or leſs, in length, each on a ſimple, ſlender, axillary ſtalk, but there are ſometimes two or more of theſe ſtalks together. *Legume* linear, compreſſed, corrugated, of one cell with ſeveral kidney-ſhaped *ſeeds*.

A. *juniperina*. Juniper-leaved Acacia. Willd. n. 2. Ait. n. 2. (Mimoſa juniperina; Venten. Malmaiſ. t. 64. "M. ulicifolia;

“ M. ulicifolia ; Wendl. Coll. 25. t. 6.” *Willd.*) — Leaves imperfectly whorled, linear-awlſhaped, rigid, ſpinous-pointed. Spikes ſolitary, globoſe.—Found near Port Jackſon, New South Wales, from whence ſir Joſeph Banks is ſaid to have received ſeeds about the year 1790. We have ſpecimens from Dr. White. This differs from the foregoing in having its ſpinous *leaves* more crowded, and leſs diſtinctly whorled, more hairy *branches*, and globular heads of *flowers*, each flower, according to Ventenat, accompanied by a little ovate, pointed, ſtalked *bractea*.

A. *acicularis*. Needle-leaved Acacia. Brown in Ait. n. 3. — “ Leaves ſcattered, roundiſh-awlſhaped, pointed, rigid. Stipulas deciduous. Young branches ſmooth. Spikes ſolitary, globoſe.”—Said to have been found in New South Wales, by colonel William Paterſon, from whence it was ſent to Kew in 1796. It flowers at the ſame ſeaſon as the two preceding, and requires the ſame treatment. If we underſtand this ſpecies aright, the *leaves* are full an inch long, being twice the length of the two foregoing, and more ſlender. We received ſpecimens anſwering to this deſcription before 1796, from Dr. White.

A. *ſulcata*. Furrowed Needle Acacia. Brown in Ait. n. 4.—“ Leaves thread-ſhaped, furrowed on all ſides, with a harmleſs point. Heads of flowers uſually in pairs. Bracteas ovate, concave, permanent, at the baſe of the flower-ſtalk. Legumes zigzag.” — Obſerved by Mr. Brown on the ſouth-weſt coaſt of New Holland, from whence it was introduced, in 1803, by Mr. Peter Good. This is likewiſe a green-houſe ſhrub, flowering from May to Auguſt.

A. *ſuaveolens*. Sweet-ſcented Acacia. Willd. n. 4. Ait. n. 5. (Mimoſa ſuaveolens ; Sm. Tr. of Linn. Soc. v. 1. 253. Labill. Nov. Holl. v. 2. 87. t. 236. M. anguſtifolia ; Jacq. Hort. Schoenbr. v. 3. 74. t. 391. M. obliqua ; Lamarck Journ. d'Hiſt. Nat. v. 1. 89. t. 5.)— Leaves linear, pointed ; tapering at the baſe. Cluſters oblong, axillary. Flowers four-cleft. Branches triangular. —Native of New South Wales. Cultivated, before 1790, by Mr. Thomas Hoy, in Sion gardens. A green-houſe ſhrub, flowering in the ſpring. The acute edges of the *branches* are bright red. The firſt *leaves* are conjugate, pinnate, with thick elliptical leaflets, and a lanceolate common footſtalk ; the reſt alternate, narrow, coriaceous, four or five inches long, rather glaucous, ſmooth, thick-edged. *Flowers* ſimply racemoſe, yellowiſh-white, fragrant, their *corolla* deeply four-lobed. *Stamens* very numerous. *Legume* elliptical, an inch and a half or two inches long, and one inch broad, finely glaucous.

A. *ſtricta*. Double-headed Acacia. Willd. n. 8. Ait. n. 8. (Mimoſa ſtricta ; Andr. Repoſ. t. 53. Curt. Mag. t. 1121.) — Leaves linear-obovate, obtuſe ; tapering at the baſe. Spikes globoſe, ſtalked, axillary, in pairs, divaricated. —Native of New South Wales, from whence ſir Joſeph Banks is recorded to have received ſeeds in 1790. This requires the ſame treatment, and flowers at the ſame time, as the laſt, from which its capitate five-cleft *flowers*, and more dilated rounded-pointed *leaves*, at once diſtinguiſh it. Dr. Sims, in Curtis's Magazine, under this ſpecies, has given but too juſt reaſons for retaining the genus *Mimoſa* entire for the preſent, which principally refer to our ignorance of their fruit in a number of inſtances. Our learned friend, however, has ſince conformed to the new arrangement ; and we think, with Willdenow, that enough is known for us to venture on the diviſion this author has propoſed, which may generally be ſupported by analogy, if not by abſolute demonſtration.

A. *melanoxylon*. Black-wooded Acacia. Brown in Ait. n. 12. Curt. Mag. t. 1659. — Leaves elliptic-lanceolate, many-ribbed, ſlightly falcate. Spikes globoſe, in ſhort cluſters. Flower-ſtalks and young branches angular, powdery. “ Umbilical cord coloured, plaited, nearly ſurrounding the ſeed.”—Found by Mr. Brown, in Van Diemen's iſland. From him we adopt the ſingular character of the umbilical cord. This is a conſiderable *tree*, raiſed by John Walker, eſq. of Arno's Grove, Southgate, who received the ſeeds under the name of Black-wood, about the year 1808. The young twigs are covered with ruſty mealineſs. *Leaves* ſtalked, three inches long, and one broad, ſlightly glaucous, uſually five-ribbed. *Flowers* pale-yellow, their globular ſpikes diſpoſed in ſhort axillary cluſters, about twice the length of each footſtalk. We have no account of the *legume*.

A. *Sophoræ*. Sophora-podded Acacia. Br. in Ait. n. 13. (Mimoſa Sophoræ ; Labill. Nov. Holl. v. 2. 87. t. 237.)— Leaves oblong-obovate, equilateral, many-ribbed. Spikes cylindrical, axillary, in pairs. Petals four. Legumes linear, curved, pointed. Umbilical cord plaited.—Found by Labillardiere, as well as by Mr. Brown, in Van Diemen's iſland. Its ſeeds were brought by the latter to Kew Garden, and raiſed there in 1805, but the plants have not yet bloſſomed. The young *leaves* are repreſented by Labillardiere as pinnate and trijugate ; the reſt obovate, two or three inches long. *Spikes* nearly ſeſſile, hardly an inch long, and very ſlender. *Flowers* ſmall. *Legumes* five or ſix inches in length, tumid, and twiſted, a quarter of an inch broad. Each *ſeed* is ſubtended by a cup-like tunic, which we preſume is the umbilical cord of Mr. Brown.

A. *marginata*. Marginate-leaved Acacia. Br. in Ait. n. 14.—“ Leaves oblong-lanceolate, rather falcate, bordered, ſingle-ribbed ; their anterior edge ſomewhat narrowed, with a ſolitary gland. Heads about four-flowered, diſpoſed in cluſters.”—Obſerved by Mr. Brown on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent in 1803, by Mr. Peter Good. A green-houſe ſhrub, flowering from April to June. *Aiton*.

A. *myrtifolia*. Myrtle-leaved Acacia. Willd. n. 14. Ait. n. 15. (Mimoſa myrtifolia ; Sm. Tr. of Linn. Soc. v. 1. 253. Bot. of New Holl. 51. t. 15. Curt. Mag. t. 302.)—Leaves elliptic-lanceolate, oblique, thick-edged, ſingle-ribbed, with a ſolitary gland at their anterior margin. Heads of flowers cluſtered, aggregate.—Native of New South Wales. Raiſed by Mr. Thomas Hoy, before the year 1789. A green-houſe ſhrub, flowering from February to May, or late in autumn. The *ſtem* is three or four feet high, with angular branches. Firſt *leaves* conjugate, pinnate ; the reſt about two inches long, broadly lanceolate, pointed, very rigid, ſomewhat glaucous, often wavy, ſmooth. *Flowers* pale yellow, fragrant, three or four in each round head, the heads diſpoſed variouſly in ſomewhat compound axillary cluſters, nearly equal in length to the leaves. *Legume* linear, curved, tumid, with very thick edges.

A. *hiſpidula*. Little harſh Acacia. Willd. n. 15. Ait. n. 16. (Mimoſa hiſpidula ; Sm. Bot. of New Holl. 53. t. 16.)—Leaves elliptical, acute, oblique, minutely toothed, rough on each ſide and at the margin. Young branches harſh. Flowers four-cleft, in ſolitary axillary heads.—Native of New South Wales, from whence ſpecimens were ſent to us, with coloured drawings, in 1794, and ſeeds about the ſame time to ſir Joſeph Banks. The roughneſs of the *foliage* and *branches* is very remarkable, cauſed by ſhort, rigid, prominent hairs, or points. The *leaves* are ſeſſile, an inch long, vertical, very ſtiff, deep-green. *Heads* ſtalked, globoſe, many-flowered. *Legume* thick-edged, elliptic-oblong, ſometimes with one or two contractions. *Seeds* few.

A. *haſtulata.* Little Halberd-leaved Acacia.—Leaves deltoid, ſpinous-pointed, roughiſh; their upper angle glandular. Stipulas briſtle-ſhaped, permanent. Branches rough. Flowers in ſolitary axillary heads.—Gathered near King George's ſound, on the ſouth-weſt coaſt of New Holland, by Mr. Menzies, to whom we are obliged for a ſpecimen. This remarkable new ſpecies is evidently allied to the two laſt-mentioned, though abundantly diſtinct from both. The ſhrubby *ſtem* bears numerous, erect, round, rough, wand-like *branches*, beſet with innumerable, ſpreading, vertical *leaves*, about a quarter of an inch long, ſingle-ribbed, unequally deltoid, with an elongated ſpinous point, thick-edged, rough with minute points; their lower angle either rounded or ſomewhat toothed; the upper more prominent, and tipped with a gland. *Stipulas* ſlender, erect, in pairs at the baſe of each leaf. *Flowers* three or four in each of the little ſtalked heads, which are very numerous all along the branches.

A. *decipiens.* Paradoxical Acacia. Br. in Ait. n. 17. Curt. Mag. t. 1745. (Mimoſa decipiens; Konig in Ann. of Bot. v. 1. 366. t. 8. Adiantum truncatum; Burm. Ind. 235. t. 66. f. 4. Linn. Syſt. Veg. ed. 13. 790.)—Leaves triangular-wedgeſhaped, ſpinous-pointed, ſmooth; their upper angle glandular. Stipulas briſtle-ſhaped, deciduous. Branches ſmooth. Flowers in ſolitary axillary heads.—Gathered by Mr. Menzies on the ſouth-weſt coaſt of New Holland, and not on the weſt ſide of North America, as mentioned in the Annals of Botany. Seeds were ſent to Kew in 1803, by Mr. Good, and the plant is marked by Mr. Aiton as a green-houſe ſhrub, flowering from March to June. Its hiſtory is certainly curious; ſpecimens without flowers having been taken by profeſſor Burmann, who miſled Linnæus, for an *Adiantum*, which error was detected by the late Mr. Dryander, on ſeeing Mr. Menzies's ſpecimens. Thoſe of Burmann were reported to have come from Java, in which there may be a further miſtake. At any rate this plant is nearly related to our laſt-deſcribed, and grows in the ſame country. The *leaves* differ in being larger, half an inch to an inch long, erect, and differently ſhaped, their inner, or upper, glandular angle being greatly extended, while the lower or rounded angle, ſeen in *A. haſtulata*, is wanting. The *flowers* are more numerous, from ſeven to ten, in each round head.

A. *biflora.* Two-flowered Acacia. Br. in Ait. n. 18.—"Leaves triangular; the outer angle ſpinous; inner glandular. Stipulas briſtle-ſhaped and ſpinous, permanent. Young branches downy. Heads two-flowered."—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence it was ſent to Kew by Mr. Good, in 1803. A green-houſe ſhrub, flowering from March to June. We have ſeen no ſpecimens.

A. *armata.* Simple-leaved prickly Acacia. Br. in Ait. n. 19. Curt. Mag. t. 1653.—"Leaves oblong, halved, ſmooth, with a ſmall point; their ſolitary rib near and parallel to the ſomewhat abrupt interior margin. Stipulas ſpinous. Heads ſolitary, globoſe. Branches hairy."—Obſerved by Mr. Brown, on the ſouth coaſt of New Holland. Sent to Kew, by Mr. Good, in 1803. A green-houſe ſhrub, flowering from April to June. *Leaves* dark green, an inch long, ſeſſile. *Flowers* yellow, numerous.

A. *alata.* Wing-ſtalked Acacia. Br. in Ait. n. 20.—"Stem winged on two ſides. Leaves decurrent, ſingle-ribbed, tipped with a ſmall ſpine; their inner margin with one glandular tooth. Stipulas ſpinous. Heads ſtalked, moſtly ſolitary."—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent to Kew, by Mr. Good, in 1803. This is likewiſe a ſhrubby green-houſe plant, flowering from April to July.

Sect. 2. *Leaves conjugate, pinnate.* Seven ſpecies in Willdenow, to which one of Mr. Brown's is to be added from *Hort. Kew.* The *Prodromus* of this able author, when completed, will probably furniſh more New Holland ſpecies to this ſection.

A. *xylocarpa.* Wooden-fruited Acacia. Willd. n. 17. (Mimoſa xylocarpa; Roxb. Corom. v. 1. 68. t. 100.)—Leaves conjugate, pinnate; leaflets four pair, ovate-oblong, acute. Heads globoſe, many-flowered, lateral, ſtalked, in pairs.—Native of the mountainous parts of the Circars of Hindooſtan, caſting its leaves during the cold ſeaſon, and flowering when the hot weather begins. This is one of the largeſt trees of this genus or any of its allies; the timber very hard, of a chocolate colour towards the centre, and much eſteemed for purpoſes where hardneſs, toughneſs, and durability, are requiſite, as in ploughs, the natives ſeldom uſing iron in that implement. The *leaves* are large, ſmooth, paler beneath, conſiſting of two diviſions, or wings, and thoſe of four pair of *leaflets* each, except that the innermoſt leaflet on each ſide, at the bottom, is wanting: the lower leaflets are about two inches long; the upper four or five. *Heads* of flowers whitiſh, the ſize of a cherry, on ſimple ſtalks, two or three inches in length. *Corolla* bell-ſhaped, five-cleft. *Stamens* ten. *Legume* only one from each head, ovate, compreſſed, very large and woody, three or four inches long, the ſtalk becoming neceſſarily greatly thickened. *Seeds* about ten, oval, ranged near the lower edge, as large as kidney-beans.

A. *pulchella.* Zigzag Spiny Acacia. Br. in Ait. n. 22.—"Leaves conjugate, pinnate, with a ſtalked gland between the wings, each of which has from five to ſeven pair of leaflets. Stipulas ſpinous, nearly equal to the leaves. Heads ſolitary. Branches zigzag."—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent to Kew, in 1803, by Mr. Good. A green-houſe ſhrub, flowering from April to July.

Sect. 3. *Leaves doubly pinnate. Stem without thorns. Spikes oblong.* Eleven ſpecies in Willdenow, the laſt of which, *A. Houſtoni*, we ſhall remove to the following ſection.

A. *muricata.* Warty Acacia. Willd. n. 25. (A. latifolia alopecuroides, flore albo; Plum. Ic. 6. t. 11. Mimoſa muricata; Linn. Sp. Pl. 1504.)—Thorns none. Leaves doubly pinnate; firſt diviſion of five pair; ſecond of many pair; leaflets abrupt. Spikes axillary, aggregate, nearly cylindrical. Branches warty.—Gathered in South America, or the Weſt Indies, by Plumier, whoſe figure is the only authority for this ſpecies. The *branches* are round, and warty, as well as the lower part of the *flower-ſtalks*, which laſt are evidently axillary, not, as Willdenow ſays, terminal. They are longer than the large compound *leaves*, and bear four or five alternate denſe *ſpikes*, on partial ſtalks. *Leaflets* numerous, crowded, elliptical, veiny, emarginate, about a half or three-quarters of an inch long. *Flowers* numerous, very ſmall. *Legumes* ſeveral, ſpreading, four or five inches in length, linear, flat, veiny, wavy at the edges, with many oval flat *ſeeds*.

A. *pallida.* Pale South-American Acacia. Willd. n. 26.—"Thorns none. Leaves doubly pinnate; firſt diviſion of two pair; ſecond of twelve pair; leaflets linear, obtuſe, downy. Spikes thread-ſhaped, much longer than the leaves."—Gathered by Humboldt and Bonpland, in South America. *Branches* round, warty, divaricated. *Leaflets* obtuſe at each end, ſometimes but ten pair; clothed ſparingly on the upper ſide, more denſely on the under, with fine pubeſcence; the edges fringed. There is a cup-ſhaped ſeſſile *gland* between the ſecondary diviſions of each leaf (indications of which appear likewiſe in Plumier's plate of the foregoing).

Footſtalks hairy. *Spikes* axillary, ſolitary, three or four inches long, being thrice the length of the leaves. *Flowers* oppoſite, of five *petals*. *Willdenow*.

This ſeems much allied to the laſt, but the ſhape and downineſs of the *leaflets*, and the ſolitary *ſpikes*, indicate a ſufficient difference.

A. *arenoſa*. Sand Acacia. Willd. n. 29.—“ Thorns none. Leaves doubly pinnate; firſt diviſion of ſix pair; ſecond of ſixteen pair; leaflets linear, acute. Spikes thread-ſhaped, in pairs.”—Found by Mr. Bredemeyer at the Caraccas, about the ſandy banks of rivers. A *ſhrub* ten or twelve feet high, with angular downy *branches*. *Leaflets* fringed, from ſixteen to twenty-four pair. *Footſtalks* clothed with hoary down; the partial ones accompanied by an acute intermediate gland. *Spikes* axillary, meaſuring three or four inches, generally rather longer than the leaves. *Flowers* oppoſite, white, fragrant. *Calyx* with four or five teeth. *Corolla* in four or five deep ſegments. *Stamens* twice as many, and thrice as long. *Willdenow*.

A. *guianenſis*. Guiana Acacia. Willd. n. 32. Ait. n. 25. (Mimoſa guianenſis; Aubl. Guian. 938. t. 357.)—Thorns none. Leaves doubly pinnate, each diviſion of about ten pair; leaflets elliptical, obtuſe. Common footſtalk with a convex gland. Spikes thread-ſhaped, axillary.—Obſerved by Aublet in Cayenne and Guiana, flowering in November, and bearing ripe ſeeds in January and February. This is a large *tree*, whoſe *trunk*, thirty or forty feet high, is a foot or more in diameter, with a ſmooth grey bark, and white brittle wood; the *branches* widely ſpreading. *Leaflets* elliptical, about half an inch long. The firſt diviſions of the *leaves* are ſometimes not more than ſeven or eight. *Stipulas* rounded, deciduous. *Spikes* axillary, from two to five together, on ſquare ſimple ſtalks, the *flowers* ſmall and denſely crowded. *Calyx* with five teeth. *Corolla* of one petal, in five ſharp lobes. *Stamens* ten, inſerted into the calyx below the corolla, long, ſlender, with heart-ſhaped *anthers*, each of which bears a little leafy ſtalked appendage. *Legume* linear-oblong, flattiſh, brown, ſmooth, three or four inches in length, with ſeveral *ſeeds*.

A. *lophantha* more properly belongs to this ſection, though placed in the next.

Sect. 4. *Leaves doubly pinnate. Stem without thorns. Spikes globoſe.* Thirty-one ſpecies in Willdenow, to which we have three to add, beſides *A. Houſtoni*.

A. *ciliata*. Ciliate-winged Acacia. Br. in Ait. n. 23.—“ Without thorns, hairy. Leaves doubly pinnate; firſt diviſion of two pair; ſecond of two or three pair. Stipulas nearly ſetaceous, deciduous. Heads ſolitary.”—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland; and ſent to Kew, by Mr. Good, in 1803. A green-houſe ſhrub, flowering from March to June, of which we have not ſeen either ſpecimen or figure.

A. *nigricans*. Unequal-winged Acacia. Br. in Ait. n. 24. (Mimoſa nigricans; Labill. Nov. Holl. v. 2. 88. t. 238.)—Without thorns, ſmooth. Leaves doubly pinnate; firſt diviſion of two pair; ſecond of two or three pair in the lower, and from five to ſeven pair in the upper. Stipulas ſlender-awlſhaped. Heads ſolitary.—Native of the ſouth-weſt coaſt of New Holland, from whence Mr. Good ſent ſeeds to Kew, in 1803. A green-houſe ſhrub, flowering from May to July, ſaid to be about ſix feet high in a wild ſtate. The *leaflets* are uniform, elliptical, obtuſe, one-third of an inch long. *Heads* axillary, ſtalked, one, two, or three together. *Corolla* deeply five-cleft. *Stamens* about 150. *Legumes* one or two from each head, linear-oblong, one inch and a half in length, and one-third of an inch in breadth. *Labillardiere*.

A. *odoratiſſima*. Fragrant Coromandel Acacia. Willd. n. 37. Ait. n. 27. (A. non ſpinoſa, &c.; Pluk. Amalth. t. 251. f. 4. Mimoſa odoratiſſima; Linn. Suppl. 437. Roxb. Coromand. v. 2. 12. t. 120.)—Thorns none. Leaves doubly pinnate; firſt diviſion of four pair; ſecond of ten or twelve pair; leaflets obtuſe, the lowermoſt very minute. Heads panicled, terminal.—Native of the mountainous parts of the coaſt of Coromandel, flowering in the hot ſeaſon. The *wood* is hard, and equally uſeful with that of *A. xylocarpa*. (See Sect. 2.) The *leaves* are a ſpan long, with uniform *leaflets*, an inch in length, glaucous beneath, very unequal at their baſe. *Flowers* numerous, white, highly fragrant, in numerous, aggregate, ſtalked, globular *heads*. *Legume* coriaceous, about ſix inches in length, and one in breadth, with a central row of *ſeeds*.

A. *arborea*. Rough Tree Acacia. Willd. n. 38. Ait. n. 28. (A. nou ſpinoſa jamaicenſis, foliis latâ baſi in metæ formam faſtigiatis; Pluk. Almag. 6. t. 251. f. 2. A. arborea maxima non ſpinoſa, pinnis majoribus, flore albo, ſiliquâ contortâ coccineâ ventricoſâ elegantiſſimâ; Sloane Jam. v. 2. 54. t. 182. f. 1, 2. Mimoſa arborea; Linn. Sp. Pl. 1503. Swartz Obſ. 390. Browne Jam. 252. n. 3?)—Thorns none. Leaves doubly pinnate; firſt diviſion of ſeven pair; ſecond of ſeventeen pair; leaflets halved, acute. Heads axillary, ſtalked. Legume contorted, tumid. Seeds ſpherical.—Native of fields and woods in Jamaica, where it is called Wild Tamarind, and is one of the largeſt trees of that iſland. The *wood*, according to Sloane, is durable, though ſoft and white. *Leaves* of numerous, ſmall, dark-green, ſmooth leaflets. *Heads* globular, of numerous ſweet-ſcented *flowers*, whoſe *corolla* is reddiſh, the *ſtamens* whitiſh, very long. *Legume* as if beaded, four or five inches long, red; its valves of a blood-red on the inſide. *Seeds* globular, of a ſhining black. This ſpecies was cultivated by Miller, but is now unknown in our gardens, nor are botaniſts in general well acquainted with it; Forſkall and Thunberg having given the name of *Mimoſa arborea* to two plants very different from this, as well as from each other.

A. *Julibriſſin*. Smooth Tree Acacia. Willd. n. 39. Ait. n. 29. (Mimoſa Julibriſſin; Scop. Inſubr. v. 1. 18. t. 8. Ait. ed. 2. v. 3. 440. M. arborea; Forſk. Ægypt.-Arab. 177. Gmel. It. v. 3. 372. t. 40.)—Thorns none. Leaves doubly pinnate; firſt diviſion of about ten pair; ſecond of many pair; leaflets halved, obtuſe with a point. Heads lax, aggregate, terminal. Legume flat, membranous, ſmooth.—Native of the Levant. Forſkall ſaw it cultivated at Conſtantinople, where it was called *Djul ibrzim*, by the Turks; which name, denominating *a ſilky flower*, in alluſion to the ſtamens, appears to be the origin of the ſpecific appellation choſen by Scopoli. We have ſeen this ſpecies as large as a common apple-tree, covered with a profuſion of bloſſoms, in the open ground at Turin, nor could any thing be more elegant or ſplendid. In England it is uſually treated as a green-houſe plant, and flowers ſparingly; though it ſucceeds well againſt a wall, with ſome protection in winter. The *leaves* are large and ſpreading, of numerous *leaflets*, half an inch long, very unequal in their two halves. *Flowers* lilac, with long monadelphous *ſtamens*, forming moſt beautiful taſſels like white ſilk. *Legume* half a foot long, thin, pale brown, corrugated, unequal in breadth, with many ſmall flattiſh *ſeeds*.

A. *villoſa*. Downy Jamaica Acacia. Willd. n. 46. (Mimoſa villoſa; Swartz Prodr. 85. Ind. Occ. 982.)—Thorns none. Leaves doubly pinnate; firſt diviſion of five or ſix pair; ſecond of many pair; leaflets elliptical, oblique, downy. Stalks and branches hairy. Heads rather oblong, panicled, terminal. Legume hairy, flat.—Found by Dr. Swartz, on mountains in the ſouth of Jamaica. Browne ſeems by his herbarium to have confounded this with the real *A. arborea*, juſt deſcribed. The preſent is much ſmaller, being merely a *ſhrub*, ſix feet high, with hairy furrowed *branches*. *Leaflets* downy on both ſides, ſmaller and more obtuſe than in the *arborea;* glaucous underneath; from ten to twelve pair in each ſubdiviſion. *Cluſters* terminal, compoſed of many oblong and obtuſe, rather than globular *ſpikes*, on very hairy ſtalks. *Flowers* ſmall, white, with numerous capillary *ſtamens*, of a tawny hue, inſerted into the lower part of the *receptacle*. *Legume* ſhort, very different from that of *arborea*.

A. *diſcolor*. Two-coloured-leaved Acacia. Willd. n. 47. Ait. n. 32. Curt. Mag. t. 1750. (Mimoſa diſcolor; Andr. Repoſ. t. 235. M. botrycephala; Venten. Hort. Celſ. t. 1.)—Thorns none. Leaves doubly pinnate; firſt diviſion of five pair; ſecond of about ten pair; leaflets lanceolate, pale beneath. Heads in terminal and axillary cluſters, much longer than the leaves.—Native of New South Wales, from whence ſeeds and ſpecimens were among the firſt brought into this country, in the year 1788. It is now not an uncommon green-houſe plant in general collections, flowering at various ſeaſons. The *branches* are angular and zigzag. *Leaves* rather ſtiff, their *footſtalks* hairy like the young branches; leaflets not half an inch long, acute, ſmooth; dark green above; very pale beneath. *Flowers* yellow, in numerous globular heads, diſpoſed in very conſpicuous long cluſters.

A. *pubeſcens*. Hairy-ſtem'd Acacia. Br. in Ait. n. 33. (Mimoſa pubeſcens; Venten. Malmaiſ. t. 21. Curt. Mag. t. 1263.)—Thorns none. Branches hairy. Leaves doubly pinnate; firſt diviſion of about eight pair; ſecond of about fifteen pair; footſtalks without glands; leaflets obtuſe. Heads in axillary cluſters, longer than the leaves.—Native of New South Wales, from whence its ſeeds are ſaid to have been procured by ſir J. Banks, about the year 1790. This pretty delicate ſpecies has an arboreſcent *ſtem*, with drooping *branches*, and its copious fern-like *foliage* exhibits a moſt elegant appearance. Both ſides of the *leaflets* are of a ſimilar bright green. The whole compound *leaf* meaſures uſually two inches; the numerous cluſters of yellow capitate *flowers*, which ſmell like new hay, being about twice that length.

A. *lophantha*. Two-ſpiked New Holland Acacia. Willd. n. 53. Ait. n. 34. (Mimoſa diſtachya; Venten. Hort. Celſ. t. 20. M. elegans; Andr. Repoſ. t. 563.)—Thorns none. Leaves doubly pinnate; firſt diviſion of ten or twelve pair; ſecond of about twenty pair; leaflets lanceolate; top and bottom of the common footſtalk glandular. Spikes oblong, axillary, in pairs.—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland, from whence ſeeds were ſent to Kew, in 1803, by Mr. Good. A tall *ſhrub*, or perhaps a *tree*, with furrowed warty *branches*. *Leaves* large, drooping, dark green, with innumerable narrow ſmooth *leaflets*. *Spikes* ſtalked, ovate or oblong, not globoſe, of numerous, crowded, ſulphur-coloured *flowers*, having each about 200 monadelphous *ſtamens*. *Legume* oblong, flat, thick-edged, ſomewhat conſtricted here and there occaſionally, where the ſeeds happen to be abortive.

A. *brachyloba*. Illinois Acacia. Willd. n. 54. Ait. n. 35. Purſh n. 1. (Mimoſa illinoenſis; Michaux Boreal.-Amer. v. 2. 254.)—"Herbaceous, without thorns. Leaves doubly pinnate; firſt diviſion of five to eight pair; ſecond of many pair, with a gland between the lowermoſt. Heads globoſe, axillary, ſolitary. Legumes lanceolate, ſtraight."—In the extenſive natural meadows of Illinois and Kentucky, flowering in June and July. Perennial. *Flowers* white, with only five *ſtamens*. *Purſh*. *Stem* ſmooth, furrowed. *Leaflets* from ſixteen to twenty-four pair, linear, acute, ſlightly fringed at the baſe. *Footſtalks* nearly ſmooth. *Heads* of flowers the ſize of a pea, ſtalked. *Legume* the length of the nail. *Willdenow*.

A. *glanduloſa*. Glandulous Acacia. Willd. n. 55. Ait. n. 36. Purſh n. 2. (Mimoſa glanduloſa; Michaux Boreal.-Amer. v. 2. 254. Venten. Choix. t. 27.)—Herbaceous, without thorns. Leaves doubly pinnate; firſt diviſion of about twelve pair; ſecond of many pair, with a gland between each. Heads globoſe, axillary, ſolitary. Legumes oblong, curved.—On the banks of the rivers Tenneſſee and Miſſiſſippi, flowering in July. *Flowers* white, pentandrous. *Purſh*. This appears to be very nearly related to the laſt. Both are herbaceous, with perennial *roots*, and have been introduced into the Engliſh gardens, but we have not had any account of their ſucceſs. They require the ſhelter of a green-houſe.

A. *decurrens*. Decurrent Acacia. Willd. n. 56. Ait. n. 37. (Mimoſa decurrens; Venten. Malmaiſ. t. 61.)—Thorns none. Leaves doubly pinnate; firſt diviſion of about eleven pair; partial of innumerable linear leaflets, on a winged ſtalk, with a gland near the baſe, on the common ſtalk. Heads globoſe, in axillary cluſters.—Native of New South Wales. Sir Joſeph Banks is ſaid to have introduced this plant at Kew, in 1790. It flowers in the early part of ſummer, and is a green-houſe *ſhrub*, of an elegant fern-like aſpect, with ſtrongly angular zigzag *branches*. The *leaves*, though their common ſtalk is ſubtended by a projection from the branch, are not really decurrent. *Flowers* yellow, forming ſhort cluſters of little round heads.

A. *grandiflora*. Great Red Acacia. Willd. n. 61. Ait. n. 39. (Mimoſa grandiflora; L'Herit. Sert. 30. Thornton Illuſtr. t. 4. Andr. Repoſ. t. 592.)—Thorns none. Leaves doubly pinnate; firſt diviſion of about fifteen pair; ſecond of very numerous, elliptic-lanceolate, ſtraight leaflets. Heads about five-flowered, in a terminal cluſter.—Native of the Eaſt Indies, from whence it is ſaid to have been introduced into the Engliſh ſtoves, by Mrs. Norman, about the year 1769. No figure of this ſtately plant, (Plukenet's ſynonym, cited by Willdenow, being too uncertain,) had ever appeared, till Dr. Thornton publiſhed his magnificent plate. The *ſtem* is ſhrubby, erect, ſlightly branched, downy, twelve feet or more in height, even in our gardens. *Leaves* large and ſpreading, with downy *footſtalks;* their *leaflets* a quarter of an inch long, ſlightly fringed, bluntiſh, unequal at the baſe, but not curved or falcate. *Cluſters* ſolitary, large, terminal, erect, of many alternate ſtalks, ſolitary or in pairs, clothed with ruſty down, each ſtalk bearing a *head* of from four to ſix *flowers*, whoſe *corolla* is but half an inch long, of a pale greeniſh-red; but the very numerous *ſtamens*, two inches in length, and of a fine ſhining crimſon, like taſſels of ſilk, render this one of the moſt beautiful of its tribe.

A. *Houſtoni*. Houſtoun's Purple Acacia. Willd. n. 34. Ait. n. 26. (A. americana non ſpinoſa, flore purpureo, ſtaminibus longiſſimis, ſiliquis planis villoſis, pinnis foliorum tenuiſſimis; Houſt. Ic. ined. t. 20. Mill. Ic. 4. t. 5. Amman. Herb. 584. n. 17. Mimoſa Houſtoni; L'Herit. Sert. 30. Banks Rel. Houſt. 12. t. 26. Gleditſia inermis; Linn. Sp. Pl. 1509, excluding the ſynonyms, except Miller's; and place of growth.)—Thorns none. Leaves doubly pinnate; firſt diviſion of five or ſix pair; ſecond of very numerous, linear, ſomewhat falcate leaflets. Heads of few flowers, in a terminal cluſter.—Gathered at Vera Cruz, in South America, by Dr. Houſtoun, who ſent ſeeds to Miller, in 1729. Theſe produced plants which flowered in the ſtove at Chelſea. The preſent ſpecies is certainly next akin to the laſt, however differently its infloreſcence may have been deſcribed or delineated by authors, in which reſpect indeed Miller and Houſtoun diſagree. The plate of the former however has all the appearance of fidelity, and it is poſſible the partial *flower-ſtalks* may vary in length, or, more probably, be elongated as the flowers open. Having ſeen no ſpecimens, we muſt be guided by the materials before us, from which we gather that the *leaves* of *A. Houſtoni* have not half ſo many *pinnæ*, and that their *leaflets* are narrower, longer, more acute, and more curved. The *petals* are purple. *Legume* thick-edged, hairy, tapering at the baſe. The leaf in *Parad. Lond.* t. 64, cited in *Hort. Kew.* appears to belong to this ſpecies, but the *flowers*, and perhaps the *legume*, which is ſmooth, ſeem thoſe of *A. grandiflora.* If this be the caſe, the ſmooth *legume*, not tapering at the baſe, would be an important addition to the ſpecific character of *grandiflora.*

Sect. 5. *Leaves doubly pinnate. Stipulas becoming ſpines. Spikes elongated.* Ten ſpecies in Willdenow.

A. *juliflora.* Long-flowered Acacia. Willd. n. 66. Ait. n. 41. (Mimoſa juliflora; Swartz Prodr. 85. Ind. Occ. 986, printed by miſtake *piliflora.* M. diffuſa, ſpica oblonga, ſiliquis longioribus compreſſis; Browne Jam. 252. n. 2.)—Spines ſtipulary, in pairs. Leaves doubly pinnate; firſt diviſion of two pair, with intermediate glands; ſecond of about twenty pair of oblong leaflets. Spikes axillary, two or three together, cylindrical, pendulous.—Native of very dry fields in the ſouth part of Jamaica, flowering in the middle of ſummer. The *ſtem* varies from ſix to thirty feet in height. *Branches* long and ſpreading. *Spines* ſtrong, four or five lines in length, prominent, curved upwards. *Leaves* ſpreading, with narrow, obtuſe, ſmooth, ribbed *leaflets.* *Spikes* two or three inches long, lax, many-flowered. *Flowers* crowded, ſeſſile, very numerous, yellow, ſweet-ſcented. *Corolla* internally hairy. *Stamens* eight or ten, diſtinct. *Legume* from three to five inches long, compreſſed, ſmooth, often twiſted, containing ſeveral oblong brown *ſeeds*, ſeparated by fleſhy partitions. There are numerous *flowers* in each ſpike deſtitute of a *piſtil.* Cattle feeding on the leaves and young branches, unleſs gradually accuſtomed to them, are poiſoned, and the ſweet legumes are reported to be noxious. The inhabitants of Jamaica call this plant *Caſhew.* Browne erroneouſly gives it the name of *Poponax*, which belongs to *Mimoſa* (*Acacia*) *tortuoſa.* *Swartz.* See Sect. 6.

A. *caffra.* Hottentot Acacia. Willd. n. 70. Ait. n. 42. (Mimoſa caffra; Thunb. Prodr. 92.)—"Spines ſtipulary, in pairs, incurved. Leaves doubly pinnate; firſt diviſion of twelve pair; ſecond of many pair; with a gland on the footſtalk. Spikes axillary, cylindrical."—Found by Thunberg in Southern Africa. Sent to Kew in 1800, by W. Somerville, M. D. The *branches* are round and ſtriated. Firſt diviſions of the *leaves* from ſeven to twelve, ſecond from twenty to thirty, pair; *leaflets* linear, obtuſe, ſmooth. *Footſtalks* nearly ſmooth; the common one bearing a depreſſed gland above its baſe. *Spike* ſtalked, two inches long. *Legume* the ſame length, linear-lanceolate, flat. *Willdenow.*

A. *Catechu.* Medicinal Acacia. Willd. n. 73. Ait. n. 44. (Mimoſa Catechu; Linn. Suppl. 409. Woodv. Med. Bot. 183. t. 66. Roxb. Coromand. v. 2. 40. t. 175. Terra Japonica; Kerr in Med. Obſ. and Inqu. v. 5. 151. t. 4.)—Spines ſtipulary, hooked, in pairs. Leaves hairy, doubly pinnate; firſt diviſion of ten or twelve pair; ſecond of many pair; with a gland at each extremity of the common footſtalk. Spikes cylindrical, axillary, two or three together.—Native of the mountainous parts of Coromandel. A large tree, of which ſeeds have been ſent by Dr. Roxburgh to ſir J. Banks. Theſe have vegetated at Kew, but the plants have not arrived at a flowering ſtate. The *branches* are round, downy when young; the older ones beſet with numerous pairs of ſmall recurved thorns, originating in the *ſtipulas*, as in all the plants of this ſection. *Leaves* ſlender and delicate, finely hairy, pale green; their *leaflets* crowded, hardly a quarter of an inch long, linear, rounded at each end, unequal at the baſe. *Spikes* ſlender, three or four inches long, hairy, ſtalked, pale yellow. *Legume* oblong, acute at each end, flat, ſmooth, with three or four diſtant flat *ſeeds.* "The *wood*," ſays Dr. Roxburgh, "is good, and applied to various uſes; but the natives have no idea of extracting from it, or any other, the *Catechu*, or *Terra Japonica.* Yet I believe there are many trees as fit to yield this extract, as the preſent." Mr. Kerr, aſſiſtant ſurgeon to the civil hoſpital at Bengal, has however deſcribed the mode of preparing the CATECHU, (ſee that article,) by boiling the interior coloured part of the wood of this ſpecies, till an inſpiſſated extract is obtained, which is the drug in queſtion, long ſuppoſed to be an earth produced in Japan. Another ſort of *Catechu*, or *Gutta Gambir*, made in Sumatra, Prince of Wales's iſland, &c., has been ſhewn by Mr. Hunter, ſecretary to the Aſiatic Society, in Tranſactions of the Linnæan Society, v. 9. 218. to be the produce of a ſpecies of NAUCLEA. (See that article, ſpec. 7.) We preſume that Mr. Kerr and Mr. Hunter are equally correct, and that the two diſtinct kinds of *Terra Japonica*, known to druggiſts, are thus accounted for.

Sect. 6. *Leaves doubly pinnate. Stipulas becoming ſpines. Spikes globoſe.* Sixteen ſpecies in Willdenow.

A. *macracantha.* Long-thorned Acacia. Willd. n. 76.—"Spines ſtipulary, in pairs, lanceolate, compreſſed, nearly as long as the leaves, which are doubly pinnate; firſt diviſion of twelve pair; ſecond of many pair; with a depreſſed gland at each extremity of the common footſtalk. Spikes ſtalked, globoſe."—Gathered by Humboldt and Bonpland in South America. The *branches* are ſtriated, and nearly round. *Leaflets* about thirty pair in each diviſion, linear, obtuſe, fringed. *Footſtalks* downy. *Spines* two inches or more in length, ſharp-pointed, ſpreading at a right angle. *Heads* of *flowers* the ſize of a pepper-corn, on long ſtalks, in pairs, either axillary, or diſpoſed in a ſort of cluſter at the ends of the branches. *Willdenow.* This ſpecies appears very remarkable, on account of the great ſize of its thorns.

A. *eburnea.* Ivory-thorned Acacia. Willd. n. 78. (Mimoſa eburnea; Linn. Suppl. 437. M. leucacantha; Jacq. Hort. Schoenbr. v. 3. 75. t. 393.)—Spines ſtipulary, in pairs, cylindrical-awlſhaped, combined at the baſe, ſpreading. Leaves doubly pinnate; firſt diviſion of three or four pair; ſecond of ſix or more pair; leaflets diſtant, elliptic-oblong. Heads axillary, ſtalked, aggregate.—Sent by Kœnig from the Eaſt Indies. Jacquin by miſtake makes it a native of Africa. He cultivated it at Schoenbrun, but we have not met with this ſpecies in any Engliſh ſtove, the following one having been miſcalled by the above name. The true *A. eburnea*, of which the original Linnæan ſpecimen lies before us, is a twiſted irregularly branched *ſhrub*, whoſe twigs are round and zigzag, armed with tremendous ſtraight *ſpines*, which are white, ſmooth and poliſhed, almoſt like ivory, but brown and very ſharp at the end: the longeſt meaſure nearly two inches; ſome are but a quarter that ſize: they taper gradually from a thick confluent baſe. *Leaves* about two inches long, with ſmooth *leaflets*, placed at the diſtance of their own width from each other. *Common foot-*

ſtalk with two depreſſed glands in the upper part. *Flower-ſtalks* either axillary, or terminal and racemoſe, more or leſs aggregate, each bearing a globular *head*, of yellow ſweet-ſcented *flowers*. We know nothing of the *legume*.

A. *horrida*. Awl-thorned Acacia. Willd. n. 79, excluding the ſynonym of Jacquin, and perhaps Forſkall. (A. maderaſpatana, foliolis parvis, aculeis e regione binis prægrandibus horrida, cortice cinereo; Pluk. Phyt. t. 121. f. 4. A. eburnea; Ait. n. 46, but not of Willd. Mimoſa horrida; Linn. Sp. Pl. 1505. Vahl Symb. v. 1. 81? M. eburnea; Roxb. Coromand. v. 2. 54. t. 199.)—Spines ſtipulary, in pairs, linear-awlſhaped, angular, ſpreading, longer than the leaves; ſome much ſhorter and recurved. Leaves doubly pinnate; firſt diviſion of two or three pair; ſecond of many pair; leaflets crowded, on a hairy ſtalk. Heads axillary, ſtalked, aggregate.—Native of the Eaſt Indies, flowering in the cold ſeaſon, ſent by Dr. Roxburgh to ſir Joſeph Banks in 1792. This is a ſmall ill-looking *tree*, or large buſhy *ſhrub*, whoſe *branches* ſpread in every direction, and are round, purpliſh, wavy, very rigid, armed with formidable *thorns*, of various ſizes. Some of the latter are two inches long, white, ſpreading horizontally in oppoſite directions, ſcarcely combined at the baſe, much more ſlender and linear than in the *A. eburnea*, flat or channelled along their upper ſide; when young they are much ſmaller, needle-like, and hairy: others, on the ſame branch, and of the ſame age, with the large ones, are very ſhort and hooked. The *leaves* are not half the ſize of the laſt ſpecies. *Heads* of *flowers* globoſe, with a purpliſh *corolla*, and yellow *ſtamens*. *Legume* linear, twiſted, two inches long, ſmooth. The *flowers* are ſaid by Dr. Roxburgh to be ſeparated from each other, on their globoſe *receptacle*, by abrupt, fringed, chaffy ſcales, of which we can find no traces in our ſpecimens.

A. *tortuoſa*. Poponax Acacia. Willd. n. 82. (A. americana, ſiliquis teretibus ventricoſis, floribus luteis; Sloane Jam. v. 2. 56. Mimoſa tortuoſa; Linn. Sp. Pl. 1505. Swartz Obſ. 391. Browne Jam. 251. n. 1.)—Spines ſtipulary, in pairs, awl-ſhaped, much ſhorter than the leaves, round, downy. Leaves doubly pinnate; firſt diviſion of three or four pair; ſecond of many pair; leaflets crowded, on a downy ſtalk. Heads axillary, on downy ſtalks, ſolitary or in pairs. Legume externally fleſhy.—Very common in the low ſandy lands of Jamaica. The *ſtem* is ſhrubby, with ſpreading wavy *branches*, rendering the plant uſeful for hedges according to Dr. Swartz; but Browne ſpeaks of it as of little ſervice, the ſmell of every part being ſo rank and diſagreeable, that it cannot be uſed even for fire-wood. The taſte is bitter, and the *flowers* have an oppreſſive ſmell. Both theſe authors mention the *legumes* as furniſhed with a glutinous juice under their ſkin, whoſe qualities are eminently bitter and aſtringent. Sloane appears to confound the *A. Farneſiana* and others with this ſpecies. The true *tortuoſa*, of which we have Browne's own ſpecimen, comes near to *horrida* in botanical characters, but the *leaves* and *leaflets* are much larger; *thorns* ſmaller, not angular, but more tapering; *flower-ſtalks* downy, not ſmooth. There are no ſcales on the *receptacle* between the *flowers*, but the teeth of the long tubular *calyx* are very denſely and finely fringed. Dr. Swartz ſays this is the tree really called *Poponax* in Jamaica, Browne erroneouſly attributing that name to *A. juliflora*. Both are frequently met with in the ſame ſituations.

A. *farneſiana*. Sponge Acacia. Willd. n. 83. Ait. n. 47. (A. indica farneſiana; Aldin. Hort. Farneſ. 3. t. 2. 4. Mimoſa farneſiana; Linn. Sp. Pl. 1506.)—Spines ſtipulary, in pairs, awl-ſhaped. Leaves doubly pinnate; firſt diviſion of from five to eight pair; ſecond of many pair; leaflets crowded. Heads ſtalked, axillary. Legume tumid, coriaceous.—Native of Hiſpaniola, from whence the ſeeds were brought to Italy, early in the 17th century. This ſhrub is occaſionally ſeen in our ſtoves, being eſteemed for the peculiarly delicious ſcent of its balls of yellow *flowers*, which are produced during ſummer. A coloured figure is much wanted. The dry tumid *legume* diſtinguiſhes it clearly, as a ſpecies, from the laſt. The whole plant is ſmoother, nor have we ever obſerved the herbage to be fœtid.

A. *arabica*. Eaſt Indian Gum-Arabic Acacia. Willd. n. 86. (A. altera vera, &c.; Pluk. Almag. 3. t. 251. f. 1. Mimoſa arabica; Lamarck Dict. v. 1. 19. Roxb. Coromand. v. 2. 26. t. 149. Nella Tooma of the Telingas.)—Spines ſtipulary, awl-ſhaped, in pairs. Leaves doubly pinnate; firſt diviſion of five pair; ſecond of many pair. Heads axillary, about three together. Legume necklace-like, flat, denſely downy.—Native of the Eaſt Indies, whether of Arabia alſo may be doubted. Dr. Roxburgh ſays it is abundant over every part of India, thriving beſt in a low, ſtiff, uncultivated ſoil, and flowering moſt part of the year. Beſides yielding a great quantity of Gum Arabic, this tree is one of the moſt uſeful in India for its tough and hard wood, ſerving many valuable purpoſes in ſhip-building, wheel-carriages, &c. The aſtringent bark ſerves for dyeing, and making ink. The *branches* are round. *Spines* diſtinct, an inch, more or leſs, in length. *Leaves* like ſeveral of the foregoing, as are alſo the aggregate globular heads of yellow *flowers*. But the *legumes* afford a moſt ſtriking character, being flat, four or five inches long, covered with denſe hoary pubeſcence, like fine velvet, and remarkably contracted into numerous orbicular portions, in each of which is lodged a flattiſh *ſeed*. Cattle are very fond of the tender branches and young pods.

A. *vera*. Egyptian Gum-Arabic Acacia. Willd. n. 87. Ait. n. 48. Veſling Ægypt. 6. t. 8. Bauh. Hiſt. v. 1. p. 2. 429. (Mimoſa nilotica; Linn. Sp. Pl. 1506. Haſſelq. Travels, Engl. ed. 250. Woodv. Med. Bot. 187. t. 67.)—Spines ſtipulary, in pairs, linear-awlſhaped. Leaves doubly pinnate; firſt diviſion of five or ſix pair; ſecond of many pair; common ſtalk glandular. Heads axillary, about three together. Legume necklace-like, nearly flat, ſmooth.—Native of the ſandy deſarts of upper and lower Egypt, from whence Haſſelquiſt ſent ſpecimens to Linnæus, who ſeems to have deſcribed the ſame plant under the name of *Mimoſa Senegal*. This original Gum Arabic tree was known to our earlier botaniſts, and Gerarde appears to have cultivated it in his garden, whence it has obtained a place in Mr. Aiton's valuable work; but few perſons at preſent are acquainted with living, or even dried, ſpecimens, eſpecially of the *legumes*. Theſe clearly diſtinguiſh the ſpecies, being more ſtrictly contracted into orbicular portions than the laſt, with an obliquity well expreſſed in the wooden cut of Veſlingius. Their ſurface is brown, nearly or quite ſmooth, pale at the edges; the diſk of each lobe rather tumid, from the ſwelling of the *ſeeds*. In the *leaves* or *flowers* of theſe two ſpecies, we cannot, from the dried ſpecimens, detect any great difference; but the *ſpines* of *A. vera* are almoſt as remarkable for their length and whiteneſs as thoſe of *horrida*. For the moſt valuable produce of this tree, ſee ARABIC, *Gum*.

Sect. 7. *Leaves doubly pinnate. Prickles ſcattered.* Eleven ſpecies in Willdenow.

A. *cæſia*. Grey Acacia. Willd. n. 97. Ait. n. 49. (A. ſpinoſa, indiæ orientalis, foliis ſubtus cæſiis, floribus globoſis luteis; Pluk. Mant. 1. Phyt. t. 330. f. 3. A. zeylanica ſarmentoſa, flore luteo globoſo; Burm. Zeyl. 3. Mimoſa cæſia; Linn. Sp. Pl. 1507.)—Branches and foot-

ſtalks prickly. Leaves doubly pinnate; firſt diviſion of ſeven pair; ſecond of ſixteen pair; leaflets oblong-oval; a gland on the main footſtalk. Spikes globoſe, in terminal panicled cluſters.—Native of the Eaſt Indies, from whence it was procured for Kew garden, by ſir J. Banks, in 1773, but appears not yet to have flowered. We have ſeen no authentic ſpecimen of this ſpecies.

A. *pennata*. Fine-leaved Acacia. Willd. n. 98. Ait. n. 50. (A. aculeata multiflora, foliis pennas avium referentibus; Burm. Zeyl. 2. t. 1. A. zeylanica, floſculis globoſis luteis, foliis pinnatis tenuiſſimè inciſis, ſpinis minoribus; Burm. Zeyl. 3. Mimoſa pennata; Linn. Sp. Pl. 1507.)—Branches prickly. Leaves doubly pinnate, with many pair of general diviſions, and very numerous linear leaflets; a gland on the common ſtalk. Panicle terminal, ſpreading; heads ſtalked, aggregate; general flower-ſtalks, like the baſe of the common footſtalks, prickly. Legume flat, ſmooth; wavy at the edges.—Native of Ceylon, and other parts of the Eaſt Indies. Sent to Kew, in 1773, by ſir J. Banks. We have ſpecimens from Dr. Roxburgh. The very delicate ſlender *leaflets*, which, in the dried plant at leaſt, fold together, give a feathery appearance, well expreſſed in Burmann's plate. The *panicle* is very large and compound, with downy ruſty ſtalks; its main branches only armed with ſmall hooked prickles. The *legumes*, not hitherto deſcribed, but very important in diſcriminating this multifarious tribe, are about three inches long, tapering, though rather blunt, at each end, flat, thick-edged, wavy or ſinuous at both margins. *Seeds* about four.

A. *Ceratonia*. Round-leaved Acacia. Willd. n. 101. Ait. n. 52. (A. repens aculeata, flore albo, foliis Siliquæ; Plum. Ic. 4. t. 8. Mimoſa Ceratonia; Linn. Sp. Pl. 1508.)—Branches, and all the ſtalks, prickly. Leaves doubly pinnate; leaflets three pair, roundiſh-obovate, oblique, three-ribbed. Panicle terminal. Heads globoſe. Legume flat, prickly at the edges.—Native of the Weſt Indies, from whence the preſent duke of Marlborough is ſaid to have introduced it into his rich collection, before the year 1800. The remarkable roundneſs of the *leaflets*, which would have authorized the name of *rotundifolia*, and their greater ſize, diſtinguiſh the preſent ſpecies from all we have hitherto noticed. Every part is extremely prickly, but devoid of pubeſcence. The heads of *flowers* are rather ſmall, and, according to Plumier, white. He delineates the *legume* of a flat, oblong, obtuſe figure, two or three inches long and one broad, fringed with hooked prickles.

A. *tamarindifolia*. Tamarind-leaved Acacia. Willd. n. 102. Ait. n. 53. (A. aculeata, flore albo, foliis Tamarindi; Plum. Ic. 4. t. 7. Mimoſa tamarindifolia; Linn. Sp. Pl. 1509. Jacq. Hort. Schoenbr. v. 3. 77. t. 396.)—Branches prickly. Leaves doubly pinnate; firſt diviſion of five or ſix pair; ſecond of about fifteen pair; a gland on the common ſtalk; leaflets oblong. Stipulas and bracteas heart-ſhaped. Cluſters terminal. Heads globoſe. Legume flat, ſmooth.—Native of South America and the Weſt Indies. Said to have been cultivated by Kennedy and Lee, at Hammerſmith, in 1774. The name is very expreſſive of the aſpect of the *leaves*. The very broad heart-ſhaped *ſtipulas*, and the ſmaller, more ovate, *bracteas*, give a peculiar character to this ſpecies. *Infloreſcence* rather racemoſe than panicled, deſtitute of haírineſs or ſpines, though the *branches* of the ſtem are armed with ſtrong prominent prickles. *Heads* of a few white *flowers*, each on a long ſtalk, ſolitary or in pairs. *Legume*, according to Plumier's figure, linear-oblong, flat, ſtraight, deſtitute of prickles at the edges, acute, about three inches long and one broad. *Seeds* numerous, oval.

A. *acantholoba*. American Prickly-podded Acacia. Willd. n. 95.—"Branches prickly. Leaves doubly pinnate; firſt diviſion of three pair; ſecond of ten pair; leaflets linear, obtuſe; downy beneath. Heads globoſe, nearly ſeſſile, racemoſe. Legume prickly at the edges."—Gathered in South America, by the celebrated travellers Humboldt and Bonpland. *Branches* round. *Leaflets* ten or eleven pair, clothed beneath with cloſe-preſſed hairs. *Footſtalks* downy. *Prickles* ſcattered, hooked, compreſſed. *Heads* ſmall, almoſt ſeſſile, diſpoſed in a terminal cluſter. *Legume* an inch and a half in length, oblong, flat, membranous, ſmooth, beſet with prickles at the margin. *Willdenow*. This author declares himſelf to have been poſſeſſed of ſeveral ſpecimens of the *Mimoſa* tribe, which were too imperfect to be enumerated or defined. We are not only in this ſituation, but we have ſeveral in ſufficiently good condition, which on account of the incomplete deſcriptions of authors, eſpecially concerning the *fruit*, we cannot aſcertain to be deſcribed or not.

ACADEMY. The *Academy of Arts* at Peterſburg was eſtabliſhed by the empreſs Elizabeth in 1758, and annexed to the Academy of Sciences. At the ſuggeſtion of count Shuvalof, the late empreſs Catharine, in 1764, formed it, &c. Next col. after l. 54, add,

The academy of painting, ſculpture, and architecture, at Vienna, was founded in the year 1705.

Under *Academies of Nonconformiſt Miniſters*, inſtead of Mancheſter *r.* York, *dele* Exeter, and inſtead of Wrexham *r.* Llanfylling.

ACÆNA, in *Botany*, *ακαινα*, *a thorn*, alluding to the prickly fruit. This genus, ſuppoſed to conſiſt of only one ſpecies, was deſcribed by Mutis, who communicated his account of it to Linnæus, without any ſpecimen, and it was publiſhed in Linn. Mant. 2. 145, 200. Some time afterwards Forſter founded his *Anciſtrum*, Forſt. Nov. Gen. t. 2, ſeveral ſpecies of which have been deſcribed by the younger Linnæus, Lamarck, and other writers. (See Acæna and Ancistrum.) Vahl firſt diſcovered theſe to be one and the ſame genus, and has greatly added to the number of ſpecies. We ſhall extract from his work a compendious view of the whole.—Vahl Enum. v. 1. 293. Linn. Mant. 2. 145. Schreb. Gen. 87. Willd. Sp. Pl. v. 1. 693. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 67. Juſſ. 336. (Anciſtrum; Forſt. Gen. t. 2. Linn. Suppl. 10. Schreb. Gen. 25. Willd. Sp. Pl. v. 1. 154. Mart. Mill. Dict. v. 1. Juſſ. 336. Lamarck Illuſtr. t. 22. Gærtn. t. 32.)—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Senticoſæ*, Linn. *Roſaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, turbinate, permanent, with four teeth, each ſometimes tipped with an upright briſtly awn, barbed at the point, or the whole body of the calyx is ſo armed. *Cor.* Petals four, roundiſh, inſerted into the border of the calyx, and ſhorter than its awns. *Stam.* Filaments two or four, thread-ſhaped, longer than the petals, inſerted into the border of the calyx; anthers roundiſh. *Piſt.* Germen ſuperior, oblong; ſtyle thread-ſhaped; ſtigma many-cleft, tufted. *Peric.* none, except the permanent calyx. *Seed* ſolitary, ovate, coated with the thickened baſe of the calyx.

Eſſ. Ch. Calyx of one leaf, armed with barbed briſtles. Petals four, inſerted into the calyx. Stigma tufted. *Seed* ſolitary, coated with the calyx.

Obſ. The *petals* are ſometimes wanting. *Flowers* occaſionally five-cleft, with five *ſtamens*. The *ſtem* is herbaceous, or ſometimes ſhrubby. *Leaves* alternate, pinnate with an odd one, deeply ſerrated or cut, often hairy or ſilky; their common *footſtalks* ſheathing, bordered with a pair of membranous combined *ſtipulas*. *Flowers* ſmall, greeniſh, in a globoſe head, or interrupted ſpike. *Fruit* reddiſh, dry.

1. A. *lappacea*. Bur Acæna. Vahl n. 1. "Fl. Peruv. v. 1. 66. t. 103. f. *a*."—"Leaflets oblong, ſerrated. Flowers racemoſe. Fruit all over prickly. Stem erect."—Native of craggy ſunny ſpots in the diſtrict of Tarma, Peru. *Stems* rather ſhrubby, numerous, a foot high, ſlightly branched, round, villous. *Leaflets* four pair, deeply ſerrated, hairy; becoming ſmooth by culture. *Flower-ſtalks* axillary, four times as long as the leaves, bearing from five to ſeven diſtant, ſtalked *flowers*.

2. A. *elongata*. Mutiſian Acæna. Linn. Mant. 200. Vahl n. 2. Willd. Sp. Pl. v. 1. 693.—Leaflets oblong, ſerrated; downy beneath; bearded at the tips of the ſerratures. Spikes elongated, compreſſed. Fruit all over prickly. Stem nearly erect.—Found in Mexico, by the celebrated Mutis. *Stem* woody, perennial, with very long, aſcending, ſomewhat compound branches, two feet in length. *Leaves* ſcattered; *leaflets* ſeſſile, crowded; the lower ones very ſmall, linear, acute, entire; from four to eight of the upper pair larger, oblong, ſerrated. *Spikes* axillary, erect, rigid, a ſpan long. *Bracteas* ſolitary, cloſe to the calyx, concave, ovate-oblong. *Flowers* alternate, nearly ſeſſile. *Mutis*.

3. A. *latebroſa*. Hairy Acæna. Vahl n. 3. Ait. n. 1. (Anciſtrum latebroſum; Willd. Sp. Pl. v. 1. 155. A. decumbens; Thunb. Prodr. 6. Agrimonia decumbens; Linn. Suppl. 251.)—Leaflets oblong, cut, hairy. Stem creeping. Spikes elongated, ſtalked, many-flowered.—Native of the Cape of Good Hope. The *germen* is downy, beſet with many barbed prickles, which, as the *fruit* ripens, project through the ſkin of the *calyx*. See Gærtner f. 2, and Lamarck f. 4.

4. A. *pinnatifida*. Deep-cut Acæna. Vahl n. 4. "Fl. Peruv. v. 1. 68. t. 104. f. *b*."—Leaflets oblong, deeply ſerrated, almoſt pinnatifid; hairy beneath. Spikes cylindrical. Stem erect.—Found on dry expoſed hills in Chili. Commerſon gathered what appears to be the ſame, at Monte Video, not, as Vahl by miſtake ſays, at the ſtraits of Magellan. The *ſtem* is quite ſimple, a ſpan high, leafy, very hairy in the upper part. *Leaves* numerous at the root, and ſeveral on the ſtem, with eight or nine pair of *leaflets*, beſides the odd one; the largeſt near an inch long, copiouſly and deeply cut, like *Potentilla anſerina*. *Spike* obtuſe, an inch or inch and half long, denſe, many-flowered, dark purple. *Germen* beſet with ſtrong barbed thorns, not proceeding from its teeth.

5. A. *Sanguiſorbæ*. Burnet-leaved Acæna. Vahl n. 5. Ait. n. 2. (Anciſtrum Sanguiſorbæ; Linn. Suppl. 89. A. diandrum; Forſt. Prodr. 10. A. anſerinæfolium; Forſt. Gen. 2. Lamarck Illuſtr. v. 1. 76. t. 22. f. 1.)—Leaflets obovate, deeply ſerrated; ſilky beneath. Spikes globoſe. Stem decumbent. Calyx-teeth awned.—Native of New Zealand, Terra del Fuego, and Staten-land. Introduced into Kew garden by ſir J. Banks, in 1796. Perennial and hardy, flowering in June. The *ſtems* are a ſpan or more in length. *Leaves* reſembling Burnet; ſmooth above. *Heads* of *flowers* globoſe, denſe, on long ſtalks.

6. A. *ovalifolia*. Oval-leaved Acæna. Vahl n. 6. "Fl. Peruv. v. 1. 67. t. 103. f. *c*." Ait. n. 3. (Anciſtrum repens; Venten. Jard. de Cels, t. 6.)—Leaflets elliptic-oblong; villous beneath. Spikes globoſe. Stem creeping. Calyx-teeth awned. Stigma unilateral.—Native of Peru, in moiſt ſhady places. Cultivated at Paris, by the late M. Cels, and at Kew by Mr. Aiton, where it is hardy, flowering in May and June. We can diſcover no difference between this and the foregoing, the *ſtigma* being perhaps accidentally imperfect.

7. A. *argentea*. Silvery Acæna. Vahl n. 7. Fl. Peruv. v. 1. 67. t. 103. f. *b*. (Proquin; Feuill. Voy. v. 3. 55. t. 41.)—Leaflets elliptic-lanceolate, acute, ſerrated; ſilky beneath. Spikes globoſe. Stem creeping.—Native of Chili, in moiſt ground. The Indians uſe it as a vulnerary. The *branches* are two feet long. *Leaves* ſhining and ſmooth above; ſilvery beneath. *Flowers* in globular heads, on long ſtalks. *Stamens* two or four. *Calyx* with two, three, or four terminal awns.

8. A. *lucida*. Shining Deep-cut Acæna. Vahl n. 8. Ait. n. 4. (Anciſtrum lucidum; Willd. Sp. Pl. v. 1. 155. Lamarck Illuſtr. v. 1. 77. t. 22. f. 3.)—Leaflets in three or five deep oblong ſegments; hairy beneath. Spikes oblong. Stem almoſt buried.—Native of the Falkland iſlands, from whence Dr. Fothergill procured it in 1777. Commerſon gathered the ſame in the ſtraits of Magellan. The *ſtems* run juſt under the ſurface of the ground, ſending up numerous leafy tufts. *Leaves* linear-oblong, of many pairs of ſmall, elliptic-oblong, deeply divided *leaflets*. *Spikes* partly interrupted. *Fruit* reddiſh, ſmooth, entirely unarmed, as well as the *calyx*, in our ſpecimens. Vahl attributes four awns to the latter.

9. A. *trifida*. Three-cleft Acæna. Vahl n. 9. Fl. Peruv. v. 1. 67. t. 104. f. *c*.—"Downy and hoary. Leaflets wedge-ſhaped, in three or five ſegments. Spikes globoſe. Stem erect."—Native of paſtures, fields, and hills in Chili. Denſely villous. *Stems* ſeveral, unequal, the longeſt meaſuring about a foot. *Leaflets* ſeven or eight pair; the lowermoſt often undivided. *Flower-ſtalks* terminal, often bearing one or two little round heads, beſides the principal one. *Bracteas* linear. *Calyx* ſometimes five-cleft. *Stamens* two to five. *Fruit* obovate, denſely villous, with four or five angles, and as many awns. *Vahl*.

10. A. *magellanica*. Magellanic Acæna. Vahl n. 10. (Anciſtrum magellanicum; Lamarck Illuſtr. v. 1. 76. t. 22. f. 2.)—Leaflets obovate, deeply ſerrated, three-cleft; hoary beneath. Spikes globoſe. Stem erect, ſmooth.—Gathered by Commerſon, at the ſtraits of Magellan. *Stems* rather ſhrubby, three or four inches high, branched, ſmooth; ſometimes hoary at the ſummit. *Leaves* at the ends of the branches: leaflets five or ſix pair, ſcarcely half the length of the nail; the uppermoſt with ſeven or nine teeth, lower with about three, loweſt of all entire. *Flower-ſtalks* axillary, at the top of each branch, erect, purpliſh, ſlightly villous at the upper part. *Head* twice the ſize of a pea. Very nearly akin to the laſt, but the ſmoothneſs of the *ſtem*, *branches* clothed with imbricated baſes of the *footſtalks*, crowded *leaves*, and ſmooth *bracteas*, diſtinguiſh this ſpecies. *Vahl*.

11. A. *adcendens*. Aſcending Smoothiſh Acæna. Vahl n. 11. (A. lævigata; Ait. n. 5? Anciſtrum magellanicum β; Lamarck Illuſtr. v. 1. 76.)—Leaflets oblong or obovate, ſerrated, nearly ſmooth. Spikes globoſe. Stem decumbent.—Gathered by Commerſon at the ſtraits of Magellan. We do not find any ſpecimen from him in the Linnæan collection; but Mr. Menzies has communicated ſome, by the name of *Anciſtrum alpinum*, which appear to anſwer to Vahl's deſcription, except being conſiderably hairy. Theſe were gathered on the ſummits of the mountains near Cape Horn, along with *Viola tridentata*. (See VIOLA n. 76.) Vahl ſpeaks of the *ſtems* as a ſpan long, ſmooth. *Leaflets* from five to ſeven pair, oppoſite or alternate, bluntly ſerrated, veiny, ſomewhat hairy at the rib. *Flower-ſtalks* terminal, elongated. *Head* the ſize of a cherry.

Calyx with four awns. The hairineſs of the upper ſide of the *leaves* in our plant, and the ſmaller ſize of the *heads* of *flowers*, may be owing to a very lofty or expoſed ſituation. We merely gueſs this to be Mr. Aiton's *lævigata* from the ſynonym of Lamarck.

12. A. *cylindriſtachya.* Cylindrical-ſpiked Acæna. Vahl n. 12. "Fl. Peruv. v. 1. 68. t. 104. f. *a.*"—"Leaflets oblong, ſerrated; ſilky beneath. Spikes cylindrical, on nearly radical ſtalks. Stems ſubterraneous."—Found on hills in Tarma, Peru. *Herb* clothed with ſilky pubeſcence. *Leaves* radical, numerous; leaflets ten or eleven pair, obtuſe, furrowed. *Flower-ſtalks* ſeveral, from three to nine inches high, bearing a few ſimple leaves. *Calyx* purpliſh, with four awns. *Stamens* two.

13. A. *pumila.* Smooth Dwarf Acæna. Vahl n. 13.—Leaflets oval, convex, ſerrated, very ſmooth; poliſhed on the upper ſide. Flower-ſtalks almoſt radical. Spikes cylindrical.—Gathered by Commerſon at the ſtraits of Magellan, and by Mr. Menzies in Staten-land, near Cape Horn. The *root* is tuberous. *Stems* very ſhort, or ſcarcely any. *Leaflets* about twelve pair, with blunt revolute teeth; veiny on both ſides; paler and opaque beneath. *Flower-ſtalk* ſlightly leafy. *Spike* interrupted in the lower part. *Germen* beſet with very numerous little barbed briſtles.

ACALZIKE. After Tartary, add: the capital of *Akiſka* (which ſee); a populous and commercial city, ſituated in an open valley, on the left bank of the Kur. The inhabitants are, Jews, Turks, Greeks, Armenians, and Georgians.

ACANTHI, in *Botany*, Juſſieu's third natural order of his eighth claſs, or the thirty-ſixth of his general ſeries, named from the moſt celebrated and conſpicuous genus which it contains. For the character of the claſs, ſee GENTIANÆ. The *Acanthi* are thus defined.

Calyx divided, permanent, often bracteated. *Corolla* moſtly irregular. *Stamina* either two; or four, two of which are ſhorter than the others. *Style* ſolitary; with a two-lobed, rarely ſimple, *ſtigma.* *Fruit* capſular, of two cells, often many-ſeeded, with two elaſtic valves, and a partition contrary, or oppoſite, thereto, inſerted into their middle, ſplitting from top to bottom into two uninterrupted *receptacles*, bearing ſeeds on each ſide, rendering the valves ſemibilocular. *Stem* either herbaceous or ſhrubby. *Leaves* for the moſt part oppoſite, as well as the *flowers.*

Sect. 1. *Stamens four, in unequal pairs.*

This contains *Acanthus* of all authors; *Dilivaria* of Juſſieu, founded on *Acanthus ilicifolius* of Linnæus; but ſurely on the ſlighteſt poſſible characters; *Blepharis* of Juſſieu; *A. maderaſpatenſis* of Linnæus, as ſlightly diſtinguiſhed; *Thunbergia* of Linn. Suppl.; *Barleria;* and *Ruellia.*

Sect. 2. *Stamens only two.*

Juſticia and *Dianthera.*

Mr. Brown, who retains this order by the name of *Acanthaceæ*, Prodr. Nov. Holl. v. 1. 472, has enriched it with many valuable remarks, and ſome new genera. He combines, like Profeſſor Vahl, *Dianthera* with *Juſticia*, but extracts from the latter the *Hypoeſtes* of Solander; with *Eranthemum*, originally founded by Linnæus; and eſtabliſhes moreover two genera of his own by the names of HYGROPHILA and NELSONIA. (See thoſe articles.) We perceive alſo that this intelligent writer retains Vahl's *Elytraria.* He propoſes alſo *Aphelandra*, conſiſting of *Juſticia pulcherrima* and its allies; *Aetheilema*, founded on Forſkall's *Ruellia imbricata*, and various undeſcribed Eaſt Indian and African ſpecies, of which therefore we can give no account. LEPIDAGATHIS of Willdenow, Sp. Pl. v. 3. 400, of which we propoſe to ſpeak hereafter, is admitted by Mr. Brown, as well as a new genus of Juſſieu's named *Blechum.* Some others are leſs diſtinctly indicated. We ſelect from the work of our learned friend the following additional obſervations upon the *Acanthi*, or *Acanthaceæ.*

The *anthers* are either of two cells, ſometimes equal, ſometimes unequal in their inſertion, or of only one cell; and burſt longitudinally. *Germen* ſurrounded at the baſe with a glandular diſk. *Seeds* roundiſh, moſtly ſubtended by *retinacula*, props, or awl-ſhaped aſcending proceſſes from the partition. *Skin* of the ſeed lax. *Albumen* invariably none. *Embryo* either curved or ſtraight. *Cotyledons* large, nearly orbicular. *Plumula* inconſpicuous. Theſe plants are chiefly tropical. Their pubeſcence, if any, is ſimple, occaſionally capitate, very rarely ſtarry. *Leaves* oppoſite, rarely four in a whorl, without *ſtipulas*, ſimple, undivided, either entire or ſerrated; ſeldom ſinuated, or ſlightly lobed. *Infloreſcence* terminal or axillary, ſpiked or racemoſe, faſciculated, panicled, or ſolitary. The order is certainly natural, though not eaſily to be defined. In ſome inſtances the props of the *ſeeds* are wanting. The rudiments of a fifth ſtamen frequently occur. The elaſtic mode of burſting in the *capſule* is nearly univerſal.

The following principles by which the genera are to be diſcriminated, are thus propoſed by Mr. Brown in ſucceſſion, according to their relative importance. 1. Seeds with or without props. 2. Partition combined with the valves or ſeparate. 3. Anthers of two cells or of one. 4. Anther-bearing ſtamens two or four. 5. Limb of the irregular corolla with one lip or two. 6. Calyx equal or unequal. Cells of the capſule containing each two or more ſeeds. The following is the order of Mr. Brown's genera. *Hypoeſtes*, *Juſticia*, *Eranthemum*, *Ruellia*, *Hygrophila*, *Acanthus* including *Dilivaria* of Juſſieu, and *Nelſonia*, which may be found in their proper places.

ACANTHONOTUS, in *Ichthyology*, a genus of fiſh, whoſe characters are, that the body is elongated, without dorſal fins, and that it has ſeveral ſpines on the back and abdomen. There is one ſpecies, a native of the Eaſt Indies, deſcribed by Bloch under the name of

NASUS; Snouted Acanthonotus, which is grey, with the back tranſverſely barred with brown. This fiſh is of conſiderable length, that deſcribed by Bloch being two feet and a half: the head is large, the teeth ſmall, forming a row along each jaw, the eyes large, and the noſtrils conſpicuous; the body, moderately wide for about a third of its length, tapers towards the extremity; head and body are covered with ſcales, of a blueiſh tinge, ſilvery on the abdomen; the pectoral fins brown, of a moderate ſize, the ventral of like colour, and ſmall; the lateral line ſtraight, nearer to the back than to the abdomen; with ten ſpines, ſtrong but ſhort, along the narrow part of the back, and towards the abdomen from twelve to thirteen others, followed by the anal fin, which is ſhallow, and continued into the tail, which is very ſmall. Shaw's Gen. Zool.

ACANTHURUS, a genus of fiſh, conſiſting of ſuch ſpecies of the Linnæan genus *Chætodon* (which ſee) as, in contra-diſtinction to the principal character of that genus, have, in general, moderately broad and ſtrong teeth, rather than ſlender and ſetaceous ones; they are alſo furniſhed on each ſide of the tail with a ſtrong ſpine. Their generic character is as follows: Teeth ſmall, in moſt ſpecies lobated; tail aculeated on each ſide; habit and general appearance as in the chætodon. The ſpecies are,

UNICORNIS, Grey-brown, with a frontal horn ſtretching

ing forwards over the ſnout, and two ſpines on each ſide of the tail. See Chætodon *Unicornis.*

Nasus. Grey, ſpeckled with black, with a rounded frontal tubercle, and two ſpines on each ſide of the tail. A native of the Indian ſeas, and, according to Cepede, firſt deſcribed by Commerſon.

Teuthis. Blue, with the middle of the body paler, and a ſpine on each ſide of the tail. See Teuthis *Hepatus.*

Chirurgus; Lancet Acanthurus. Orange-yellow, with the body croſſed on the hind part by tranſverſe brown ſtripes, and a ſpine on each ſide of the tail. See Chætodon *Chirurgus.*

Nigricans. Blackiſh, ſub-argenteous beneath, with a ſpine on each ſide of the tail. See Chætodon *Nigricans.*

Militaris. Brown, with rhombic-ovate body, and ſtrong ſpine on each ſide of the tail. Native of the Indian and American ſeas.

Triostegus; Triradiated Acanthurus. Greeniſh-brown, with four tranſverſe duſky bands, and a ſpine on each ſide of the tail. Native of the Indian ſeas. See Chætodon *Trioſtegus.*

Harpurus; Guarded Acanthurus; Rhombic-ovate brown Acanthurus, with extremely minute ſcales, and two ſpines on each ſide of the tail. Native of the Indian ſeas.

Sohal; Duſky Acanthurus, with longitudinal violet ſtreaks, and two ſpines on each ſide of the tail imbedded in a red depreſſion. See Chætodon *Sohal.*

Nigro-fuscus; Duſky Acanthurus, with ovate body, and ſpine on each ſide of the tail. A variety of the preceding. See Chætodon *Nigro-fuſcus.*

Achilles; Brown, ovate Acanthurus, with a bare ovate red ſpot on the hind part, aculeated in the middle.

Lineatus; Ovate-brown Acanthurus, with numerous longitudinal white ſtripes, and ſpine on each ſide of the tail. See Chætodon *Lineatus.*

Umbratus; Brown-ovate Acanthurus, with extremely minute ſcales, and a ſpine on each ſide of the tail. Native of the Indian ſeas.

Meleagris; Blackiſh-brown Acanthurus, thickly marked with round white ſpots, and ſpine on each ſide of the tail. Native of the Indian and American ſeas.

Velifer; Broad-finned, whitiſh Acanthurus, with roundiſh-ovate body, marked by numerous brown tranſverſe bands, and ſpine on each ſide of the tail. Native of the American ſeas. Shaw's Zool.

ACANTHUS, in *Botany.* In addition to the obſervations of our predeceſſor, we would remark, what the writer of the preſent article has elſewhere hinted, (*Conſiderations reſpecting Cambridge, more particularly relating to its Botanical Profeſſorſhip*, 37,) that every mention of this plant in Virgil accords with the Common Holly, *Ilex Aquifolium*, ſo far, at leaſt, as the words of the poet indicate any thing in particular. The paſſages in queſtion are,

——— *baccas ſemper frondentis acanthi.*—Georg. 2. 119.
——— *aut flexi tacuiſſem vimen acanthi.*—Ib. 4. 123.
Ille comam mollis jam tum tondebat acanthi.—Ib. 4. 137.
Et molli circum eſt anſas amplexus acantho.—Ecl. 3. 45.
Mixtaque ridenti colocaſia fundet acantho.—Ib. 4. 20.
—— *circumtextum croceo velamen acantho.*—Æn. 1. 653.
——— *pictum croceo velamen acantho.*—Ib. 1. 715.

The flexible twigs, ever-green leaves, bright or gay ſaffron-coloured berries, (as the term *croceus* is uſed with conſiderable latitude by Latin writers,) the head of the plant being clipped by gardeners in the early ſpring, all ſufficiently well apply to the Holly, which is a common wild, as well as garden, ſhrub, throughout Italy, but of which we can find no mention whatever in all Virgil's writings, if theſe paſſages allude to any thing elſe. They are acknowledged to be inapplicable to the ακανθα of Dioſcorides, which is evidently the Linnæan *Acanthus.* They are no leſs ſo to the ακανθος of Theophraſtus, which is a tree bearing pods, or legumes. Theſe Greek names, ſimply meaning a thorny or prickly plant, are variouſly applied, not only to different trees or ſhrubs, but to many kinds of thiſtles. The *Acanthus Dioſcoridis*, Linn. Sp. Pl. 891, a ſpecies adopted by Linnæus from other writers, without ſeeing a ſpecimen or figure, ſeems to be merely a narrow-leaved, or ſtarved ſtate of *A. ſpinoſus*; of which *A. mollis* may, on the other hand, be a cultivated, or more luxuriant, variety. The latter was found by Dr. Sibthorp in Sicily, not in Greece; the former, apparently the natural ſtate of this herb, as deſcribed by Dioſcorides, occurs in moiſt ſtony places, as well as about the borders of fields, in the ſouthern part of Greece, and the iſlands of the Archipelago, and is very common in Crete.

ACARNA, a name adopted from the Greeks, whoſe ακαρνα was, like this, ſome ſort of thiſtle. This name is now applied in Willdenow's Sp. Pl. v. 3, 1699, and from thence by Mr. Aiton, Hort. Kew. v. 4. 490, to a genus ſeparated by theſe writers from the Linnæan Atractylis (ſee that article); from which it differs in the want of a radius. The ſpecies referred to *Acarna* are, 1. *Atractylis gummifera* of Linn. Sp. Pl. 1161; 2. *A. macrocephala*, Desfont. Atlant. v. 2. 253; 3. *A. macrophylla*, ibid. 255. t. 226; 4. *A. cæſpitoſa*, ibid. 254. t. 225; 5. *A. lancea*, Thunb. Jap. 306; 6. *A. ovata*, ibid. 306; and 7. *A. cancellata*, Linn. Sp. Pl. 1162.—We can by no means concur in this alteration. Nothing is leſs certain than ſuch a generic diſtinction as the above, when unſupported by any natural character. Willdenow has alſo ſeparated from *Atractylis* the *purpurata* and *mexicana* of Linnæus, perhaps with more propriety, their receptacles being nearly naked, and their ſeed-down ſimple, to ſay nothing of a difference in the ſtructure of the radiant florets of the former, which rather invalidates than confirms the new-eſtabliſhed genus. See Onoseris.

ACCELERANDO, l. 11, *r.* refinements.

ACCENT, in *Muſic*, col. 2, l. 7, *r. ſieſſa*; l. 33, *r.* winds on your wings, &c.; l. 48, for uſing *r.* bowing.

ACCIACATURA, l. 13, *r.* Prattico; l. 14, Cimbolo; l. 22, *r.* reprinted.

ACCOMACH, or Accomack, l. 3, *r.* contained in 1810 15,743; l. 4. *r.* 4542.

ACCOMMODATION, in *Commerce*, a term applied to the acceptance of a bill, when the drawee only lends his name, and the drawer engages to furniſh him with the means of payment before the bill becomes due.

ACCOMPANIMENT, col. 4, l. 13, *r. ſcuopre*; l. 21, *r.* leave for have.

ACCOUNT Current, the perſonal account of a merchant or trader with each of his correſpondents or cuſtomers, a copy of which account is tranſmitted to the perſon whoſe name it bears, ſhewing the ſtate of affairs between the parties at the current or preſent time when made out.

ACCURSIUS, *r. Mariangelus.*

ACER, l. 6, *r. Trihilatæ Acera.* Juſſ.

ACERA, in *Botany*, the ſixth natural order, of the 13th claſs in Juſſieu's ſyſtem; the 66th in his general ſeries. See the characters of this claſs under the article Gerania. The *Acera* are defined as follows.

Calyx of one leaf. *Petals* definite, very rarely wanting, inſerted around the diſk, which is under the germen. *Stamina* inſerted into the middle of the ſame diſk, definite, but often unequal in number to the petals. *Germen* ſimple, ſtanding on the before-mentioned diſk; *ſtyle* one, or rarely two; *ſtigma* one or two. *Fruit* of ſeveral cells, or ſeveral capſules, the cells or capſules three or two. *Seeds* in each ſolitary, or at the utmoſt three, attached to the inner angle, ſome of them frequently abortive. *Corculum* deſtitute of *albumen*, the *radicle* lying on the lobes. *Stem* arboreous, or ſhrubby. *Leaves* oppoſite, without *ſtipulas*. *Flowers* racemoſe or corymboſe; ſometimes by the abortion of one or other part becoming ſeparate in ſex.

Sect. 1. *Fruit of ſeveral cells*, contains only *Aeſculus*.

Sect. 2. *Fruit of ſeveral capſules*, only *Acer*.

Sect. 3. Conſiſts of genera allied on the one hand to the *Acera*, on the other to Malpighiæ; ſee that article. Theſe are *Hippocratea* and *Thryallis*.

There is ſome doubt, even in the mind of Juſſieu himſelf, whether *Aeſculus* properly belongs to this natural order; and he juſtly adverts to its great affinity to his Sapindi, (ſee that article,) with which its fruit undoubtedly very cloſely accords.

ACERAS, ſo named from α, *without*, and κέρας, *a horn*, alluding to the want of a nectariferous ſpur to the lip.—Brown in Ait. Hort. Kew. v. 5. 191. Sm. Compend. Fl. Brit. ed. 2. 128.—Claſs and order, *Gynandria Diandria*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth ſuperior, of three ovate, concave, equal, converging leaves. *Cor.* Petals two, linear-lanceolate, concealed by the calyx, and about the ſame length. Nectary an oblong, flat, pendulous lip, much longer than the petals, with two pair of deep, linear, flat, dependent lobes, but no poſterior ſpur. *Stam.* Filament none; anther erect, oblong, attached by its back, parallel to the ſtyle, of two cells, opening in front, the maſſes of pollen club-ſhaped, each attaching itſelf, by a taper baſe, to two glands in a ſingle pouch near the ſtigma. *Piſt.* Germen inferior, linear-oblong, twiſted; ſtyle columnar, very ſhort; ſtigma below the anther, rather concave. *Peric.* Capſule oblong, with three blunt angles, twiſted, of one cell and three valves, ſplitting by three lateral fiſſures. *Seeds* numerous, minute, each with a chaffy tunic.

Eſſ. Ch. Calyx converging. Lip without a ſpur, flat. Anther nearly terminal, fixed to the ſtyle, of two cells.

This genus was firſt eſtabliſhed by Mr. Brown, who ſeparates it from Ophrys, (ſee that article,) on account of the converging *calyx*, and eſpecially the ſituation of the two glands, which receive the *pollen*, being in one pouch, not in two diſtinct and diſtant ones. The latter character, though excellent in this inſtance, appears to us in others leſs ſatisfactory (ſee Gymnadenia hereafter); and even in the characters of *Aceras* and *Ophrys*, the flat lip of the former, contraſted with the convex one of the latter, ſeems a more obvious and natural diſtinction. In affinity the preſent genus comes neareſt to Orchis, but wants the ſpur.

1. A. *anthropophorum*. Green-man Aceras. Br. n. 1. Sm. Compend. 130. (Ophrys anthropophora; Linn. Sp. Pl. 1343. Willd. Sp. Pl. v. 4. 63. Sm. Fl. Brit. 937. Engl. Bot. t. 29. Curt. Lond. faſc. 6. t. 66. O. n. 1264; Hall. Hiſt. v. 2. 133. t. 23. O. anthropophora oreades; Column. Ecphr. 318. t. 320. f. 1. O. flore nudi hominis effigiem repræſentans; Rudb. Elyſ. v. 2. 193. f. 6. Vaill. Pariſ. t. 31. f. 19, 20.)--Lip of the nectary longer than the germen.—Native of dry calcareous paſtures, in Italy, France, Switzerland, and England, flowering in June. The *root* conſiſts of two roundiſh-ovate, nearly equal, downy bulbs, or knobs. *Herb* ſmooth, of a bright, ſlightly glaucous, green, about ten or twelve inches high. *Leaves* ſeveral, ovato-lanceolate, all radical, except one which ſheaths the lower part of the ſtalk. *Spike* erect, of numerous rather ſcattered *flowers*. *Calyx* convex, green, with reddiſh-brown edges. *Petals* green, erect. *Lip* pale yellow, pendulous, near an inch long, in four narrow, rather ſpreading lobes, of which the two lowermoſt are uſually the ſhorteſt; the whole flower having nearly the ſhape of *Orchis militaris*, except the want of a ſpur, and of a ſmall central lobe, often obſervable in that plant. We have found at Valcimara, on the Apennines, what ſeems a mere variety with a red *lip*.

2. A. *anthropomorphum*. Short-lipped Aceras. (Ophrys anthropomorpha; Willd. Sp. Pl. v. 4. 63.)—Lip but half the length of the germen.—Found on hills in Portugal, by profeſſor Linck. About a ſpan high, the *ſpike* an inch long. *Bracteas* oblong, membranous, half the length of the germen, nor does the lip exceed that proportion. Willdenow thinks it can ſcarcely be a variety of the former. We have ſeen no ſpecimen.

ACERIC Acid, in *Chemiſtry*, lately diſcovered by profeſſor Scherer, of Vienna, in the ſap of the *acer campeſtre*, or common maple. Its properties have been very imperfectly deſcribed. The acerate of lime is white, ſlightly tranſlucent, has a weak acidulous taſte, and is not altered by expoſure to the atmoſphere. 1000 parts of cold water diſſolve 9 parts, and 1000 parts of boiling water 17 parts of this ſalt. Schweigger's Journal, iv. Thomſon's Chemiſtry, iv. new edition.

ACETATES, or Acetites, a claſs of ſalts, the characteriſtics of which are, that they are all very ſoluble in water; that they are decompoſed by the action of heat; and that they afford acetic acid when diſtilled with ſulphuric acid. Accordingly we have acetates of barytes, of potaſh, of ſoda, of lime, of ammonia, of magneſia, &c. See Acetic *Acid*.

ACETIC Acid. It is now univerſally admitted by chemiſts, that the acetic acid differs in no reſpect from common vinegar, or what was formerly termed *acetous* acid, but in the degree of concentration only. This opinion, firſt advanced by Adet, has lately been fully confirmed by the experiments of Darracq and Prouſt. What has been ſaid, therefore, on the ſubject of *acetous* acid and *vinegar* in the Cyclopædia, is to be underſtood as applicable to dilute *acetic* acid; and the ſalts termed *acetites* are to be conſidered as *acetates*. The following facts are important, and deſerve a place here.

The ſpecific gravity of acetic acid does not enable us to determine its ſtrength. The ſpecific gravity is ſtated by Dr. Thomſon to be a maximum when the liquid is a compound of one atom, and three atoms water. When the proportion of water is either increaſed or diminiſhed, the ſpecific gravity diminiſhes. Acid compoſed of one atom real acid and one atom water, and acid compoſed of one atom real acid and nine and a half of water, are ſtated by the ſame chemiſt to have the ſame ſpecific gravity.

The following table, drawn up chiefly from the experiments of Mollerat by Dr. T., exhibits the ſpecific gravity of acetic acid of various ſtrengths.

Atoms.		Weight of		
Acid.	Water.	Acid.	Water.	Sp. Gr.
1 +	1	100	14.78	1.0630
	2	100	25.21	1.0742
		100	37.99	1.0770
	3	100	48.43	1.0791
		100	52.94	1.0800
		100	59.38	1.0763
	4	100	71.90	1.0742
	5 −	100	83.90	1.0728
	6 +	100	116.25	1.0658
	7	100	127.73	1.0637
	9½	100	166.34	1.0630

Acetic acid of the ſp. gr. 1.063 is the ſtrongeſt that can be procured. It cryſtallizes at the temperature of 55°, and the cryſtals melt ſlowly when heated to 72½°. This had been long ago obſerved by Courtenvaux. Lowitz has propoſed an ingenious method of obtaining it of the requiſite degree of ſtrength to cryſtallize. This conſiſts in making diſtilled vinegar into a thick paſte with well-burnt charcoal, and expoſing the mixture to a temperature of 212°. The watery part is driven off, and the acid remains. The acid itſelf may be ſeparated by a higher degree of heat, and thus obtained in a very concentrated ſtate. It is commonly neceſſary, however, to repeat the proceſs before it can be made to cryſtallize.

Mr. Chenevix, by diſtilling the *acetates*, obtained a peculiar ſubſtance different from acetic acid, and which he has denominated *pyro-acetic* ſpirit. The acetates of potaſh and ſoda gave a greater proportion of this principle than any of the metalline acetates; but when the acetate of barytes is diſtilled, the whole liquid product conſiſts of this ſpirit without any mixture of acid whatever. No other genus of ſalts tried, ſuch as the oxalates, tartrates, or citrates, yielded this ſpirit, nor was acetic acid converted into it by heat.

Pyro-acetic ſpirit is a white and limpid fluid. Its taſte is at firſt hot and acrid, but it becomes cooling and rather urinous. Its ſmell is peculiar, and is compared by Mr. Chenevix to that of a mixture of oil of peppermint and bitter almonds. Its ſpecific gravity is .7864. It burns with a flame, white exteriorly, but of a fine blue within, and leaves no reſidue. It boils at a temperature of 165°. It mixes with water, alcohol, and volatile oils, in any proportion. With hot olive-oil it alſo mixes in any proportion; but with that oil cold it only mixes in certain proportions. When hot it diſſolves wax and tallow. It diſſolves alſo a little ſulphur and phoſphorus, and is an excellent ſolvent of camphor. It diſſolves potaſh, and becomes dark-coloured, but it may be obtained again unaltered by diſtillation. Strong ſulphuric acid blackens and decompoſes it. Nitric acid renders it yellow, and changes its properties. Muriatic acid renders it brown. When diſtilled with this acid a combination takes place, and a ſubſtance is formed poſſeſſing very different properties from muriatic ether. Theſe properties are ſufficient to ſhew, that the pyro-acetic ſpirit is a diſtinct ſubſtance, and differs entirely from alcohol, ether, and volatile oils. Of courſe, therefore, as Dr. Thomſon obſerves, it deſerves a diſtinct place among compound combuſtibles.

Many attempts have been made to analyſe the acetic acid. Thoſe moſt worthy of notice are by Gay Luſſac and Thenard, and Berzelius. The former burnt a mixture of acetate of barytes and chlorate of potaſh. The reſults were carbonic acid and water. Berzelius's analyſis was made on the ſame principles, but the ſalt he employed was ſuppoſed to be quite free from water. The following are the reſults of theſe celebrated chemiſts :

	Hydrogen.		Carbon.		Oxygen.		Acid.
Gay Luſſac	5.629	+	50.224	+	44.147	=	100
Berzelius	6.35	+	46.83	+	46.82	=	100

If, with Dr. Thomſon, we conſider the reſults of Berzelius moſt entitled to credit, acetic acid conſiſts of

3 atoms or proportions of hydrogen, weighing 0.375
4 ——————— of carbon ——— 3.000
3 ——————— of oxygen ——— 3.000

Or of ten atoms or proportions, and the weight of an integrant particle, will be 6.375; and this weight, as the ſame chemiſt has ſhewn, accords very well with the conſtitution of the acetates.

ACHARIA, in *Botany*, a genus dedicated by Profeſſor Thunberg, to the honour of his countryman Dr. Eric Acharius, knight of the order of Waſa, a member of various learned ſocieties, and one of the moſt diſtinguiſhed botaniſts of the preſent day, particularly with regard to the *Lichen* tribe, which he has profoundly ſtudied, and moſt learnedly illuſtrated. (See LICHENES.) Dr. Acharius is now Regius Profeſſor of Phyſic, at Vadſtena, in Sweden.—Thunb. Prodr. præf. n. 7. Willd. Sp. Pl. v. 4. 327. Lamarck Illuſtr. t. 755.—Claſs and order, *Monoecia Triandria*; or rather, perhaps, *Triandria Monogynia*. Nat. Ord. *Eleagni*, Juſſ. ?

Gen. Ch. *Cal.* Perianth inferior, of two ſmall, ovate, acute, permanent leaves. *Cor.* of one petal, tubular-bell-ſhaped, downy, in three deep, equal, elliptical ſegments, permanent. *Stam.* Filaments three, very ſhort, inſerted into the top of the tube of the corolla, oppoſite to its ſegments; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, roundiſh; ſtyle ſolitary, thread-ſhaped, half as long as the corolla; ſtigma three-cleft. *Peric.* Capſule ovate, of one cell, and three valves. *Seed* ſolitary? globoſe, rough. The *ſtamens* are moſt perfect in the upper flowers, the *piſtil* in the lower.

Eſſ. Ch. Calyx of two leaves. Corolla of one petal, three-cleft. Capſule of one cell, and three valves. Seed ſolitary?

Obſ. Nothing can be more imperfect or puzzling than the character and natural affinity of this genus, according to the materials furniſhed by Thunberg, eſpecially what regards the *capſule* and *ſeed*. He defines the fruit, "*capſule* of one cell, with three *ſeeds*." Willdenow, who ſeems to have had no other authority than Thunberg's figure, ſays, "*capſule* of one cell and three valves, with a ſolitary *ſeed*," which laſt account beſt agrees with that figure. With reſpect to the natural order of *Acharia*, if we take for *bracteas* what Thunberg terms a *calyx*, the *flower* will indicate one of Juſſieu's *Eleagni*, though the *capſule* of three valves is very anomalous, and the lobed *leaves* no leſs ſo. By the ſpecific name *tragodes*, or rather *tragioides*, and the place where the genus is introduced, Thunberg appears to have conſidered it as akin to TRAGIA, (ſee that article,) which idea the aſpect of the *leaves*, and the ſomewhat monoecious *flowers*, might probably ſuggeſt.

1. A. *tragodes*. Lobed Acharia. Thunb. Prodr. 14. t. 1. Fl. Cap. v. 1. 160. Willd. n. 1.—Gathered by Profeſſor Thunberg, near Van Stade's river, and in other parts of the interior of Africa, above the Cape of Good Hope, flowering in December and January. *Root* fibrous, annual? *Stem* ſolitary, herbaceous, erect? from four to twelve inches high, branched from the bottom to the top, ſmooth; *branches* alternate, angular, erect, ſomewhat zigzag, wand-like, ſubdivided. *Leaves* alternate, on ſtalks about their own length, about an inch long, three-lobed, finely downy; lobes obovate, variouſly cut. *Flowers* in effect monoecious, axillary, ſolitary, on ſhort ſtalks, reflexed, ſmall, the male about the upper part of the plant, female lower down. The *corolla* is about a quarter of an inch long, downy all over, as are likewiſe the *germen* and *ſtyle*. *Capſule* ovate-oblong, acute, thrice the length of the permanent corolla. *Seed* nearly the ſize of a pepper-corn, apparently black and rough.

ACHERON, l. 1, *r.* Theſprotia.

ACHILLINI, l. 25, for 40 *r.* 49.

ACHIMENES, in *Botany*, ſo named by Browne, poſſibly from α, and χειμαινω, *to be wintry, or tempeſtuous*, meaning that the plants in queſtion are not calculated to endure rough weather. He tells us they thrive beſt in the cooler parts of Jamaica. When cultivated in Europe, they require great heat. This genus is founded on two ſpecies only, and thoſe as generically different as two plants of the ſame natural order can well be. See Browne's Jamaica, 270. t. 30. f. 1, and Juſſ. Gen. 119. The latter writer, following Browne, did not diſtinguiſh theſe plants. One of them is *Columnea hirſuta*, the other our CYRILLA; ſee that article.

ACHOR, laſt line, *r.* PORRIGO inſtead of TINEA *Capitis*.

ACHROCORDES. Add, See SERPENTES.

ACHTIL, ACHTELIEG, or *Martel*, a corn-meaſure in Germany, which contains 4 ſimmers, 8 metzers, 16 ſechters, or 64 geſcheides. See MALTER.

ACIANTHUS, in *Botany*, from ακις, *a point*, and ανϑος, *a flower*, becauſe of the briſtly tips of the calyx-leaves, unuſual in this family.—Brown Prodr. Nov. Holl. v. 1. 321.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth three-leaved, ſomewhat ringent, awned; its two ſide-leaves placed under the lip; upper one broadeſt, vaulted, erect. *Cor.* Petals two, linear-lanceolate, much ſmaller than the calyx. Nectary a prominent undivided lip, ſhorter than the petals, with two ſwellings at the baſe, but no appendage to the diſk. *Stam.* Anther terminal, permanent, of two cells cloſe to each other; maſſes of pollen in each cell four, or two divided ones. *Piſt.* Germen inferior, oblong, angular; ſtyle erect, ſemi-cylindrical, without any auricles or wings at the ſummit; ſtigma in front. *Peric.* Capſule of one cell. *Seeds* numerous, minute.

Eſſ. Ch. Calyx ſomewhat ringent; its ſide-leaves under the lip. Lip without a ſpur, ſhorter than the petals, undivided, with two prominences at the baſe. Anther terminal, without appendages, permanent. Pollen powdery. Column ſemi-cylindrical.

This genus is next akin to MICROTIS of the ſame author (ſee that article); to whoſe eſſential character ſhould be added, "Anther with two auricles. Column funnel-ſhaped."—*Acianthus* conſiſts of little ſmooth herbs, with ſolitary, undivided, naked, downy *bulbs*, or *tubers*, throwing out a few fibres, along with a downy ſhoot, at whoſe extremity the young bulb is ſituated, on a partial ſtalk. *Stem* very ſhort, its baſe encloſed in a ſhort, tubular, pointed ſheath. *Leaf* ſolitary, deeply heart-ſhaped, acute, with three ribs, and many reticulated veins; its under ſide red or purple. *Flowers* ſmall, reddiſh, either cluſtered or ſolitary, their common ſtalk without *bracteas*, except beneath each flower.

1. A. *fornicatus*. Vaulted Acianthus. Br. n. 1.—Flowers racemoſe. Awns four times ſhorter than the perianth. Petals nearly erect. Lip bearing longitudinal glands. Column concealed.—Native of the neighbourhood of Port Jackſon, New South Wales, from whence we, long ago, received ſpecimens in ſpirits, as well as dried, by favour of Dr. White, and where Mr. Brown has alſo gathered this curious little plant. The *leaf* is about an inch in diameter. Common *flower-ſtalk* from three to ſix inches high, bearing from two to ſix *flowers*, about the ſize and aſpect of the *Corallorrhiza*, each with an ovate *bractea* at its baſe. Lower leaves of the *calyx* linear-lanceolate, very narrow in compariſon of the upper one. *Petals* linear-lanceolate, very delicate. *Lip* ſomewhat fleſhy, having a longitudinal furrow, the ridges bearded horizontally with papillary glands. This is the only ſpecies we have ſeen.

2. A. *exſertus*. Prominent Acianthus. Br. n. 2.—"Flowers racemoſe. Awns very ſhort. Upper calyx-leaf tapering at the baſe. Petals horizontally reflexed. Lip glandular at the extremity. Column prominent."—Gathered by Mr. Brown, near Port Jackſon.

3. A. *caudatus*. Long-awned Acianthus. Br. n. 3.—"Stalk with one or two flowers. Awns very long. Leaf wavy at the margin."—Gathered by Mr. Ferdinand Bauer, in the neighbourhood of Port Jackſon.

4. A.? *bifolius*. Two-leaved doubtful Acianthus. Br. n. 4. (Epipactis reflexa; Labill. Nov. Holl. v. 2. 60. t. 211. f. 1.)—"Stalk ſingle-flowered. Leaves two, radical, hooded. Perianth without awns, its three leaves uniform; the lateral ones reflexed. Petals? linear, narrow."—Gathered by Labillardiere, at Cape Van Diemen. Mr. Brown doubts whether this ſpecies, which he appears not to have examined, is moſt akin to *Acianthus*, or to another genus of his, hereafter to be noticed, named *Chiloglottis*. It agrees with the former in having four maſſes of pollen, a column deſtitute of a joint, and a lip without any appendage: with the latter in bearing two radical leaves, a perianth without awns, and very narrow petals. Theſe laſt are repreſented in the plate, at *fig.* 2, as if ſituated on the outſide of the calyx, which the deſcription, and, if we miſtake not, the other figures, ſhew to be an error of the draughtſman or engraver.

ACICARPHA, ſo named by the celebrated Juſſieu, from ακις, *a point*, and καϱφη, *a chaffy ſcale*, becauſe the ſcales of the receptacle, as he thought, become armed with a ſpinous point, when the ſeeds, which they ſeparately envelop, approach towards maturity.—Juſſ. in Annal. du Muſ. d'Hiſt. Nat. v. 2. 347. Willd. Sp. Pl. v. 3. 2327.—Claſs and order, *Syngeneſia Polygamia-neceſſaria?* Nat. Ord. *Compoſitæ capitatæ*, or rather *Aggregatæ*, Linn. *Corymbiferæ*, *ſect.* 5. Juſſ.

Gen. Ch. *Common Calyx* of one leaf, in five deep, linear, ſpreading ſegments, permanent. *Cor.* compound, diſcoid. Florets all uniform, tubular, funnel-ſhaped; their limbs ſomewhat bell-ſhaped, five-cleft, obtuſe; the central ones male, leaſt numerous; thoſe of the circumference more abundant, each furniſhed with ſtamens and piſtil, but not all fertile. *Stam.* Filaments five, very ſhort; anthers oblong, united, ſhorter than the limb of the floret. *Piſt.* Germen oblong; ſtyle thread-ſhaped, longer than the corolla; ſtigma club-ſhaped, notched. *Peric.* none, except the hardened ſcales of the receptacle. *Seeds* ſolitary; oblong, deſtitute of crown or wing, each encloſed in a greatly enlarged, hardened, concave, ſpinous-pointed ſcale of the lower part of the cylindrical chaffy *receptacle*.

Eſſ. Ch. Receptacle chaffy. Seed-down none. Calyx in five deep ſegments. Florets uniform, tubular. Seeds ſeparately encloſed in the ſpinous ſcales of the receptacle.

1. A. *tribuloides*. Caltrop Acicarpha. Juſſ. as above, 348. t. 58. f. 1. Willd. n. 1.—Leaves oblong, deeply toothed.—Gathered by Commerſon, on the ſea-ſhore at Monte Video. *Root* tapering, annual. *Stems* one or more, herbaceous, aſcending or decumbent, a ſpan long, ſomewhat branched, leafy, ſmooth. *Leaves* alternate, ſeſſile, oblong, obtuſe, fleſhy, ſmooth, an inch and a half to three inches long, deeply and coarſely toothed; tapering at the baſe. *Flower-ſtalks* terminal and lateral, oppoſite to the leaves, and about as long, ſimple, ſingle-flowered, erect. *Flowers* white, hemiſpherical, one-third of an inch in diameter. *Fruit* a globular head, armed with unequal, rigid, ſharp, pale, divaricated, or recurved ſpines, and crowned

with a tuft of withered male florets, like a taſſel. The intermediate *florets* ſeem to be abortive, though furniſhed with the moſt conſpicuous *piſtils*.

2. A. *ſpathulata*. Spatulate Acicarpha. Brown Tr. of Linn. Soc. v. 12. 129.—Leaves ſpatulate, moſtly entire.—Sent from Brazil by Mr. Sellow. A ſmooth, diffuſe, apparently annual plant, with angular aſcending *branches*. *Leaves* ſcattered, ſtalked, without *ſtipulas*, ſpatulate, with a very ſhort little point, rather thick, and perhaps glaucous, an inch and a half long; the lower ones ſometimes toothed from above the middle. *Footſtalks* linear, a little dilated at the baſe; the lowermoſt longeſt. *Heads* of *flowers* yellow, ſolitary; either ſtalked and oppoſite to the leaves, or terminal and nearly ſeſſile. *Involucrum* of five leaves in a ſimple row, longer than the flowers. *Receptacle* conical, ſlender, chaffy, with lanceolate pointed ſcales. *Florets* tubular, uniform, ſmooth. Thoſe of the circumference in two or three rows, with perfect *ſtamens* as well as *piſtils*. Tube of the *corolla* ſlender, cylindrical, cloſely united to the *germen* and baſe of the *ſtyle*; limb funnel-ſhaped, five-cleft, ſegments parallel at the edges, half-lanceolate, flat, three-ribbed. *Stamens* five, inſerted into the corolla, alternate with its ſegments, their *filaments*, as well as the lower half of the anthers, united into a tube. *Germens* combined, each crowned with a five-cleft partial *calyx*, whoſe teeth, alternate with the ſegments of the *corolla*, become ſpinous, each germen containing one pendulous *ſeed*. *Style* thread-ſhaped, ſmooth. *Stigma* ſimple, obtuſe, rather hairy. The numerous upper *florets* are rather ſmaller, with a membranous *calyx*, and imperfect *germens*. The ripe *fruit*, originating from the florets of the circumference, conſiſts of cloſe *pericarps*, combined together, not burſting, each crowned with its own enlarged ſpinous *calyx*. *Seed* ovate, pendulous. *Albumen* fleſhy, large, white. *Embryo* nearly cylindrical, central, about the length of the albumen, with two linear *cotyledons*. By this account it appears that Mr. Brown differs from M. de Juſſieu, in thinking the preſent genus belongs to the Linnæan order of *Aggregatæ*, and not to the *Compoſitæ*. This laſt account of the *fruit* is evidently more natural than the above, and the character, if Mr. Brown, which we doubt not, be correct, muſt be altered to "*Seeds* crowned with the ſpinous partial calyx."

ACID, Acidification, in *Chemiſtry*. When theſe articles were written for the Cyclopædia, the theory of Lavoiſier, that oxygen was the only principle of acidification, was almoſt univerſally received. Since that period, however, a great revolution has taken place in chemiſtry, and the doctrine in queſtion is now no longer admitted. This indeed has been noticed in ſubſequent parts of this work, more eſpecially under Oxygen and Oxymuriatic *Acid*; ſo that little more is neceſſary than to refer our readers to theſe articles. It may not be deemed ſuperfluous, however, to mention here very briefly the diſcoveries that have led to theſe important changes.

The firſt circumſtance which gave the death-blow to the doctrine of Lavoiſier, was the demonſtration by Gay Luſſac and Thenard, and more eſpecially by Davy, that oxymuriatic acid, or *chlorine*, as it is now termed, contains no oxygen, but is a ſimple elementary ſubſtance. Chemiſts indeed had never been able to demonſtrate ſatisfactorily that oxygen actually exiſted in this ſubſtance; but miſled by the plauſibility of the Lavoiſierian doctrines, had tacitly admitted its preſence from analogy: and ſo ſtrongly was this belief founded, that there are a few, we believe, who adhere to the old opinions even to the preſent time.

More recently, however, the old opinions have been rendered ſtill further improbable, and the new ones corroborated by the diſcovery of *iodine* and *cyanogen*; the one an elementary, the other a compound ſubſtance, both which have been unequivocally demonſtrated to form acids by combining with hydrogen. The analogy, alſo, of ſulphuretted and telluretted hydrogen, compounds free from oxygen, but poſſeſſing the properties of acids, have been likewiſe urged in proof of the new opinions, and as quite irreconcileable with thoſe of Lavoiſier.

Our readers will find further information on this ſubject in the articles Chlorine, Cyanogen, Iodine, Muriatic *Acid*, Oxygen, and Oxymuriatic *Acid*.

ACINACIFORME, Folium, in *Botany*, a Scimitar-ſhaped Leaf, is ſcarcely uſed but for one ſpecies of *Meſembryanthemum*, which bears this ſpecific name. (See Leaf. It is of a ſucculent texture, compreſſed, one edge conve and thin, the other ſtraighter and thick.

Acinaciforme, *Pericarpium*, a Seed-veſſel of a ſimilar ſhape, is exemplified in the cells of the capſule of the ſame genus of *Meſembryanthemum*; ſee Linn. Phil. Bot. 224.

ACINUS, in *Botany and Vegetable Phyſiology*, a Grain, is technically uſed for each pulpy portion, containing a ſolitary ſeed, of a compound Berry. (See Bacca.) The fruit of the Raſpberry, Bramble, &c., conſiſts of ſeveral *acini*; and perhaps the ſame term may be applied to the ſeparate portions of a Mulberry, though originating in the calyx of each flower become pulpy. In *Paſſiflora* the *capſule* is lined with very juicy *acini*, each lodging a ſingle ſeed. Gærtner improperly extends the above term to the ſimple many-ſeeded berries of the Vine, Gooſeberry, &c. The laſt-mentioned fruit, in an early ſtate, rather reſembles the *Paſſiflora*.

ACONITUM, in *Botany*, (ſee our former article,) has received conſiderable elucidation from profeſſor De Candolle, in his *Regni Vegetabilis Syſtema Naturale*, v. 1. 364, where this genus is treated of as one of the natural order of Ranunculaceæ. (See that article.) Its generic references are, Linn. Gen. 274. Schreb. 368. Willd. Sp. Pl. v. 2. 1232. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 321. Sm. Prodr. Fl. Græc. Sibth. v. 1. 372. Purſh 372. Juſſ. 234. Tourn. t. 239, 240. Lamarck Illuſtr. t. 482. Gærtn. t. 65. "Koelle Monogr. 1788. Erlang. in 8vo."—Claſs and order, *Polyandria Pentagynia*. Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Cand.

Eſſ. Ch. Calyx none. Petals five; the uppermoſt vaulted. Nectaries two, ſtalked, recurved. Capſules three or five.

M. De Candolle, following Juſſieu's view of the ſubject, gives the following characters, uſing the term *ſepala* for *calyx-leaves*, and *petala* for *nectaries*.

Calyx of five petal-like, deciduous leaves; the upper one (hood) large, concave, helmet-ſhaped; two lateral ones, (wings,) orbicular; two lowermoſt oblong. Petals five, ſometimes irregular in number; three very minute, claw-ſhaped, often converted into ſtamens; two uppermoſt with long claws, hooded, ſheltered under the helmet-ſhaped leaf of the calyx, dilated at the top into a bag, whoſe bottom, the ſummit, or ſpur, of the petal, is callous, incurved, its mouth extended into an oblong, emarginate limb, or lip. Stamens indefinite. Capſules three to five, with an indefinite number of ſeeds.

Perennial herbs, with tuberous *roots*, whoſe knobs in ſome inſtances bear fibres, in others are oblong, and mixed therewith. *Stem* leafy. *Leaves* ſtalked, deeply palmate, with from three to five ſegments, variouſly cut, cloven and toothed. *Cluſters* terminal. *Stalks* ſingle-flowered, from the boſoms of the *bracteas*, each bearing two ſmaller *bracteas*.

Flowers large, irregular, ſometimes ſulphur-coloured, ſometimes blue, or white.

All the ſpecies are poiſonous; the *Anthoræ* leſs dangerous; the *Napelli* highly noxious. The root is always the moſt poiſonous part, the herbage leſs acrid, and though in a freſh ſtate injurious to animals, by drying, or by boiling in water, it becomes ſo mild, that ſome ſpecies, *A. ſeptentrionale* for inſtance, are eatable! Dr. Storck, who found Aconite ſo uſeful in chronic rheumatiſm, confirmed gout, and venereal ſwellings of long duration, employed *A. paniculatum;* but other phyſicians have often, without ſufficient attention, promiſcuouſly given every kind with blue flowers.

The twenty-eight ſpecies at this time known inhabit rough buſhy or woody places, in the northern hemiſphere; eleven are found in Europe, eleven in Siberia, one in Japan, one in North America, and one is common to Siberia and the weſtern part of North America.

This is a moſt natural genus, but very difficult as to the determination of its ſpecies, nor has it been properly inveſtigated. Cluſius in his time was extremely well acquainted with the European kinds, and requires to be conſulted in preference to all other writers.

Aconitum may be diſtributed by the habit, rather than by any characters, into five ſections, or diviſions, as follows.

Sect. 1. *Anthora.* Flowers pale yellow. Hood convex. Leaves in numerous deep linear ſegments. Species 1 and 2.

2. *Lycoctonum.* Flowers pale yellow, or very rarely blue. Hood conical, elongated, ſcarcely pointed in front. Leaves in wedge-ſhaped lobes. Species 3—10.

3. *Napellus.* Flowers blue or white. Hood convex. Leaves in numerous deep linear ſegments. Species 11—14.

4. *Cammarum.* Flowers blue or white. Hood conical, or very convex, with a long point in front. Leaves with wedge-ſhaped lobes. Species 15—20.

5. *Anabates.* Flowers blue or white. Hood convex. Stem climbing, ſomewhat twining. Species 21—25.

† Such as are not ſufficiently deſcribed; 26—28.

†† Such as are doubtful, or uncertain; 29—35.

Sect. 1. *Anthora.*

To the above characters are added—Hood acute at the apex. Root with two oblong knobs.

1. A. *Anthora.* Wholeſome Wolf's-bane. (No. 5 of our former article.) Linn. Sp. Pl. 751. Willd. n. 5. Ait. n. 4. Jacq. Auſtr. t. 382. (Anthora Matth. Valgr. v. 2. 441. Camer. Epit. 837. Rivin. Pentap. Irr. t. 128. A. vulgaris. Cluſ. Hiſt. v. 2. 98. A. ſive Aconitum ſalutiferum; Ger. Em. 969. A. vera, flore luteo; Barrel. Ic. t. 609.)

β. atrovirens; leaves and ſtalks ſmooth. (A. ſalutiferum elatius pyrenaicum, foliis atro-virentibus, flore majore; Tourn. Inſt. 425.

γ. confertiforum; cluſter cylindrical, denſe, downy. (A. tuberoſum; Patrin, unpubliſhed.)

Hood convex, terminating in a point; ſpurs ſpiral; lips inverſely heart-ſhaped. Leaves in numerous linear ſegments. —Native of rough buſhy places, on the mountains of Europe; in Switzerland, on the Apennines, and in Siberia; β on the Pyrenees; γ on mount Caucaſus.

Var. α has either a ſimple or branched *ſtem*, which, like the *flower-ſtalks*, is either ſmooth, or finely downy. β has ſmooth dark-green *leaves*, a taller and ſmooth *ſtem*, leſs convex *hood*, with a more abrupt and pointed *beak*. γ is ſmaller, with a cloſer more cylindrical *cluſter*, whoſe main ſtalk, as well as the partial ones, are clothed with velvet-like down; it may be a diſtinct ſpecies. *De Candolle.*

We have not followed, here or elſewhere, our learned friend, in his elaborate aſſemblage of ſynonyms, nor in his chronological arrangement of them. To the latter we have objections, and the former would only be burthenſome to our plan. We wiſh to give our readers an idea of his powers of diſcrimination, and to profit by them ourſelves.

2. A. *anthoroideum.* Prominent Wholeſome Wolf's-bane. (A. pyrenaicum; Pallas Itin. v. 2. 316, by his herbarium.) —Hood convex; its back protruding forward, over the pointed beak; ſpurs ſpiral; lips inverſely heart-ſhaped. Leaves in numerous linear ſegments.—Gathered by Pallas in Siberia. This is ſo like *A. Anthora*, that perhaps it may be eſteemed a mere variety. It differs only in this reſpect, that the back, or ridge, of the *hood* is not merely convex, but ſtretched forward over the point in front. This plant varies like the former as to the denſity of its *cluſter*, and the ſmoothneſs or fine downineſs of the *flower-ſtalks*. *De Candolle.* We moſt readily concur in the opinion of its being a variety of the firſt ſpecies.

Sect. 2. *Lycoctonum.*

Flowers pale yellow, whitiſh, or blueiſh; their hood conical, elongated, obtuſe, ſcarcely pointed in front. Root tuberous, ſending out fibres. Leaves with ſomewhat wedge-ſhaped lobes, deeply toothed, or jagged, at the extremity.

3. A. *barbatum.* Bearded Wolf's-bane. Patrin, unpubliſhed. “Perſ. Enchir. v. 2. 83. Poiret Suppl. to Lamarck Dict. v. 1. 114.”—Hood conical, obtuſe; ſpurs ſtraight; lips obovate; wings bearded with a fringe. Bracteas minute. Stem downy. Leaves in five deep diviſions, with linear pointed lobes.—Native of the eaſtern part of Siberia, about Irkoulſk. *Patrin.* Intermediate between *Anthora* and *Lycoctonum*, differing from the former in having a conical *hood*, from the latter in the linear lobes of its *leaves;* from both in the ſtraight *ſpurs*, or ſummits of the *nectaries*, (De Candolle's *petals*). *Stem* round, finely downy, not hiſpid. *Leaves* with long ſcattered hairs on the *footſtalks*, and here and there on the under ſide; the upper appearing downy when magnified; their outline circular, divided nearly to the baſe into five ſomewhat cohering lobes, pinnatifid, with linear pointed ſegments. *Cluſter* erect, long and denſe. *Stalks* erect, downy, ſhorter than the flowers, having under each a linear-awlſhaped, ſcarcely downy, *bractea*, ſtill ſhorter; as well as a ſmaller cloſe *bractea* half way up. *Flowers* whitiſh, according to Patrin; pale yellow when dry; externally downy; hood elongated; wings orbicular, with long hairs on their margin and inner ſurface. *Germens* downy.

4. A. *hiſpidum.* Rough-ſtalked Wolf's-bane. De Cand. n. 4.—Hood conical, obtuſe; ſpurs ſtraight; lips obovate; wings ſlightly bearded. Bracteas awl-ſhaped, hairy. Stem hairy. Leaves in five deep diviſions, with linear, rather acute, lobes.—Found by Pallas, in the eaſtern part of Siberia. *Lambert.* Differs from the laſt in its hiſpid, not downy, *ſtem;* more deeply five-cleft *leaves*, whoſe lobes are not pointed, but rather obtuſe, with a little callous apex; more hairy *bracteas;* and ſcarcely bearded *wings*. The *leaves* are very like *Anthora*, but with broader lobes; *flowers* like *Lycoctonum*, but with ſtraight *ſpurs*. *Stem* erect, round, ſimple; hiſpid chiefly at the baſe, with ſoft, rather deflexed, hairs; the top almoſt ſmooth. Lower *leaves* on long hairy *ſtalks*, their outline orbicular; upper ſide ſcarcely downy; ribs of the under one hairy. *Cluſter* ſimple, rarely with one ſmall branch, cylindrical, erect. *Stalks* erect, ſhorter than the *flowers*, which are pale yellow, reſembling the laſt, but leſs bearded. *Bracteas* awl-ſhaped, ſhaggy, two lines long; two ſmaller ones in the middle of each ſtalk. *De Candolle.*

5. A. *ſquarroſum.* Spreading-lobed Wolf's-bane. Linn. MSS. in Herb. propr. De Cand. n. 5. (A. n. 2; Linn. Hort. Upſ. 152, excluding the ſynonyms. A. pyrenaicum; Linn. Sp. Pl. 751, excluding the ſynonyms, and the Pyrenees

as its place of growth.)—Hood conical, obtuſe; ſpurs ſpiral; lips inverſely heart-ſhaped. Cluſter drooping at the ſummit before expanſion. Leaves in five deep diviſions; lobes pinnatifid, with ſpreading, recurved, acute ſegments.—Native of Siberia and Tartary; cultivated in the Upſal garden. Very nearly allied to *Lycoctonum*, but differing in the *leaves* being divided to the very baſe into many pinnatifid portions, whoſe elongated, acute, widely ſpreading ſegments are entire, not at all cut or ſerrated. *Cluſter* long, its upper part drooping while the flowers remain in bud. *Bracteas*, both general and partial, very ſmall. *Stalks* ſhorter than the flowers, but much longer than their reſpective *bracteas*. The reſt as in *Lycoctonum*. *De Cand.* To this original ſpecimen is attached a different one from Siberia, which we concur with profeſſor De Candolle in thinking no other than *Lycoctonum*. Hence Linnæus is no authority for *A. pyrenaicum*, which depends upon other authors, as follows. His herbarium indeed contains, if we miſtake not, a ſpecimen of this ſpecies, brought by baron Alſtroemer from Spain, but confounded by Linnæus with *Lycoctonum*.

6. A. *pyrenaicum*. Pyrenean Wolf's-bane. Lamarck Dict. v. 1. 33. Desfont. Tabl. 149. "De Cand. Franc. ed. 3. v. 4. 916. v. 5. 642." (A. pyrenaicum, ampliore folio tenuiùs laciniato; Tourn. Inſt. 424. A. n. 6; Camer. Epit. 831, with a figure.)—Hood conical, obtuſe; ſpurs ſpiral; lips obovate. Leaves palmate below the middle, with from ſeven to nine three-cleft, deeply cut lobes, lying over each other.—Native of rugged meadows on the Pyrenees, among lofty thickets, flowering in July and Auguſt. Tournefort and De Candolle. Related to *Lycoctonum*, but certainly diſtinct. A handſome plant, three or four feet high, downy, with large, long-ſtalked, almoſt circular *leaves*, whoſe main lobes are unequally divided, wedge-ſhaped at the baſe, ſeparated upwards into acute, cut lobes, dilated ſo as frequently to overlap each other. *Cluſter* long, cylindrical, denſe, more or leſs branched at the baſe. *Stalks* often ſhorter than the flowers. *Lower bracteas* in three or five lobes; *upper* linear, in the middle of each ſtalk, ſpreading, from two to five lines long. *Flowers* pale yellow, externally covered with velvet-like down. *Germens* hairy. Theſe characters are not very ſtrong, but they are conſtant. Specimens gathered by De Candolle in the Pyrenees differed in no reſpect from thoſe which have been cultivated at Paris, ever ſince the time of Tournefort. *De Candolle.* We have had no opportunity of enquiring what ſtands for this ſpecies in the gardens of England, but Miller is moſt likely to have received the true plant from France. Our Linnæan Spaniſh ſpecimen, mentioned under the laſt, correctly anſwers, in every point, to the above deſcription.

7. A. *lycoctonum*. Great Yellow Wolf's-bane. Linn. Sp. Pl. 750. Willd. n. 1. Ait. n. 1. Jacq. Auſtr. t. 380. Bulliard Fr. t. 63. Villars Dauph. v. 3. 703, from the author. (A. lycoctonum vulgare, luteo flore; Cluſ. Hiſt. v. 2. 94. A. luteum ponticum; Lob. Ic. 677. Ger. Em. 970. A. reticulata radice, flore ſulphureo-albicante; Barrel. Ic. t. 599, 600. A. n. 2; Camer. Epit. 827. Matth. Valgr. v. 2. 431. Napellus flore luteo; Rivin. Pentap. Irr. t. 129.)—Hood conical, obtuſe; ſpurs ſpiral; lips obovate. Leaves downy, divided more than half way, into from three to five lobes, which are three-cleft and jagged. Partial bracteas in the middle of each flower-ſtalk.—Native of woods, thickets, and graſſy paſtures, on the mountains of Switzerland, France, Germany, and Italy, flowering in ſummer. This is probably, as M. De Candolle indicates, the real ακονιτον λυκοκτονον of Dioſcorides, with whoſe imperfect account it ſufficiently agrees. It is one of the moſt common of this genus, but not found in Britain. The *ſtem* is from two to four feet high, nearly ſimple, or very much branched, ſmooth or downy. Lobes of the *leaves* more or leſs deep, either cloſe or ſpreading. *Flowers* crowded or diſtant. M. De Candolle hints that ſome of theſe diverſities may afford ſpecific diſtinctions, but we can ſcarcely ſuppoſe this. He obſerves that *A. lycoctonum* differs from *barbatum*, *hiſpidum*, and *ochroleucum* in its ſpiral ſpurs; from *pyrenaicum* in having from three to five, not ſeven to nine lobes in the *leaves*, and thoſe not lying over each other, as well as in the *germens* being ſmooth, ſcarcely at all downy or hairy, and the *ſtalks* moſtly longer than their flowers. From the following one, hitherto confounded herewith, it differs in having pale-yellow, not blue, *flowers*, and the partial *bracteas* ſituated half way up the flower-ſtalks, not near their baſe.

8. A. *ſeptentrionale*. Blue Northern Wolf's-bane. "Koelle Acon. 22." Willd. n. 7. De Cand. n. 8. Ait. n. 6. (A. lycoctonum; Linn. Fl. Lapp. ed. 2. 185. Tour in Lapland, v. 1. 36. 47. 278. v. 2. 123. 277. Fl. Dan. t. 123. Calceolus Lapponicus; Schæff. Lapp. 360.)—Hood conical, obtuſe; ſpurs ſpiral; lips obovate. Leaves downy, divided more than half way, into from three to five divaricated ſharply cut lobes. Partial bracteas at the lower part of each flower-ſtalk.—Native of mountainous thickets and paſtures on the ſides of the Lapland alps, and throughout Norway, as well as in ſome parts of Siberia, and on the Carpathian mountains. Linnæus noticed it alſo about the baſes of the larger hills in Medelpad and Angermanland; but though he has recorded in Fl. Lapp. that the *flowers* are of a greyiſh-blue; not yellow, as deſcribed in all the accounts of *A. lycoctonum*; yet he ſtill ſuppoſed his to be the ſame ſpecies. His own ſpecimen retains evident traces of this blue or grey colour, and anſwers to the diſtinctive characters of the *ſeptentrionale*, as given by De Candolle. The *leaves*, as that excellent writer remarks, are more acutely toothed. With reſpect to the ſituation of the partial *bracteas*, they are rather on the lower part, than at the baſe, of the *flower-ſtalks*. The *flowers* are leſs downy, and of a thinner texture, than in *lycoctonum*. Perhaps if living ſpecimens were compared, better characters might be diſcovered, for there is every reaſon to preſume this a diſtinct ſpecies. Linnæus in Fl. Lapp. ſpeaks of the leaves being boiled and eaten with impunity; and in his Lapland Tour, v. 2. 123, records another inſtance of the ſame fact. He was juſtly aſtoniſhed, knowing the poiſonous quality attributed by all writers to *A. lycoctonum*. Perhaps this may ſtrengthen our opinion of theſe plants being truly diſtinct, for we find no record of the true *lycoctonum* being uſed as food, in any ſtate. Haller was one of the firſt botaniſts who ſuggeſted the propriety of ſeparating theſe ſpecies; ſee his Hiſt. Stirp. Helvet. n. 1200. Yet there ſeems little reaſon for his wonder, there expreſſed, that this *Aconitum* ſhould be fatal to wolves. When recent its qualities are probably very different.

9. A. *ochroleucum*. Pale Wolf's-bane. Willd. n. 4. De Cand. n. 9. Ait. n. 3. Marſch. Taurico-Caucaſ. v. 2. 14, excluding the ſynonym of Tournefort.—Hood conical, elongated; ſpurs curved; lips lanceolate. Leaves deeply palmate, five-lobed, ſcarcely downy beneath; lobes deeply three-cleft, acutely jagged and toothed.—Found in mountainous meadows of mount Caucaſus; frequent about the mineral ſprings of Narzana; flowering in ſummer. Communicated to us by Dr. Fiſcher. The habit entirely reſembles *A. lycoctonum*, but the ſurface of the herb is nearly ſmooth; the lobes of the *leaves* are more ſharply toothed; and the *ſpurs* of the *nectaries* are rather curved than ſpiral. *Stem* erect, round, pale green, three or four feet high, with ſtraight branches. *Cluſter* long, branched at the bottom.

Lower bracteas in three or five ſegments, often reflexed; *upper* linear; *partial ones* in the middle of each *flower-ſtalk*, two lines long. *Flowers* pale buff, crowded, remarkable for their long and ſlender *hood*, meaſuring above an inch. *Stalks* ſhorter than the flowers. *Spurs* of the *nectaries* curiouſly involute.

10. A. *japonicum.* Japan Wolf's-bane. Thunb. Jap. 231. Willd. n. 2. De Cand. n. 10. (Soo Huſo of the Japaneſe.)—Hood conical, obtuſe. Leaves palmate, three-lobed; lobes obtuſe, cut; their ſegments rounded, with a point.—Gathered in Japan by Thunberg, who deſcribes this ſpecies as allied to *lycoctonum.* The *ſtem* is round and ſmooth. *Leaves* ſtalked; their lateral lobes in two ſegments; middle one in three; all obtuſe, deeply toothed; their teeth rounded, with a point. *Cluſter* ſhort. *Thunberg.*

Sect. 3. *Napellus.*

Flowers blue or white, never buff-coloured; their hood convex, tapering into a point in front. Stem ſtraight. Cluſter cylindrical. Roots fibrous, from a rather tuberous ſtock. Leaves lobed in a palmate manner, many-cleft; their ſegments linear.

All the ſpecies of this ſection having been confounded under *A. Napellus,* De Candolle has thought right to lay aſide that ſpecific name entirely. But even he is doubtful whether they are not all one ſpecies!

11. A. *vulgare.* Common Monk's-hood. De Cand. n. 11. (A. Napellus; Linn. Sp. Pl. 751. "Koelle Acon. 14, with a figure." Woodv. Med. Bot. t. 6. Sm. Prodr. Fl. Græc. Sibth. v. 1. 372. A. lycoctonum 6, Napellus vulgaris; Cluſ. Hiſt. v. 2. 96. Napellus; Matth. Valgr. v. 2. 440. N. verus cæruleus; Ger. Em. 972. N. flore minore; Rivin. Pentap. Irr. t. 130.)—Germens three, ſmooth. Wings hairy on the inſide. Cluſter cylindrical, elongated. Leaves in five diviſions to the very baſe, with many linear acute ſegments, each with a longitudinal furrow on the upper ſide.—Native of mountainous meadows in moſt parts of Europe, from Switzerland, Germany, France, Spain, and Italy, to Greece, flowering in ſummer, and one of our moſt common garden plants ever ſince the days of Gerarde. Dr. Leech ſent us ſpecimens from Scotland; but there is reaſon to doubt the plant's being really wild in Britain. De Candolle diſtinguiſhes this from all its relations, though, as he ſays, with difficulty, by the ſimple, ſtraight, upright *ſtem,* almoſt always terminating in a ſimple cylindrical cloſe *cluſter,* and not corymboſe; *leaves* with linear ſegments, that are hardly at all dilated at the extremity, marked with a furrow, and not reſembling any others, except perhaps thoſe of *A. tauricum,* whoſe *cluſter* is the only one more denſe than the preſent; *hood* convex, rather acute at the ſummit, but not gibbous or elevated at the back, as in *intermedium, roſtratum,* and *variegatum; wings* hairy on the inſide, which in *tauricum, paniculatum,* &c. are ſmooth; *germens* ſmooth, never more than three, not five, and hairy; *capſules* ſix lines long, and not an inch, as in *A. neubergenſe.* The preſent ſpecies however, being very common, is extremely variable; the whole ſurface is ſometimes quite ſmooth, ſometimes downy, eſpecially about the *flowers;* the furrow on the ſegments of the *leaves* is more or leſs diſtinct; the *flowers* naturally blue, or (in the variety called by Schultz *bicolor*) white at the baſe, blue at the ſummit, become in gardens white, roſe-coloured, purple, or variegated. *De Candolle.* Their moſt uſual and well-known colour is a deep and gloomy blue; we have ſeen no other. Dr. Sibthorp's Greek plant muſt reſt on his own authority, being only mentioned in his MSS., without any accompanying ſpecimen; nor were the ſpecies of this genus ſo accurately noted in his time.

12. A. *ſtrictum.* Straight Monk's-hood. "Bernh. Monogr." De Cand. n. 12.—Germens three, ſmooth. Wings hairy on the inſide. Cluſter cylindrical, elongated. Leaves in five diviſions to the very baſe; their lobes wedge-ſhaped, jagged at the ſummit.—Native country unknown. Cloſely related to the laſt, but differing in the three or five diviſions of the *leaves* being wedge-ſhaped in their lower part, and cut at the extremity into oblong lobes, which are ſhorter, blunter, and twice as broad as in that; the *cluſter* is ſhorter, with little ſhort branches at its baſe. Perhaps this may not be ſufficiently diſtinct from the following. *De Candolle.*

13. *A. neubergenſe.* Broad-leaved Monk's-hood. De Cand. n. 13. (A. Napellus; Herb. Linn. Jacq. Auſtr. t. 382. Ehrh. Pl. Off. n. 87. "Palmſtr. Suec. t. 46." A. lycoctonum, vel neubergenſe; Cluſ. Hiſt. v. 2. 96. Moriſ. ſect. 12. t. 3. f. 11. A. purpureum neubergenſe; Ger. Em. 973. A. foliorum laciniis linearibus, ſupernè latioribus, lineâ exaratis; Linn. Hort. Cliff. 214. Moræus in Stockh. Tranſ. for 1739. 43. t. 2. Napellus flore majore; Rivin. Pentap. Irr. t. 131.)—Germens three, ſmooth. Wings hairy on the inſide. Cluſter cylindrical, elongated, lax; ſtalks downy, rather ſpreading. Leaves in five deep, wedge-ſhaped, three-lobed, jagged ſegments.—Native of alpine meadows in various parts of Germany, Hungary, Siberia, &c., flowering rather later than *A. vulgare,* and no leſs common in gardens than that ſpecies, with which it is generally confounded. Cluſius having originally met with this plant in the greateſt abundance on the mountain called Neuberg, in Styria, De Candolle has choſen the above ſpecific name, which is indeed preferable to the mongrel one of *neomontanum,* adopted by ſome writers. The ſpecies before us is ſaid to differ from *vulgare,* in having broader *leaves,* whoſe rather wedge-ſhaped diviſions are more connected at the baſe; three-cleft and cut at the extremity, into acute ſegments, thrice the breadth of *vulgare,* and not marked with any furrow. The *cluſter* alſo is more lax, its ſtalks always downy, more ſpreading, and longer than the *flowers.* The *capſules,* according to Wahlenberg, are three, above an inch long, ſpreading, thoſe in the middle part of the cluſter exceeding the length of their ſtalks.

14. A. *tauricum.* Taurian Monk's-hood. Wulf. in Jacq. Coll. v. 2. 112. Jacq. Ic. Rar. t. 492. De Cand n. 14. "Koelle Acon. 15." (A. Napellus; Bull. Fr. t. 45? *De Cand.* A. lycoctonum quartum tauricum; Cluſ. Hiſt. v. 2. 95. A. violaceum; Ger. Em. 973.)—Germens three, ſmooth. Wings ſmooth. Cluſter cylindrical, elongated, very denſe; ſtalks ſmooth, ſhorter than the bracteas. Leaves in five diviſions to the very baſe, ſomewhat pedate, with linear lobes.—Native of the alpine heights of Tauria, Carinthia, &c. flowering in ſummer. Very like *vulgare,* but the ſmooth *wings* and *flower-ſtalks,* the latter ſhorter than their *bracteas;* the ſhort denſe *cluſter,* whoſe main ſtalk is concealed; and the pedate, more wedge-ſhaped, linear-lobed, ſcarcely furrowed *leaves,* are thought by De Candolle to afford ſufficient differences.

Sect. 4. *Cammarum.*

Flowers blue or white; hood very convex, or conical, ending, often abruptly, in a point in front. Cluſter lax, ſomewhat corymboſe. Stem ſtraight. Leaves deeply divided, in a palmate manner, into wedge-ſhaped lobes. Roots navew-ſhaped, intermixed with ſmall fibres.

For the ſame reaſon as concerns the laſt ſection, the ſpecific name *Cammarum* is here laid aſide, having been variouſly applied by different botaniſts. De Candolle ſuſpects all the ſpecies of the preſent ſection, or at leaſt the firſt four, may be varieties of each other!

15. A. *intermedium*. Ambiguous Monk's-hood. De Cand. n. 15. (A. neomontanum; Willd. n. 9, excluding the ſynonyms. "Hoppe Pl. Exſicc." *De Cand.* Thora italica, ſeu Napellus minor, flore cæruleo; Barrel. Ic. t. 610.)—Germens three, ſmooth. Wings internally hairy. Cluſter lax, corymboſe; ſtalks ſmooth. Hood very convex, ſomewhat conical.—Found in mountainous woody parts of Germany and Flanders, flowering in July. In habit like the two following, but the hairy *wings*, (De Candolle by miſtake ſays *lips*,) diſtinguiſh this ſpecies from all the reſt of the ſection. We have ſeen no ſpecimen.

16. A. *paniculatum*. Panicled Monk's-hood. Lamarck Franc. ed. 1. v. 3. 646. n. 1224. Dict. v. 1. 33. De Cand. n. 16. (A. Napello ſimile, ſed minus, cæruleum, præcocius; Bauh. Hiſt. v. 3. 656. Chabr. Sciagr. 531. Napellus; Camer. Epit. 836. Storck Libell. 69. t. 3.)

β, cluſter drooping. De Cand. (A. cernuum; "Koelle Acon. 17." Willd. n. 12. A. lycoctonum octavum, comâ nutante; Cluſ. Hiſt. v. 2. 97. A. maximum nutante comâ; Ger. Em. 971. A. ſeptimum; Matth. Valgr. v. 2. 436. Camer. Epit. 832.

Germens three, ſmooth. Wings internally ſmooth. Cluſter lax, corymboſe; ſtalks downy. Hood convex.—Found in various alpine parts of Europe, flowering towards autumn. The *roots* are roundiſh, tapering downwards, bearing many long fibres. *Stem* erect, ſmooth. *Leaves* ſomewhat pedate; their lobes wedge-ſhaped below, acutely pinnatifid upwards. *Cluſter* uſually erect, with long downy *ſtalks;* downy; the lower ones branched. *Flowers* large, of a brighter blue than *vulgare*, with a convex *hood*, whoſe point is more remarkable than in the 3d ſection. It may be important, if any perſon ſhould repeat Storck's experiments, to be aware that this is the plant he uſed, and not our Common Monk's-hood, *A. vulgare*.

17. A. *roſtratum*. Beaked Monk's-hood. De Cand. n. 17. (A. *Cammarum;* Lamarck Dict. v. 1. 33. Willd. n. 14? A. lycoctonum nonum judenbergenſe; Cluſ. Hiſt. v. 2. 97. A. maximum judenbergenſe; Ger. Em. 973. A. lycoctonum, flore maximo; Bauh. Hiſt. v. 3. 659.)—Germens three, ſmooth, or only fringed at the inner edge. Wings ſmooth. Cluſter ſomewhat corymboſe, of few flowers, with ſmooth ſtalks. Hood conical, elevated, abrupt in front, with a prominent beak.—Native of the Auſtrian and Swiſs alps, flowering in ſummer. We have it in Mr. Davall's herbarium, but the plant ſeems unknown to cultivators. The *roots* are roundiſh, tapering downward. *Stem* a yard high, ſtraight, round, ſmooth, purpliſh. *Leaves* ſomewhat pedate, with wedge-ſhaped, jagged, acute lobes. This ſpecies differs from the preceding, as well as from the following, in the very large and high *hood*, accompanied by a very conſiderable *beak*, being conſpicuous for the greater ſize, and rather paler blue, of its flowers.

18. A. *hebegynum*. Downy-fruited Monk's-hood. De Cand. n. 18. (A. Cammarum; Linn. Sp. Pl. 751? Willd. n. 14? Ait. n. 11? Jacq. Auſtr. t. 424.)—Germens from three to five, all over finely downy. Wings nearly ſmooth. Cluſter rather corymboſe, of few flowers; ſtalks downy. Hood convex, beaked in front.—Native of rugged buſhy places on the alps of Switzerland, from whence we have it; as well as of Auſtria and the receſſes of the Carpathian mountains, flowering in ſummer. A large handſome ſpecies, with ample *foliage*, whoſe ſegments are acutely pinnatifid. *Flowers* dark-blue; their hood rounded, much leſs elevated than in the preceding. The *germens* clothed with fine velvet-like down afford a clear ſpecific character. There are no means of perfectly aſcertaining the *A. Cammarum* of Linnæus, he having left no ſpecimen, and his ſynonyms pointing to different plants. His character of "*floribus ſubpentagynis*" is all that indicates the preſent ſpecies, which is probably the plant of the gardens. De Candolle ſays all the ſynonyms of his firſt, or principal, variety of *paniculatum*, may juſt as well ſerve for *hebegynum;* but ſurely Storck's figure cannot be miſtaken for this. The plants themſelves can never be confounded, provided the *germens* be attended to; for which diſcovery we are indebted to profeſſor De Candolle.

19. A. *variegatum*. Variegated Monk's-hood. Linn. Sp. Pl. 750. Willd. n. 13. Ait. n. 10. "Koelle Acon. 18." (A. lycoctonum decimum, Thora italica; Cluſ. Hiſt. v. 2. 98. A. lycoctonum cæruleum parvum; Ger. Em. 971. Napellus flore mixto; Rivin. Pentap. Irr. t. 133.)—Germens three, ſmooth as well as the petals. Cluſter lax; ſtalks ſmooth; the lower ones many-flowered, twice the length of their many-cleft bracteas; their lower partial bracteas cut. Hood elevated, conical, obtuſe, with a ſhort beak in front.—Native of woody rather alpine ſituations, in Carniola, Bohemia, and Italy, flowering in Auguſt. *Root*, according to Cluſius, tuberous, with ovate knobs, or rather perhaps buds. Whole *herb* ſmooth. *Stem* erect, with ſpreading branches. *Lower leaves* on long ſtalks, their outline orbicular, their upper ſide of a ſhining green, lower pale; their three or five deep principal diviſions wedge-ſhaped at the baſe, dilated and many-cleft at the extremity, with oblong acute ſegments; *upper leaves* ſeſſile; *floral* ones in three deep diviſions, copiouſly, but not deeply, cut. *Lower ſtalks* of the *cluſter* diſtant, each bearing three or four flowers. Partial *bracteas*, which are under each flower, linear. *Flowers* large, perfectly ſmooth, blue (or blue and white); the *hood* very large, above an inch long, and extremely convex, not at all covering the wings, its beak ſhort; *wings* orbicular, ſix or ſeven lines long; *germens* ſmooth, ſlender. *De Candolle.* This deſcription anſwers to the Linnæan ſpecimen, and nearly to our garden plant, except that we have always ſeen the *flowers* principally white, with a portion of blue on the beak and wings, and that the *ſtem* in ours is rather of the twining or wavy kind, as in the next ſection; by no means ſtraight, though ſupporting itſelf. This character appears in the old wooden cuts, and may poſſibly have eſcaped M. De Candolle, only becauſe, as he himſelf mentions, he had ſeen no other than a dried ſpecimen. The figure of Rivinus indeed is erect, and yet, notwithſtanding the annexed repreſentation of five *capſules*, we can ſcarcely doubt that ſynonym.

20. A. *album*. White Monk's-hood. Ait. ed. 1. v. 2. 246. ed. 2. n. 5. Willd. n. 6. De Cand. n. 20. (A. orientale; Mill. Dict. ed. 8. n. 10. A. lycoctonum orientale, flore magno albo; Tourn. Cor. 30. Napellus flore albo; Rivin. Pentap. Irr. t. 132?)—Germens four or five. Hood conical, with a long claw. Cluſter lax, ſimple. Stalks erect. Leaves in three or five deep, ovate-wedge-ſhaped, three-cleft, toothed ſegments.—Found in the Levant by Tournefort, who ſent ſeeds to the royal garden at Paris, and from thence, according to Miller, it came to England. Hence there can be no doubt reſpecting Tournefort's ſynonym; and yet his appellation of *lycoctonum*, and the place in his *Inſt.*, where he directs this ſpecies to be inſerted, might favour the application of his ſynonym to *ochroleucum*, n. 9, as in the Flora Taurico-Caucaſica. The plant of Aiton, and conſequently of De Candolle, is totally different from the *ochroleucum*, and very near *variegatum*. The *ſtem* is deſcribed by Miller ſix feet high, or more. We have a ſpecimen from Dr. Schrader, ſent to be compared with *Napellus*, which appears to be this very ſpecies, and agrees well with the figure of Rivinus indicated above, except the *flowers* being blue; but that circumſtance can

be of no moment. The *ſtem* is round and ſmooth. *Leaves* ſmooth; their wedge-like lobes ſharply pinnatifid. *Cluſter* lax, with ſome axillary branches below. *Stalks* erect, ſmooth. *Hood* near an inch and a half long, obtuſe, even, bent forward with a ſlightly recurved, notched, beak; its *claw* longer than the large round *wings*. *Germens* five, ſmooth.

Sect. 5. *Anabates*.

Flowers blue or white; hood convex. Cluſter lax. Stem twining, climbing.

21. A. *erioſtemon*. Hairy-threaded Monk's-hood. De Cand. n. 21. ("A. volubile; Koelle Acon. 21, but not of Willdenow." *De C.*)—Stem twining, ſomewhat downy with cloſe hairs. Footſtalks naked. Leaves in three or five deep, pinnatifid lobes, with lanceolate ſegments. Cluſter lax. Germens two or three, very ſmooth. Stamens hairy.—Gathered by Koelle in Siberia; cultivated at Montpellier. *Stem* round, its fine cloſe hairs ſcarcely viſible with a microſcope. *Leaves* ſmooth, with diſtant, oblong, acute ſegments. *Upper branches* flowering at their extremities. *Lower bracteas* in three or five diviſions; *upper* oblong, undivided; *partial ones* linear. *Stalks* downy. *Flowers* pale blue, hardly at all downy; *hood* gradually tapering into an acute beak, with a ſpace between it and the *wings*, which are fringed, but nearly or quite ſmooth on their inſide. *Filaments* hairy! *De Candolle.*

22. A. *ciliare*. Fringed Monk's-hood. De Cand. n. 22. (A. volubile; Willd. n. 11, but not of Koelle. Ait. n. 9. Donn Cant. ed. 5. 135.)—Stem twining, clothed with ſpreading hairs. Footſtalks fringed. Leaves in three or five deep pinnatifid lobes, with linear-lanceolate ſegments. Cluſter lax. Germens five or more.—Native of woods in Siberia. We received a ſpecimen in flower, in Sept. 1801, from the rich garden of the late Rev. Mr. Watts, of Aſhill, Norfolk. The *ſtem* is round, ſlender, purpliſh, ſix feet high, varying in its degree of downineſs. *Leaves* in ſize and figure not unlike *Malva moſchata*. *Cluſter* branched, lax. *Flowers* of a middle ſize, rather light blue, downy; *hood* convex, rounded, with a beak in front; *ſpurs* hooked, with an obtuſe, inverſely heart-ſhaped, lip. *Germens* five or ſix, elliptic-oblong, ſmooth. *Stamens* ſmooth. Our ſpecimen rather anſwers to the more hairy variety of De Candolle, which he ſuſpected might prove a diſtinct ſpecies; we have ſeen no other, and can therefore form no opinion.

23. A. *tortuoſum*. Twiſted Monk's-hood. Willd. Enum. 576. De Cand. n. 23. (A. n. 8; Matth. Valgr. v. 2. 437? A. comâ inflexâ, foliis latioribus; Tourn. Inſt. 425?)—Stem twining, ſmooth, as well as the footſtalks. Leaves in three deep, ovate, pointed, coarſely and deeply toothed lobes. Cluſter lax. Germens two or three, quite ſmooth, as well as the ſtamens.—Seen in a cultivated ſtate only, by Willdenow and De Candolle, who knew not whence it came. The *ſtem* riſes to the height of ſix or ſeven feet, branching, round, and ſmooth. *Leaves* ſmooth; their lobes wedge-ſhaped at the baſe; the lateral ones deeply cloven. *Flower-ſtalks* downy. *Lower bracteas* three-cleft; *partial ones* awl-ſhaped, placed about half way up each ſtalk. *Flowers* ſmooth, pale blue; *hood* convex, gradually tapering into an acute beak. The figure of Matthiolus expreſſes the habit, but may probably belong to ſome other ſpecies. *De Candolle.* Indeed many of that author's figures are curved, evidently to accommodate them to the dimenſions of the wooden block.

24. A. *glabrum*. Smooth Twining Monk's-hood. De Cand. n. 24.—Stem twining, ſmooth like the footſtalks. Leaves in five deep, lanceolate, wedge-ſhaped, coarſely and deeply toothed lobes. Cluſter lax. Hood ſtalked, elongated, conical, with a long, erect, cloven beak.—Native country unknown. Deſcribed from the herbarium of Profeſſor Deſfontaines. The whole herb is ſmooth. The *flowers* are pale blue, and remarkable for the long linear lobes which terminate the *beak*, and ſtanding erect, are nearly on a level with the top of the *hood*, which appears to be the great peculiarity of this little-known ſpecies.

25. A. *uncinatum*. American Monk's-hood. Linn. Sp. Pl. 750. Willd. n. 15. Ait. n. 12. Purſh n. 1. Curt. Mag. t. 1119. De Cand. n. 25.—Stem ſomewhat twining, ſlightly downy. Footſtalks ſmooth. Leaves abrupt at the baſe; lobes three or five, acute, with three teeth. Cluſter lax. Hood ſtalked, elongated, convex.—In ſwamps, and by the ſides of rivulets, on the high mountains of Virginia and Carolina, flowering in June and July. *Flowers* large, of a fine blue, and ſingular ſtructure. *Purſh.* *Stem* round, ſomewhat branched, minutely downy. *Footſtalks* ſmooth, round, with a longitudinal furrow. *Leaves* coriaceous, ſmooth, dark-green, lobed only about half down; lobes three-ribbed. *Lower ſtalks* of the *cluſter* long and divided; *upper* ſimple and crowded; all downy in their upper part. *Bracteas* two, oblong, not far from the *flowers*, which are large, of a rich violet purple; *hood* tapering into a ſharp beak; wings orbicular, hairy rather than fringed. *Germens* three to five, downy. Such is our Linnæan ſpecimen, from J. Bartram.

M. De Candolle ſaw in the herbarium of Michaux, mixed with the above, ſpecimens, whoſe *hood* was twice as long, almoſt conical, without any hook or beak. This he conſiders as the *uncinatum* of that author, Fl. Boreal.-Amer. v. 1. 315, and poſſibly a diſtinct ſpecies.

Mr. Purſh ſays,—"On the foot of the Peaks of Otter, and about the ſweet ſprings, another ſpecies occurs, with ſmaller *flowers*, and a climbing *ſtem* which ſometimes attains the height of nine feet; but unfortunately I have no materials at preſent to give a correct deſcription thereof."

Hence it appears that the hiſtory of this long-eſtabliſhed genus is not yet complete. M. De Candolle enumerates three ſpecies, of which he had not ſufficient information to define them correctly. Theſe are,

26. A. *delphinifolium*, of which there are three varieties. 1. *Americanum*, found by David Nelſon, in Sledge (not Hedge) iſland, with an erect *ſtem*, from ſix to twenty inches high, downy upwards; *leaves* like *Delphinium pentagynum*, ſmooth, in numerous pinnatifid ſegments; and blue racemoſe *flowers*, whoſe *hood* is convex, acute at the ſummit. 2. *Sibiricum*, gathered in Siberia by Pallas, has larger *flowers*, with *nectaries* but half the length of the hood. 3. *Kamtchaticum*, has from three to ſix rather ſcattered, ſomewhat ſmaller, *flowers*, and rather longer *nectaries*. *Root* of tufted fibres. *De Cand.*

27. A. *biflorum*. (A. grandiflorum; Fiſcher Hort. Gorenk. 1808. 77.)—Native of the Altai mountains. *Root* tuberous, ovate, the ſize of a pea. *Stem* four inches high, ſlender, finely downy at the ſummit. *Leaves* in five deep, palmate ſegments, with linear acute lobes; the lowermoſt on long ſtalks. *Flowers* two, terminal, nearly ſeſſile, pale blue; *hood* convex, externally downy at the back, tapering into an acute beak; *wings* obovate, or roundiſh, ſmooth. *Stamens* ſmooth. *Germens* three, villous. *Nectaries* hooked, obtuſe, with very minute lips. *De Cand.*

28. A. *maximum*. Pallas herb.—Native of Kamtchatka. *Stem* ſix feet high, erect, round, ſmooth. *Leaves* ſmooth, ſtalked, wedge-ſhaped at the baſe, in three or five dilated, wedge-ſhaped, five-cleft lobes. *Cluſter* ſhort, of eight or ten pale-blue *flowers*, on downy *ſtalks*, with a convex acute *hood*, like that of *delphinifolium*, but ſmaller. *De Cand.*

The ſeven following are ſcarcely to be aſcertained.

29. A. nonum; Matth. Valgr. v. 2. 438. Dalech. Hiſt. 1741. f. 2. A. comâ inflexâ, floribus rarioribus, et foliis elegantèr diſſectis; Tourn. Inſt. 425.—We ſhould ſuppoſe this an unnatural poſture of *A. Anthora*, n. 1.

30. A. lycoctonum quartum, ſive lynceanum; Cluſ. Hiſt. v. 2. 96. Bauh. Hiſt. v. 3. 657.—No figure.

31. A. ramoſum, parvo flore; Bauh. Pin. 183. Bauhin cites A. octavum, Matth. Valgr. v. 2. 437. See our n. 23.

32. A. ſpicâ florum pyramidali; Moriſ. Præl. 226. A. pyramidale multiflorum; Tourn. Inſt. 425. A. pyramidale; Mill. Dict. ed. 8. n. 6.—Eſteemed by De Candolle a variety of *A. vulgare*, n. 11.

33. A. *ſeptimum.* Matthioli; Debry Floril. Nov. t. 42, but not the plant of Matthiolus.

34. A. minus autumnale inſulæ Cheuſan, ſinicè *Tſou-u;* Pluk. Amalth. 5.

35. Napellus major cæruleus montanus, anthoræ radice; Bocc. Muſ. 74.—Native of Monte Coſcione, in Corſica.

ACOTYLEDONES, conſtitute a claſs of plants in the natural ſyſtems of moſt authors, but eſpecially of Juſſieu, in whoſe method this claſs ſtands firſt. In theſe the *corculum* of the ſeed is defined to be deſtitute of cotyledons, and conſequently undivided in the proceſs of germination, though forming a root below, and more or leſs of a ſtem, or at leaſt a frond, above. The parts of fructification in many of this tribe are obſcure, anomalous, or altogether unknown. The orders in the above-mentioned writer are ſix; Fungi, Algæ, Hepaticæ, Musci, Filices, and Naiades; all which articles the reader will find in their proper places. From our account of *Muſci* and *Filices* he may obſerve, that the denomination of the ſuppoſed natural claſs in queſtion, and its eſſential character above-mentioned, are far from being univerſal or unexceptionable, thoſe two orders having manifeſt cotyledons, or ſomething equivalent; while many plants, ſuppoſed to have a ſolitary cotyledon, have really none at all. See the article Monocotyledones, where this ſubject is diſcuſſed. See alſo Cotyledones and Germination.

ACOUCHY. See Akouschy.

ACOUROA, in *Botany*, apparently a vernacular name in Guiana, by which Aublet has choſen to deſignate a papilionaceous diadelphous plant, which Juſſieu, with great reaſon, ſuſpects to be a ſpecies of Pterocarpus (ſee that article); as well as another genus, named by the ſame author *Vatairea.* See Aubl. Guian. 753—756. t. 301, 302.

A. *violacea*, the only ſpecies, is a tree, found about the margins of ſalt-water creeks in Guiana, bearing flowers and fruit in July. The *trunk* is twelve or fifteen feet high, and a foot in diameter, ſending out from its ſummit many ſpreading branches; the bark reddiſh, cracked, and wrinkled; the wood whitiſh externally, but the heart is reddiſh, hard and compact. *Leaves* alternate, alternately pinnate of ſeven or nine ovate, pointed, entire, firm, ſmooth *leaflets*, gradually larger upwards, the lowermoſt being an inch and a half or two inches long, the uppermoſt or terminal one four or five. *Stipulas* ſmall, deciduous. *Cluſters* about the ends of the branches, long, compound, many-flowered. *Bracteas* ſmall, ſolitary at the baſe of each flower. *Calyx* of one leaf, in five ſharp unequal ſegments. *Corolla* papilionaceous, violet-coloured. *Stamens* ten, diadelphous, the odd one diſtinct. *Stigma* obtuſe. *Pericarp* dry, reddiſh, nearly orbicular, concave on one ſide, convex on the other, not burſting. *Seed* ſolitary, lenticular. *Aublet.*

The *Vatairea*, Aubl. t. 302, is a much larger tree, the *trunk* being fifty feet in height, with a ſmooth whitiſh bark, and light brittle wood. *Leaves* pinnate, as in the former, but more elliptical. *Flowers* unknown. *Pod* flat on both ſides, with a thick edge, cheſnut-brown, of an irregularly orbicular ſhape, about three inches in diameter, containing one large *ſeed;* which, when beaten in a mortar with purified pork lard, is uſed to cure tetters or ring-worms, whence the inhabitants of Guiana call this ſeed *Graine à dartres.* The tree grows by river ſides in that country. *Aublet.*

ACQUACKNACK. Add, containing 2023 inhabitants.

ACRE, col. 3, l. 29. The tobacco of Acre is highly eſteemed; and coarſe muſlins, remarkable for the durability of their dye, are ſold at a low rate. The inhabitants make uſe of wooden tubes for their tobacco-pipes, garniſhed with a ſwathing of ſilk, or linen, for the purpoſe of abſorbing water. This being kept moiſt, cools the ſmoke, as it riſes, by the conſtant evaporation. A modern traveller, in the account of his Journey from Acre to mount Carmel, mentions the exportation to Venice of the ſand of the river Belus for the glaſs-houſes of that city. (See Glass.) At Acre there are the remains of an ancient church, with pointed arches, other inſtances of which, demonſtrating the exiſtence of the Gothic architecture, occur in the Holy Land.

ACROSTICHUM, in *Botany*, a Linnæan name, whoſe meaning therefore is to be ſought in the obſcure hints left by its author. He derives the word in *Phil. Bot.* 183, from ακϱος, *top*, and ϛιχος, *an order or row*, but its application has been thought rather difficult. We agree with De Theis, that ακϱοϛιχον literally means the beginning, or the firſt letters, words, or lines, of a ſet of verſes; but we cannot aſſent to his explanation, of its being given to theſe plants "becauſe ſeveral of them bear, on the back of the leaf, lines reſembling the beginnings of words;" there being in fact no ſuch thing, nor has Linnæus deſcribed any ſimilar marks. It ſeems natural to trace his ideas in the appearance of the moſt remarkable of the original ſpecies, four of which are delineated in *Amoen. Acad. v.* 1. *t.* 10, and in two or three of theſe, the *rows* of linear appendages, or *leaflets*, at the *top* of the *frond*, ſufficiently explain the meaning of Linnæus. Theſe ſpecies indeed are now removed from the eſtabliſhed genus of *Acroſtichum*, which has undergone much alteration ſince its firſt publication, and the view of its ſpecies already given, (ſee Acrostichum,) requires to be totally reformed. Many of them are removed to other genera, while a great number of new ones have more than ſupplied their places. Willdenow, the lateſt general writer on *Filices*, which make the moſt original and accurate part of his *Species Plantarum*, defines ſixty-two ſpecies, under ſix ſections, of which we ſhall take a general view, firſt, as uſual, prefixing the generic ſynonyms and characters.—Linn. Gen. 559. Schreb. 756. Willd. Sp. Pl. v. 5. 100. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 5. 500. Sm. Mem. de l'Acad. de Turin, v. 5. 147. Tracts 230. Prodr. Fl. Græc. Sibth. v. 2. 271. Swartz Syn. Fil. 9. Ind. Occ. 1587. Spreng. Crypt. Engl. ed. 84. t. 2. f. 18. Brown Prodr. Nov. Holl. v. 1. 145. Purſh 658. Juſſ. 15. Lamarck Dict. v. 1. 34. Illuſtr. t. 865 f. 4.—Claſs and order, *Cryptogamia Filices.* Nat. Ord. *Filices dorſiferæ;* ſect. *annulatæ.*

Gen. Ch. *Capſules* globular, of two equal valves, bound by a jointed elaſtic ring, and diſpoſed in broad, continued, indeterminate, denſe maſſes, more or leſs intermixed with hairs, or fine ſcales, over the back of the *frond;* either entirely, or partially at the upper part of the whole, or of its ſegments or leaflets, which are often contracted, or otherwiſe changed, in their fructifying portions. *Involucrum* entirely wanting, (unleſs the above-mentioned hairs, or ſcales, be taken for ſuch.)

Eſſ. Ch. Capſules occupying the back of the frond, in uninterrupted ſhapeleſs maſſes, either partially or entirely. Involucrum none.

The whole genus, as it now ſtands, is chiefly tropical, a very few ſpecies only being found in the ſouth of Europe, and one in North America. None are arboreſcent. The ſpecies removed from the catalogue of the genus, in our former article, are the following; and are thus diſpoſed of by Willdenow, we believe, on the whole, very correctly.

A. *lanceolatum*, is Polypodium acroſtichoides, Willd. Sp. Pl. v. 5. 156.
heterophyllum, P. adnaſcens, ibid. 145.
punctatum, Linn. Sp. Pl. 1524, P. lingulatum, 159.
ſpicatum, Sm. Pl. Ic. t. 49, Lomaria ſpicata, 289.
Lingua, Polypodium Lingua, 162.
haſtatum, P. tricuſpe, 163.
ſeptentrionale, Aſplenium ſeptentrionale, 307.
auſtrale, A. auſtrale, 308.
pectinatum, Schizæa pectinata, 85.
dichotomum, S. dichotoma, 87.
digitatum, S. digitata, 86.
ferrugineum, Polypodium incanum β, 175.
polypodioides, P. incanum α, 174.
rufum, Hemionitis rufa, 129.
punctatum, Linn. Suppl. 444, altered to *punctulatum* by Swartz, Syn. 13, retains the latter name in Willd. Sp. Pl. v. 5. 118.
areolatum, Woodwardia anguſtifolia, Sm. unjuſtifiably altered to W. onocleoides, ibid. 416.
marginatum, Pteris grandifolia, 369.
ſanctum, Polypodium ſanctum, 198.
platyneuron, Aſplenium ebeneum, 329.
ſiliquoſum and *thalictroides*, reduced to one ſpecies, as Pteris thalictroides, 378; but perhaps they require further inveſtigation.
ilvenſe, Polypodium ilvenſe, 198. See WOODSIA.
furcatum, Mertenſia furcata, 71; a genus reduced by Mr. Brown to GLEICHENIA. See that article, and MERTENSIA.
aculeatum, Davallia fumarioides, 480.
barbarum, Todea africana, 76, our OSMUNDA *barbara*.
viviparum, Darea vivipara, 302.
ferrulatum, Grammitis ferrulata, 141.
graminoides, G. graminoides, 141.

To which we muſt add that *A. ebeneum* is made by Willdenow the variety β of *calomelanos*, 124; and *petiolatum* is reduced to *viſcoſum*, 103. Fifteen ſpecies therefore, out of our former liſt, are all that are retained by Willdenow, and the generic name remains with plants that do not by any means anſwer to it, though they agree correctly with the generic character.

We proceed to give examples of the ſeveral ſections.

Sect. 1. *Frond ſimple, undivided.* Twenty-five ſpecies. We ſhall here venture to unite two of them, *latifolium* and *longifolium*, adding a new one, *limbellatum*.

A. *nummularifolium*. Money-wort Acroſtichum. Willd. n. 1. Swartz Syn. Fil. 419 and 191. t. 2. f. 1.—Barren fronds roundiſh, obtuſe, ſomewhat heart-ſhaped; hoary and downy beneath: fertile ones obovate. Common ſtalk thread-ſhaped, ſcaly, creeping.—Found by Thunberg in Java. The *common ſtalk* creeps extenſively, attaching itſelf by copious, tufted, black radicles, and bearing ſeveral alternate ſimple *fronds*, or *leaves*, not an inch long, on ſhort partial footſtalks; theſe are ſmooth on the upper ſide, veinleſs; the hoary down of their under ſurface is interſperſed with ſtarry hairs. The fertile *fronds* are fewer and ſmaller, tapering at the baſe, ſometimes beſprinkled with ſtarry hairs; their backs covered with ſhining-brown capſules, intermixed with ſtarry hairs of a ruſty hue. *Swartz.*

A. *fimbriatum*. Fringed Acroſtichum. Willd. n. 3. "Cavan. Annal. de Nat. Scienc. v. 1. 102." Swartz Syn. Fil. 11.—Fronds lanceolate, fringed. Stalks briſtly.—Native of ſhady mountainous places in the kingdom of Quito.—We have been favoured with a ſpecimen, gathered by William Swainſon, jun. eſq. of Liverpool, on damp rocks in woods, among the mountains at Rio Janeiro, which anſwers to the above definition, but we are not authorized, without better information, to aſſert that it is Cavanille's plant. The *fronds* of ours grow eight or ten together, in tufts, with a fibrous, blackiſh, ſcarcely hairy, *root*: each being an inch and a half long, one-third of an inch wide, bluntiſh, ſhaggy on both ſides with coarſe, briſtly, reddiſh-brown hairs, ſpreading copiouſly beyond the edges. *Stalks* ſimple, equally ſhaggy, rather longer than the fronds. The fertile *fronds* are convex above, almoſt hooded; their concave under ſurface covered with brown *capſules*. The ſize and habit of this fern reſemble *Blechnum Lanceola*, of Swartz, in Stockholm Tranſ. for 1817, 71. t. 3. f. 2, a native of Braſil; but the latter is ſmooth and naked, with the proper fructification and *involucrum* of a *Blechnum*.

A. *viſcoſum*. Glutinous Acroſtichum. Willd. n. 8. Swartz Syn. Fil. 10 and 193. (A. petiolatum; Sw. Ind. Occ. 1588.)—Fronds linear-lanceolate, pointed, ſmooth on both ſides; their ribs, as well as ſtalks, ſcaly and viſcid: fertile ones linear; hairy beneath and covered with capſules to the very margin.—Found on the moſſy trunks of trees, on the higheſt mountains of Jamaica. *Root* ſlightly creeping. *Stalks* crowded, ſlender, angular, roughiſh, ruſty and ſcaly, three or four inches high. Each *frond* is a ſpan long, erect, rather rigid; the *barren* ones linear-lanceolate, pointed, ſomewhat membranous, ſmooth, beſprinkled at the back with minute, prominent, browniſh, glandular dots; their ribs ſcaly; *fertile* ones on longer ſtalks, more linear, either ſmooth or ſlightly hairy, covered entirely at the back with pale ruſty powdery *capſules*. The clammineſs of the *ſtalks*, and the hairineſs of the fertile *fronds*, diſtinguiſh this ſpecies from its allies. *Swartz.*

A. *limbellatum*. Narrow-bordered Acroſtichum. (Lingua cervina anguſtifolia, coſtis et pediculis villoſis; Plum. Fil. 113. t. 129.)—Fronds linear-lanceolate, wavy, pointed, ſmooth on both ſides; their ribs and ſtalks hairy: fertile ones nearly linear, with a ſmooth naked border.—Gathered by Plumier, on moſſy rocks about the ſource of a little rivulet, called Le Morne Rouge, near fort St. Pierre, in Martinico. The *root* is long, creeping, cylindrical, reſembling a worm, covered with little black fibres. *Fronds* numerous, erect, above a foot high, each of their fine tranſverſe veins ending in a little dot, before they reach the margin; at leaſt ſuch is their appearance in Plumier's figure. This character, the greater height of the *fronds*, and the fertile ones having a ſmooth naked border, over which the *capſules* do not extend, cauſed Dr. Swartz to omit citing Plumier's figure under the laſt-mentioned ſpecies. We have no doubt of theſe plants being very diſtinct from each other. Plumier is one of the few authors whoſe fidelity is always to be relied on, and he is therefore the ſole authority for ſeveral of Linnæus's ſpecies of ferns, deſcribed from his plates and deſcriptions.

A. *villoſum*. Shaggy Bordered Acroſtichum. Willd. n. 10. Swartz Syn. Fil. 10. Ind. Occ. 1592. (Lingua cervina villoſa minor; Plum. Fil. 110. t. 127. f. D.)—Fronds lanceolate, wavy, pointed, ſhaggy on both ſides: fertile ones ſomewhat elliptical, with a naked border; fringed at the edge. Stalks hairy, elongated.—Gathered by Plumier in wet woods in Hiſpaniola; by Swartz on the hollow moſſy ſides of hills in the ſouth of Jamaica. *Root* tufted, not creeping. *Stalks* about half as long as the *fronds*, ſhaggy with coarſe ruſty hairs, ſuch as cover both ſides of the leafy part, eſpecially at the edges. There is a vacant ſpace, as in the laſt, between the *capſules* and the margin of the leaf, well expreſſed by Plumier, and mentioned by Swartz.

A. *hirtum*. Great Hairy Acroſtichum. Willd. n. 11. Swartz Syn. Fil. 419 and 194.—Fronds elliptic-lanceolate, pointed, ſcaly on both ſides, like their ſtalks; the margin dotted, and ſomewhat crenate: fertile ones much narrower, covered to the edge with capſules and convoluted ſcales.—Suppoſed by Swartz to be a native of Madeira, but we have always believed our fine ſpecimens to have been gathered by the late Mr. Smeathman, in the Weſt Indies. The *root* is thick and ſcaly, apparently ſomewhat creeping. *Fronds* a ſpan long, on ſcaly *ſtalks* often exceeding that length; thickly beſprinkled ſometimes on both ſides, but eſpecially on the under one, which is the paleſt, with ſmall, ovate or heart-ſhaped, pointed, peltate, cloſe-preſſed ſcales, of a pale ſhining brown. Many of the tranſverſe *veins* terminate, near the margin, in depreſſed dots. The fertile *fronds* are much ſhorter and narrower, ſomewhat heart-ſhaped at the baſe, covered entirely at the back with ſhining ruſty *capſules*, intermixed with lanceolate, convoluted, tubular ſcales. We have one *frond*, two-thirds of which are barren and broadly elliptical, but the upper part is ſuddenly contracted into a lanceolate form, covered with *capſules* and ſcales. The main rib is always very ſcaly beneath.

A. *undulatum*. Wavy Hairy Acroſtichum. Willd. n. 14. (Lingua cervina villoſa, major et rufeſcens; Plum. Fil. 110. t. 126.)—Fronds ovato-lanceolate, ſomewhat wavy, briſtly on both ſides, like their ſtalks; the margin ſlightly crenate and obſcurely dotted: barren ones emarginate: fertile ones acute.—Found by Plumier on the trunks of old trees, in Martinico. Nearly related to the laſt, but diſtinct. The *fronds* are ſmaller and narrower, with much leſs evident marginal dots. The briſtly hairs, ſcattered over both ſurfaces, and alſo clothing the *ſtalks*, in ſome degree indeed partake of the nature of ſcales, and are channelled, or ſlightly tubular, at their baſe; but they totally differ from the flat cloſe ſcales of the foregoing. The end of each barren *frond* is more or leſs emarginate, with a little tuft, or bud, of ſcales in the fiſſure.

A. *latifolium*. Broad-thick-leaved Acroſtichum. Willd. n. 15. Swartz Syn. Fil. 9. Ind. Occ. 1589. (A. n. 1; Browne Jam. 104. A. longifolium; Willd. n. 16. Jacq. Coll. v. 2. 105. Swartz Syn. Fil. 9. Lingua cervina rigida et glabra; Plum. Fil. 118. t. 135.)—Fronds oblong-lanceolate, bordered, contracted at each end, ſmooth on both ſides, as well as the ſtalks: fertile ones of the ſame ſhape, with a ſmooth, narrow, membranous edge. Native of rocks, and old moſſy trunks of trees, in Jamaica and Martinico. The *root* is thick and creeping, clothed at the extremity, and about the bottoms of the ſtalks, with large, brown, chaffy ſcales. *Fronds* ſcattered, from a ſpan to twelve or eighteen inches long, erect, entire, rigid, with a narrow, thin, membranous, entire border, a ſtout reddiſh rib, and ſcarcely any traces of veins, both ſurfaces being peculiarly even and ſmooth. The *ſtalks* are ſmooth and naked, angular, ſometimes as long as the fronds, but generally ſhorter. The fertile *fronds* agree with the barren ones in ſhape and ſize, as well as in their narrow, membranous, naked border, but the whole under ſide, except that border, is denſely clothed with innumerable, minute, ſnuff-coloured *capſules*, unaccompanied by any ſcales or hairs. Jacquin deſcribed his plant independent of Swartz, but we cannot find the leaſt pretence for diſtinguiſhing them, even as varieties, the revolute poſition of the ſeed-bearing frond, in Plumier's plate, being merely owing to its young ſtate, as his deſcription implies. The *ſtalks*, at an early period, may probably be ſomewhat ſcaly, though afterwards naked, even in the fertile *fronds*.

A. *crinitum*. Hairy Oval Acroſtichum. Linn. Sp. Pl. 1523. Willd. n. 23. Ait. n. 2. Swartz Syn. Fil. 11. (Lingua cervina villoſa, amplis foliis ſubrotundis; Plum. Fil. 109. t. 125. Phyllitis crinita, latiſſimo folio; Petiv. Fil. n. 145. t. 13. f. 14, copied from Plumier.)—Fronds elliptical, obtuſe at each end, hairy, denſely fringed. Stalk and mid-rib hairy.—Gathered by Plumier in Martinico. Brought from the Weſt Indies to Kew Garden, by Admiral Bligh, in 1793. A very fine and large ſpecies, ſpecimens of which are rare. Each *frond* is about a foot long, and half as much in breadth, fleſhy; of a ſomewhat yellowiſh-green on the upper ſide, beſprinkled with ſlender briſtly hairs, which, as well as the thick fringe, and the copious hairs on the *ſtalks*, are coal-black. The fructification of this plant has not been aſcertained, for what Plumier noticed, on the very young leaves, were moſt probably the tumid or glandular baſes of the hairs; nor was he at all confident on this ſubject. It may well, however, by analogy, be conſidered as an *Acroſtichum*. The *root* is tufted and ſhaggy. We place this fern next to ſpecies with which it moſt nearly accords; the following one being incorrectly inſerted before it by Willdenow.

A. *citrifolium*. Lemon-leaved Acroſtichum. Linn. Sp. Pl. 1529. Willd. n. 22. Swartz Syn. Fil. 9. (A. n. 3; Linn. Amoen. Acad. v. 1. 269. Hemionitis paraſitica; Linn. Sp. Pl. 1535. H. n. 2; Browne Jam. 95, from the author. Lingua cervina ſcandens, citrei foliis, minor; Plum. Fil. 101. t. 116. Lonchitis vaniliæ folio; Petiv. Fil. n. 150. t. 15. f. 1.)—Fronds alternate, ovate, pointed; tapering at the baſe, on ſhort ſtalks, ſmooth, reticulated with veins. Common ſtalk creeping, ſcaly.—Found on trees near rivulets in Martinico, and in the cooler, ſhady, inland woods of the mountainous parts of Jamaica. The common *ſtem*, or main *root*, creeps to a great extent, among moſſes, or *Jungermanniæ*, up the old trunks of trees, attaching itſelf by numerous ſhaggy radicles. It is clothed with large, acute, reticulated, finely toothed, pellucid ſcales. The *fronds* are ſituated alternately, about one or two inches from each other, on ſhort bordered ſtalks, ſpreading in two directions, and are ovate or elliptical, of a fine ſhining green, rather fleſhy, very ſmooth, two or three inches long, and one or one and a half broad, obſcurely crenate. There is only about half way up any decided mid-rib, but the principal veins, parallel at firſt, branch out into regular, very elegant reticulations. Some of the uppermoſt and youngeſt *fronds*, according to Plumier, are entirely covered at the back, with minute, denſely crowded, bright cheſnut, *capſules*, except a central naked line, indicating a mid-rib. We have no ſpecimen in fructification, but ſeveral *capſules* accidentally ſticking to one of the barren fronds, are remarkably ſmall, very pale, with dark jointed rings. Linnæus originally adopted this fern, as an *Acroſtichum*, from Plumier. When he received ſpecimens of the ſame from Browne, as a *Hemionitis*, he did not diſcover that he had already claſſed the plant in his ſyſtem; hence it occurs twice, even in his Sp. Pl.—*Hemionitis obtuſa*, Willd. Sp. Pl. v. 5. 127, agrees very nearly with this *Acroſtichum*, in ſize and texture of the *fronds*, and moſt preciſely in their veiny reticulations; but its fructification is deſcribed as eſſentially different.

Sect. 2. *Frond ſimple, divided.* Four ſpecies.

A. *peltatum.* Shield Acroſtichum. Willd. n. 26. Swartz Syn. Fil. 11. Ind. Occ. 1593. (Oſmunda peltata; Swartz Prodr. 127. Lichen digitatus, geranii facie; Plum. Fil. 141. t. 50. f. A. Hepatica digitata fungoides; Pet. Fil. n. 188. . 11. f. 3.)—Barren fronds in many forked, linear, radiating ſegments: fertile ones undivided, roundiſh-kidneyſhaped, finely crenate. — Found on the moſſy trunks of trees, in Jamaica and Hiſpaniola. This remarkable little fern has the habit of a *Trichomanes;* or of ſome very ſingular *Jungermanniæ*, brought by Mr. Menzies from New Zealand. The trailing creeping *root* throws up ſeveral ſtalked, vertical, membranous, barren *fronds*, deeply divided into two principal lobes, and each of thoſe irregularly into numerous, linear, ſingle-ribbed ſegments, all ſpreading like a fan. The fertile *fronds* are about as tall, but ſmaller, not an inch broad, roundiſh, or ſomewhat kidney-ſhaped, horizontal; pale green and ſmooth above; covered beneath with ſmall, brown, ſhining, annulated *capſules*.

A. *alcicorne.* Stag's-horn Acroſtichum. Willd. n. 29. Swartz Syn. Fil. 12. 17. and 196. Brown n. 1. Ait. n. 3. (" A. Stemaria; Beauvois Fl. d'Oware, 2. t. 2." A. bifurcatum; Cavan. Leccion. 241. n. 587. Neuroplatyceros æthiopicus, nervoſis foliis, cornu cervinum referentibus; Pluk. Amalth. 151. t. 429. f. 2. Cornu alcis Simbor dicta; Bont. Hiſt. Nat. 121, with a figure.)—Fronds ſomewhat tufted, forked, coriaceous, ribbed; downy at the back; from a peltate, leafy, ſpongy baſe.—Native of Guinea, Madagaſcar, Java, and New South Wales, growing on the trunks of trees. This is a very large and ſtriking ſpecies, attached to the trees, or ſometimes to rocks, by a peltate, dilated, ſomewhat membranous, irregular, veiny, lobed baſe, of a ſhining brown, a foot in diameter; thin at the edges; thick and ſpongy in the centre, where it is fixed by downy branching *radicles*, and from whence it throws up two or three erect, flat, irregularly forked *fronds*, a foot or two in height, rather dilated upwards, entire at the edges, from one to two inches broad in the different parts; tapering at the baſe into a ſtout, channelled, winged *footſtalk*. The ultimate diviſions are level-topped, linear, bluntiſh, near a finger's length, each bearing at its back, in the lower half, a broad, irregular, denſe, naked maſs of innumerable brown *capſules*, ſo diſpoſed, in cloſe lines, that the whole maſs appears ſtriated. The whole *frond* is ſtrongly ribbed; green and ſmooth above; whitiſh and downy beneath; the ribs forked, ſmooth, reddiſh. We cannot but think the ſingular dilated baſe of this fern is no other than one of its ſeminal leaves, or reputed *cotyledons*, greatly enlarged, and more permanent than uſual. *Polypodium quercifolium* of Linnæus, Willd. Sp. Pl. v. 5. 170, has ſomething analogous in its barren *fronds*, which are only advanced a ſtep nearer towards the proper habit of a fern. See Ger. Em. 1133.

Sect. 3. *Frond ternate.* Two ſpecies.

A. *quercifolium.* Oak-leaved Acroſtichum. Willd. n. 30. Swartz Syn. Fil. 12. Retz. Obſ. faſc. 6. 39. " Schkuhr Crypt. 2. t. 3." (Oſmunda trifida; Jacq. Coll. v. 3. 281. t. 20. f. 3.)—Fronds ternate, bluntly lobed; fertile ones contracted, linear-oblong, ſomewhat cut.—Found on trees in Ceylon, by Koenig. A delicate ſlender fern, whoſe ſmall, creeping, ſcaly *root* ſends up ſeveral erect *fronds*, from ſix inches to a foot high, whoſe downy *ſtalks* are alſo ſcaly in their lower part. The terminal *leaflet* is much the largeſt, two or three inches long, and one broad, in the barren *fronds*, with downy ribs and edges, obtuſe, ſlightly and variouſly ſinuated; the lateral ones an inch long, rounded, ſomewhat lobed. The fertile *fronds* have each a much taller ſmoother ſtalk, but their *leaflets* are, as uſual, much ſmaller and narrower, their backs covered, except the ribs and margin, with minute, ſtalked, annulated *capſules*.

A. *auritum.* Eared Acroſtichum. Willd. n. 31. Swartz Syn. Fil. 13. and 198. (Filix florida; Rumph. Amboin. v. 6. 78. t. 35. f. 1.)—Fronds ternate, pinnatifid, cut; fertile ones doubly pinnate, with linear entire ſegments.—Native of Amboyna and Java, growing among coarſe graſſes, on the banks of rivers. *Rumphius*, *Thunberg*. *Stalks* from one to two feet high, ſlender, angular, ſmooth, black and ſhining. *Fronds* ſmooth, ſlightly veiny, of three principal *leaves* variouſly pinnatifid, lobed and cut, ſeveral inches long; the middle one largeſt: the fertile *fronds* are more compound, with extremely narrow linear *leaflets* or ſegments.

Sect. 4. *Frond pinnatifid.* Three ſpecies.

A. *ſerrulatum.* Finely-ſerrated Acroſtichum. Willd. n. 32. (Polypodium fuſcum tenuiſſimis denticulis ſerratum; Plum. Fil. 63. t. 81.)—Fronds deeply pinnatifid; ſegments linear-lanceolate, parallel; thoſe of the barren ones finely ſerrated, of the fertile ones entire.—Gathered by Plumier, in the foreſts of Hiſpaniola. The long, creeping, nearly ſmooth, blackiſh *root* ſends up ſeveral *fronds*, twelve or eighteen inches high, on ſhortiſh ſmooth *ſtalks*. The outline of each is lanceolate, taper-pointed, compoſed of a great number of crowded parallel ſegments, divided almoſt to the mid-rib, each ſegment linear, acute, finely and ſharply ſerrated, ſmooth on both ſides, thin and almoſt membranous, with a rib and many ſimply forked veins. From the very extremity of the root ſprings one *frond*, a little ſmaller than the reſt, but of a ſimilar ſtructure, except that its ſegments are nearly all entire at the margins, and bear on their backs a denſe aſſemblage of minute cheſnut-coloured *capſules*, ſome few of the upper ſegments only, with the point, being naked and ſerrated. By the figure, this fern would be judged a *Blechnum*, and poſſibly it might, if examined in a young ſtate, prove to be ſuch, the capſules extending over the leaf at an advanced period only, when the *involucrum* is often reflexed, or obliterated; but as no botaniſt, beſides Plumier, appears to have ſeen the plant, we muſt rely on his account of the matter, and he very preciſely ſays the back of this fertile *frond* is at firſt, as it were, chagreen'd, and cheſnut-coloured, being ſubſequently entirely covered with fine duſt, of the ſame hue.

The others of this ſection are, *A. lepidopteris* of Langſdorff and Fiſcher, Ic. Fil. t. 2, from Braſil; and *A. brunneum* of Willdenow, from the Caraccas.

Sect. 5. *Frond pinnate.* Fifteen ſpecies, beſides one of Mr. Brown's.

A. *bifurcatum.* Slender Forked Acroſtichum. Willd. n. 35. Swartz Syn. Fil. 12. " Schkuhr Crypt. t. 2. f. 3." (Oſmunda bifurcata; Jacq. Coll. v. 3. 282. t. 20. f. 4. Filicula corniculata inſulæ Sanctæ Helenæ; Pluk. Mant. 83. Phyt. t. 350. f. 4.)—Fronds pinnate; leaflets linear, deeply divided, ſpreading: thoſe of the fertile fronds rounded; the lower ones more or leſs ternate; upper ſolitary.—Native of St. Helena and the Weſt Indies. A ſlender delicate fern, allied in habit to *A. quercifolium*, deſcribed in the third ſection, but much ſmaller, and with very different barren *leaflets*. Its height is about ſix inches; the *ſtalks* wiry, or almoſt capillary.

A. *ſorbifolium.* Service-leaved Acroſtichum. Linn. Sp. Pl. 1526. Willd. n. 38. Ait. n. 4. (Onoclea ſorbifolia; Swartz Syn. Fil. 112. Filix ſcandens latifolia ſerrata; Plum. Amer. 8. t. 12. Lingua cervina ſcandens, foliis laminis ſerratis; Plum. Fil. 102. t. 117. Lonchitis calamifera, pinnis ſerratis; Petiv. Fil. n. 153. t. 9. f. 8.)—Fronds pinnate, ſmooth; leaflets of the barren ones lanceolate, pointed, ſerrated; wedge-ſhaped at the baſe: of the fertile ones linear, entire. Common-ſtalk climbing, ſcaly.—This climbs up the ſtems of trees in various parts of the Weſt Indies, the ſcaly *common ſtalk* being the thickneſs of a gooſe-quill. *Fronds* alternate, ſomewhat ſtalked, a foot long, lanceolate; barren *leaflets* an inch and a half or two inches long, half an inch broad; fertile ones rather ſhorter, and very much narrower; their edges ſlightly inflexed when young; the mid-ribs hairy; all the reſt of the under ſurface denſely covered with *capſules*. Linnæus, long after he had publiſhed this ſpecies, confounded with it a very different plant, figured in Sloane's Jamaica, v. 1. t. 38, and in Pluk. Phyt. t. 287, (not 286,) f. 3, which is preſerved in the Linnæan herbarium; but for want of knowing the fructification, we cannot determine its genus with any certainty. The *main-ſtalk* of each *frond* is ſlightly winged, and the habit of the whole like a DANÆA, (ſee that article,) except the *leaflets* being alternate.

A. *aureum*. Great Golden Acroſtichum. Linn. Sp. Pl. 1525. Willd. n. 41. Swartz Syn. Fil. 13. Purſh n. 1. "Schkuhr Crypt. 2. t. 1." (Lingua cervina aurea; Plum. Fil. 87. t. 104. Filix paluſtris aurea, foliis linguæ cervinæ; Plum. Amer. 5. t. 7. Phyllitis ramoſa aurea; Petiv. Fil. n. 142. t. 8. f. 5.)—Fronds pinnate; leaflets alternate, uniform, coriaceous, oblong, bluntiſh, entire, ſmooth, with reticulated veins; wedge-ſhaped and unequal at the baſe: upper ones fertile, of the ſame ſize.—Native of bogs and wet places in the Weſt Indies. Purſh found it in deep ſwamps near the ſea-coaſt of Florida, in July. This is a noble *fern*, from five to nine feet high, conſpicuous for its large broad *leaflets*, from a ſpan to twelve inches in length, curiouſly marked with oblong veiny reticulations. About four or five of the uppermoſt, and perhaps the lower part of the next, are denſely covered at the back with innumerable *capſules*, of a golden cheſnut colour.

A. *fraxinifolium*. Great Aſh-leaved Acroſtichum. Br. n. 2.—"Fronds pinnate, ſmooth; leaflets ſtalked, oblong-tongueſhaped, pointed, entire, reticulated: upper ones fertile, contracted."—Diſcovered by Mr. Brown, in the tropical part of New Holland. Very cloſely related to *A. aureum*, but differing in its acute and ſhort-pointed *leaflets*.

A. *punctulatum*. Dotted Acroſtichum. Willd. n. 45. Swartz Syn. Fil. 13. (A. punctatum; Linn. Suppl. 444, but not Sp. Pl. 1524. A. auriculatum; Lamarck Dict. v. 1. 36.)—Fronds pinnate; fertile leaflets lanceolate, acute, entire; dotted on the upper ſide; lowermoſt auricled; uppermoſt ſomewhat confluent.—Native of the iſle of Bourbon. This ſpecies is known only from the Linnæan ſpecimen, communicated by Thouin, which conſiſts of one *frond*, about two feet high, entirely fertile, with a longiſh ſmooth *ſtalk*, and eight *leaflets*, each near three inches in length, and almoſt one in breadth, tapering at both ends, undulated or ſomewhat crenate; ſmooth and bright green, beſprinkled with depreſſed dots, above; covered, nearly to the edge, with tawny capſules, beneath. The two lowermoſt have each, at the outer ſide, a large lobe, or auricle; the two or three uppermoſt are more or leſs decurrent, ſo that the top ones are confluent.

A. *alienum*. Various-lobed Acroſtichum. Willd. n. 48. Swartz Syn. Fil. 13. Ind. Occ. 1595. (Filix latifolia, in pinnulas obtuſas, et leviter crenatas, diviſa; Plum. Fil. 10. t. 10. Oſmunda pulverulenta, pinnis vix ſerratis; Petiv. Fil. n. 154. t. 8. f. 1.)—Fronds pinnate; leaflets pinnatifid; the upper ones confluent; lobes rounded, diſtantly toothed, ſmooth, reticulated with veins: fertile ones with narrower, leſs divided, leaflets.—Found by Plumier in Martinico; by Swartz on the mountains of Jamaica. Our ſpecimens came from St. Kitt's. This is a fine ſpecies, the *fronds* crowded, three or four feet high, ſmooth and membranous, of a fine tranſparent green; the baſe of each common *ſtalk* tumid, permanent. The lower *leaflets*, a foot long, are deeply pinnatifid, and ſomewhat auricled; the middle ones roundly lobed; uppermoſt wavy, and ſtrongly confluent. All the ribs are white and ſmooth. Fertile *fronds* entirely diſtinct, ſmaller and leſs divided or lobed in every part, but their ſegments are extremely various. The under ſide, except the ribs, is denſely covered, to the very edges, with brown *capſules*. None of the *ſtalks* are ſcaly.

Sect. 6. *Frond doubly pinnatifid, or doubly pinnate.* Thirteen ſpecies, beſides one of Mr. Brown's.

A. *cervinum*. Hart's-tongue Acroſtichum. Willd. n. 50. Swartz Syn. Fil. 14 and 200. (Oſmunda cervina; Linn. Sp. Pl. 1521. O. linguæ cervinæ foliis; Plum. Fil. 132. t. 154. O. racemifera, phyllitidis folio; Petiv. Fil. n. 162. t. 8. f. 13.)—Barren fronds pinnate, with obliquely ovate, pointed, entire, bordered leaflets; fertile doubly pinnate, with linear, parallel, obtuſe leaflets.—Apparently, by Plumier's account, not uncommon in wet woods, or about the banks of rivers, in Martinico. Dr. Swartz ſeems to have met with the ſame in Jamaica, and we have it from St. Kitt's. The *root* is tufted, large, with numerous, long, branched, woolly fibres, and crowned with a great number of long, very narrow, tapering, brown and ſhining ſcales, among which ſtand ſeveral *fronds*, about a yard high, very ſmooth in every part. The *barren ones* are ſimply pinnate, with 18 or 20 ſtalked *leaflets*, a ſpan long, and near two inches broad, entire, taper-pointed, with one rib, and many fine parallel tranſverſe veins, not reticulated; the baſe of each obliquely, and very unequally, wedge-ſhaped. *Fertile fronds* fewer, doubly pinnate, conſiſting entirely of numerous ſmall, ſeſſile, parallel, but not crowded, *leaflets*, a quarter or one-third of an inch in length, covered at the back with light-brown ſtalked *capſules*.

A. *Marantæ*. Scaly European Acroſtichum. Linn. Sp. Pl. 1527. Willd. n. 53. Swartz Syn. Fil. 14. Prodr. Fl. Græc. n. 2344. Fl. Græc. t. 964, unpubl. "Schkuhr Crypt. 4. t. 4." Sprengel Crypt. 89. t. 2. f. 18, not good. (Lonchitis aſpera Marantæ; Camer. Epit. 666.)—Fronds doubly pinnate, uniform; leaflets oblong, obtuſe, entire, dilated or lobed at the baſe; the upper ones confluent; all clothed beneath with imbricated hair-pointed ſcales. Stalks ſhaggy.—We have already deſcribed this fern (ſee the article NOTHOLÆNA, n. 1); but a more careful examination has induced us, both here and in the Prodr. Fl. Græc., to retain it in *Acroſtichum*, as well as the two following ſpecies; for the *capſules* appear to cover every part of the under ſide of its *fronds*, except their ſcaly mid-rib. With reſpect to *Notholæna trichomanoides*, we readily concur with Mr. Brown in keeping it diſtinct from *Pteris*; not having ſeen his *N. vellea* or *Pumilio*, we cannot form an opinion of thoſe ſpecies.

A. *velleum*. Woolly European Acroſtichum. Willd. n. 54. Swartz Syn. Fil 14. Ait. n. 5. Prodr. Fl. Græc. n. 2345. Fl. Græc. t. 965, unpubl. (A. lanuginoſum; Deſfont. Atlant. v. 2. 400. t. 256. "Schkuhr Crypt. 8. t. 1. Lonchitis mollior lanuginoſa, Ceterach facie; Barrel. Ic. t. 857, 858. Filicula criſpa, lanugine hepatici coloris veſtita, ex inſulis fortunatis; Pluk. Almag. 150. Phyt. t. 281. f. 4.)—Fronds doubly pinnate, elliptic-oblong, uniform; leaflets obtuſe, ovate or heart-ſhaped, notched laterally, very ſhaggy on both ſides, like the ſtalks.

—Native of Spain, Barbary, Madeira, and Zante, in the fiſſures of rocks. Rather ſmaller than the laſt, with ſhorter *ſtalks* and denſer *fronds*, whoſe *leaflets* are ſhort and rounded, hairy on both ſides rather than ſcaly; their *common ſtalks* of a mahogany colour, their pubeſcence hoary, without the golden, or bright copper, hue of *A. Marantæ*. The *root* is neither ſcaly, nor creeping.

A. *diſtans*. Diſtant-winged Acroſtichum. (Notholæna diſtans; Brown Prodr. v. 1. 146.)—Fronds doubly pinnate, linear-lanceolate, uniform; branches oppoſite, diſtant, ſomewhat deltoid; leaflets oblong, obtuſe; the lower ones pinnatifid. Stalks and ribs ſhaggy, with hair-pointed ſcales. (See Notholæna n. 2.) The *capſules* decidedly cover every part of the under ſide of each *leaflet*, except the ſcaly *rib*, in as broad and continuous patches, as in any other *Acroſtichum;* at leaſt when, like our ſpecimen, they are arrived at maturity.

A. *ſulphureum*. Sulphur-coloured Acroſtichum. Willd. n. 56. Swartz Syn. Fil. 15. Ind. Occ. 1597. Schkuhr Crypt. 4. t. 4.—Fronds doubly pinnate; leaflets oblong-wedgeſhaped, pinnatifid, cloven and notched; clothed with pale yellow powder at the back.—Native of ſhady rocks, in the ſouthern part of Jamaica. *Swartz*. Linnæus had numerous ſpecimens of this fern, which he left undetermined, or perhaps confounded with the following, from which they differ in the wedge-like ſhape, and more delicate texture, of their *leaflets*, as well as the pale ſulphur colour of the powder that covers their under ſurface. The maſſes of *capſules* are moſt denſe about the middle of each leaflet, the tips being naked.

A. *calomelanos*. Mealy Acroſtichum. Linn. Sp. Pl. 1529. Willd. n. 57. Hort. Berol. t. 41. Swartz Syn. Fil. 15. "Schkuhr Crypt. 4. t. 5." (Filix albiſſimo pulvere conſperſa; Plum. Fil. 30. t. 40. Pet. Fil. n. 156. t. 9. f. 11. F. non ramoſa major, caule nigro, furculis raris, &c.; Sloane Jam. v. 1. 92. t. 30. f. 2. Adiantum, nigro ſimile, albiſſimo pulvere conſperſum; Plum. Amer. 30. t. 44. A. calomelanos americanum; Pluk. Phyt. t. 124. f. 3.)

β. A. ebeneum; Linn. Sp. Pl. 1528? (Filix non ramoſa minima, caule nigro, furculis raris, &c.; Sloane Jam. v. 1. 92. t. 53. f. 1.)

Fronds doubly pinnate; leaflets elliptic-oblong, clothed with white powder beneath; lowermoſt cut or pinnatifid, with an auricle from the upper edge at the baſe; upper ones ſerrated; uppermoſt confluent.—Native of ſhady ſituations in the Weſt Indies. The *fronds* are tufted, and, when full grown, 12 or 18 inches high, with black ſhining *ſtalks;* the *leaflets* ſmooth, and of a fine deep green above; tapering, or wedge-ſhaped, at their baſe; in the upper part of each frond decurrent. Thoſe which bear *capſules* are leſs white, and rather grey, beneath, beſprinkled with white dots, the *capſules* moſt crowded about the middle region of each. Willdenow, on the poſitive aſſertion of Swartz, makes *A. ebeneum* of Linnæus a variety, Swartz eſteeming it the ſame plant in a young ſtate, when the *fronds* are only ſimply pinnate. But Willdenow declares that he had 100 times raiſed *calomelanos* from ſeed, without ever ſeeing the young *fronds* as repreſented by Sloane, t. 53. f. 1; and that his own figure was taken from a plant of one year's growth. Still we are diſpoſed to believe Sloane's plant belongs to *calomelanos;* though it is far otherwiſe with the Linnæan *ebeneum*, the original ſpecimen of which is ſimply pinnate, with broad, ſeſſile, tranſverſe, partly pinnatifid, *leaflets*, white beneath; the maſſes of *capſules* nearer the margin than the rib. The upper *leaflets*, indeed, are decurrent and confluent. Having ſeen but this ſingle ſpecimen, we are afraid to form any poſitive opinion.

A. *chryſophyllum*. Golden Acroſtichum. Willd. n. 58. Swartz Syn. Fil. 15. Ind. Occ. 1598. (Filix aurea, pinnulis rotundè inciſis diviſa; Plum. Fil. 33. t. 44. Adiantum pulverulentum aureum; Petiv. Fil. n. 160. t. 9. f. 9.)—Fronds doubly pinnate; leaflets ovate-oblong, obtuſe, ſtriated, poliſhed; clothed beneath with deep-yellow powder; lower ones pinnatifid; upper confluent and wavy.—Native of rather mountainous paſtures, in various parts of the Weſt Indies. We are indebted to J. V. Thompſon, eſq. for a ſpecimen of this elegant plant, which is conſpicuouſly diſtinguiſhed by the copious deep lemon-coloured powder, entirely covering the back of its *leaflets*, among which the *capſules* ſeem ſparingly, but uniformly, diſperſed and ſunk.

A. *albidulum*. Whitiſh Round-leaved Acroſtichum Willd. n. 61. Swartz Syn. Fil. 16 and 205. t. 1. f. 2.—Fronds doubly pinnate; leaflets rounded, obtuſe; powdery and white beneath; lowermoſt three-lobed; uppermoſt ſimple and undivided. Capſules denſely crowded towards the margin.—Gathered by Louis Nee, in South America. *Swartz*. A delicate little fern, three or four inches high, with a capillary *ſtalk*. The whole *frond* is oblong, once or twice compounded, in a ternate manner. *Leaflets* ſmooth and flat above; clothed beneath with white powder, which ſeems to conceal their mid-ribs. The *capſules* are brown, each with a ſhining ring, and are very numerouſly crowded, in denſe maſſes, over two-thirds of each lateral portion of the *leaflet*, from the edges, leaving a bare ſtripe in the middle. Hence this ſpecies ſhould ſeem referable to Mr. Brown's genus Notholæna, to which we have already alluded (ſee that article); but the *capſules* compoſe much broader maſſes than in *N. trichomanoides*, and ſeem unattended by hairs.

A. *pteroides*. Bordered Acroſtichum. Brown n. 3.—"Fronds doubly pinnate, ſmooth; leaflets linear, reflexed at the margin."—Gathered by Mr. Brown, in the tropical part of New Holland. This ſpecies ſeems to anſwer to the character of Willdenow's *Lomaria*. We have ſeen no ſpecimen.

ACROTRICHE, ſo called by Mr. Brown, from ακϱος, *terminal*, and ϑϱιξ, τϱιχος, *a hair*, in alluſion to the bearded points of the corolla.—Brown Prodr. Nov. Holl. v. 1. 547.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of five erect, concave, obtuſe, permanent leaves, with a pair of ſmaller ones at their baſe. *Cor.* of one petal, funnel-ſhaped, longer than the calyx; limb in five equal, ſpreading ſegments, each furniſhed, towards the point, with a tuft of hairs directed inwards. Nectary a cup-ſhaped gland, ſlightly lobed, ſurrounding the baſe of the germen. *Stam.* Filaments five, thread-ſhaped, equal, inſerted into the tube of the corolla, and not projecting beyond the mouth; anthers roundiſh-oblong, incumbent. *Piſt.* Germen ſuperior, globoſe; ſtyle columnar, ſhort; ſtigma ſimple. *Peric.* Drupa globular, depreſſed, ſlightly pulpy. *Nut* ſolitary, of five lobes and five cells, its ſurface minutely cellular. *Seeds* ſolitary.

Eſſ. Ch. Outer calyx of two leaves. Corolla five-cleft, funnel-ſhaped; ſegments with a deflexed beard at the extremity. Drupa nearly dry. Nut of five cells, its ſurface minutely cellular.

This genus, the produce of New Holland, conſiſts of humble much-branched ſhrubs, their *branches* generally divaricated. *Leaves* ſcattered. *Spikes* ſhort, lateral, or axillary. *Flowers* ſmall, white. *Drupa* ſmall, with but little thickneſs, or pulp. We have examined only one ſpecimen of this fruit, but the above appears to be the true meaning of the author whom we follow, that the ſhell of the *nut* is covered with ſmall external cells, like a minute irregular honey-comb, to which the pulp of the *drupa*, filling the interſtices of the lobes of the nut only, is attached. This character Mr. Brown ſeems to conſider as very peculiar.

1. A. *divaricata*. Spreading-leaved Acrotriche. Br. n. 1.—Leaves lanceolate, pointed, divaricated, flat, green on both ſides. Spikes axillary.—Found by Mr. Brown, at Port Jackſon, New South Wales. We are not certain of having met with this ſpecies, among the various ſpecimens ſent by Dr. White, though one of them anſwers nearly to the characters, as far as we are able to inveſtigate them. This ſpecimen greatly reſembles Monotoca *ſcoparia* (ſee that article); but the *leaves* are more divaricated, or deflexed, and not glaucous at the back.

2. A. *aggregata*. Aggregate Acrotriche. Br. n. 2.—"Leaves oblong-lanceolate, rather concave; glaucous beneath; ſmooth at the edges."—Obſerved by Mr. Brown, in the tropical region of New Holland.

3. A. *ramiflora*. Flowery-branched Acrotriche. Br. n. 3.—"Leaves linear-lanceolate, pointed, divaricated; ribbed, and diſcoloured, beneath; recurved at the edges. Spikes ſmall, ſituated on the branches."—Gathered by the ſame diſtinguiſhed botaniſt, on the ſouthern coaſt of New Holland.

4. A. *ſerrulata*. Finely-ſerrated Acrotriche. Br. n. 4.—Leaves linear-lanceolate, ſpinous-pointed, ſpreading, hairy or nearly ſmooth; their edges fringed. Spikes axillary.—Gathered by Mr. Brown in Van Diemen's iſland, as well as on the ſouth coaſt of New Holland. We have ſpecimens collected by general Groſe, communicated by A. B. Lambert, eſq. A ſmall dwarf *ſhrub*, with denſely tufted, hairy *branches*. *Leaves* crowded, one-third or half an inch long, each tipped with a yellowiſh prickle; three-ribbed, and rather glaucous, beneath; more or leſs hairy on both ſides; their edges fringed with minute ſtiff hairs, as if ſerrated. *Flowers* in ſhort, lateral, erect cluſters. *Drupa* the ſize of hemp-ſeed, depreſſed, glaucous, or rather ſilky. *Nut* of five radiating lobes, or cells, the ſurface curiouſly and minutely cellular.

5. A. *patula*. Spreading-branched Acrotriche. Br. n. 5.—"Leaves ovato-lanceolate, ſpinous-pointed, flattiſh, divaricated as well as the branches. Spikes ſmall, axillary."—Native of the ſouthern coaſt of New Holland. *Brown*.

6. A. *ovalifolia*. Oval-leaved Acrotriche. Br. n. 6.—"Leaves ovate or elliptical, obtuſe, pointleſs, flat, ſmooth-edged. Spikes axillary. Drupa ſlightly cellular."—Gathered by Mr. Brown in the ſame country as the laſt.

7. A. *cordata*. Heart-leaved Acrotriche. Br. n. 7. (Styphelia cordata; Labill. Nov. Holl. 46. t. 63.)—Leaves heart-ſhaped, flat; ſtriated beneath. Flowers axillary, ſolitary or in pairs.—Found by Labillardiere, in Van Leuwin's land. A ſpan high, erect, with ſmall, rigid, thick *leaves*. *Drupa* ſcarcely bigger than muſtard-ſeed. Mr. Brown, not having ſeen this plant, is not abſolutely certain of its genus; though Labillardiere's deſcription of the *corolla* anſwers to *Acrotriche*.

8. A. *depreſſa*. Proſtrate Acrotriche. Br. n. 8.—"Leaves ovate, ſomewhat heart-ſhaped, pointed, divaricated; convex above; veiny beneath. Stem depreſſed. Spikes ſmall, on the branches."—Gathered by Mr. Brown, on the ſouth coaſt of New Holland without flowers, and with unripe fruit.

ACT *of Faith*, l. 2, day which was held; and let the whole article refer to paſt time. To the article ſubjoin, ſuch were the horrors of the inquiſition in the reign of Philip II. *Auto da Fes* have not been frequent in late times; and it is perhaps more than half a century ſince the laſt, in which criminals were burnt.

Act *of Honour*, in *Commerce*, an inſtrument drawn by a notary, when a bill is accepted for the honour of another perſon.

Acts, in *Poetry*, col. 2. l. *ult*., dance, are indeed divided; but to compenſate for this retrenchment, the two concluding dances are ſpun, &c.

ACTÆA, in *Botany*, ſee our former article, (thus named, it is generally thought, from ακτη, *the ſhore*, as being a plant that inhabits the ſea-coaſt, or the margins of waters. But this is not appropriate; and we ſhould rather ſuppoſe Linnæus, the author of the name, had in his mind the reſemblance of the plant, in ſome reſpects, to Elder, ακταια of the Greeks.)—De Cand. Syſt. v. 1. 381. Linn. Gen. 261. Schreb. 349. Willd. Sp. Pl. v. 2. 1139. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 562. Prodr. Fl. Græc. Sibth. v. 1. 356. Ait. Hort. Kew. v. 3. 286. Purſh 366. Juſſ. 235. Lamarck Illuſtr. t. 448. Gærtn. t. 114. (Chriſtophoriana; Tourn. t. 154. Cimicifuga; Linn. Syſt. Veg. ed. 14. 505. Am. Acad. v. 8. 193. Schreb. 369. Willd. Sp. Pl. v. 2. 1244. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 324. Purſh 372. Juſſ. 234. Lamarck Illuſtr. t. 487. Gærtn. t. 140.)—Claſs and order, *Polyandria Monogynia*, (or rather perhaps *Pentagynia*.) Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. *Spuriæ*, De Cand.

Eſſ. Ch. Calyx of four leaves. Petals four. Germens one or more, ſuperior, ovate. Stigma nearly ſeſſile. Pericarp of one cell, with many ſeeds.

Perennial herbs. *Leaves* ſtalked, ſimple, lobed, or variouſly cut, imitating compound leaves, according to De Candolle; (moſt of them are certainly compound.) *Flowers* racemoſe, white; *calyx* and *corolla* very fugacious; *ſtamens* generally longer than the *petals*. Number in the parts of the *flower* very variable. *Stamens* ſometimes imperfect in one flower, *piſtils* in another.

The *roots* are draſtic purges, in ſome degree poiſonous, and the herbage is not to be truſted.

Eight ſpecies are wild in buſhy rocky ground, or cold woods, of the northern hemiſphere; one in Europe; in Siberia or Japan two; in North America five.

This genus is very natural, notwithſtanding a diverſity of characters in the ſeveral ſpecies. In the *Cimicifugæ*, (which approach *Xanthorrhiza* and *Pæonia*,) the *germens* are numerous, which, as in true *Ranunculaceæ*, become aggregate *fruits*, burſting at their inner angle. The ſecond ſection, *Macrotys*, has a ſimilar but ſolitary *fruit*, nor ought it to be ſeparated from the *Cimicifugæ*, any more than *Conſolida* from *Delphinium*. *Actæa* of Linnæus, the third ſection, has likewiſe a ſolitary *fruit*, exactly ſimilar as to internal ſtructure, but fleſhy; yet not more to be ſeparated on that account, than the ſomewhat berried ſpecies of *Clematis* from the reſt. From theſe conſiderations, and the hints of Michaux and Richard, I return to the original opinion of Linnæus, and diſtribute *Actæa* as follows. *De Candolle*.

We would obſerve, in ſupport of this deciſion of our learned friend, that the anomalies in the *fruit* of *Fumaria*, whence many genera have been formed, appear to us analogous to theſe of *Actæa*. We are always happy to concur in the definition and confirmation of natural genera, in preference to the endleſs ſplitting and ſubdividing of ſuch into artificial ones; which laſt, being the eaſieſt of all things, is moſt tempting to a beginner, eſpecially as he thinks that, in purſuing it, he is exerciſing great ſagacity, and refining on the wiſdom of ages. We ſhould however certainly keep *Actæa* and *Cimicifuga* ſeparate, were it not for *Macrotys*, which evidently, and almoſt neceſſarily, combines them.

Sect. 1. *Cimicifuga*. Fruit aggregate, burſting. Species one to four.

Sect. 2. *Macrotys*. Fruit ſingle, burſting. Species five and ſix.

Sect. 3. *Chriſtophoriana*. Fruit ſingle, not burſting. Species ſeven and eight.

Sect. 1. *Cimicifuga*. Linn.

Flowers with many ſtyles. Fruit dry, burſting, aggregate.

1. A. *Cimicifuga*. Bug-wort Actæa. De Cand. n. 1. Linn. Sp. Pl. 722. (Cimicifuga; Gmel. Sib. v. 4. 181. t. 70. Linn. Am. Acad. v. 2. 354. C. fœtida; Linn. Syſt. Nat. ed. 12. v. 2. 659.)—Germens four, nearly ſeſſile, very hairy. Cluſters panicled. Leaves divided in a once or twice ternate manner; their ſegments ovato-lanceolate, deeply toothed.—Native of various parts of Siberia, and of the north-weſt coaſt of America. See our former article CIMICIFUGA.

2. A. *podocarpa*. Stalked Actæa. De Cand. n. 2. (Cimicifuga americana; Michaux Boreal.-Amer. v. 1. 316.)—Germens four or five, ſtalked, ſmooth. Cluſters panicled. Leaves twice compound.—Found by Michaux, in ſhady woods on the mountains of Carolina, flowering in Auguſt and September. *Herb* two feet high, with the habit of *A. racemoſa*. *Calyx* of five ovate, concave leaves. *Capſules* four or five, ſmooth, compreſſed, pointed with the *ſtyles*, and each ſupported by a ſtalk half its own length. *De Cand.*

3. A. *cordifolia*. Heart-leaved Actæa. De Cand. n. 3. (Cimicifuga cordifolia; Purſh 373, excluding the ſynonym.)—Germens two or three, ſmooth, ſeſſile. Cluſters panicled. Leaves divided in a twice ternate manner; their ſegments five or ſeven lobed, ſerrated, heart-ſhaped at the baſe.—In ſhady woods on high mountains of Carolina, flowering in July. Reſembles *A. Cimicifuga* very much in general habit. *Purſh.* Like *A. racemoſa* and *podocarpa*, differing from the former in having numerous *capſules*, from the latter in their being ſeſſile. *Leaves* ſmooth, their broad ſegments, (we ſhould ſay *leaflets*,) almoſt reſembling vine-leaves. *Cluſters* elongated, wand-like, panicled, ſmooth, with a little acute *bractea* under each partial ſtalk, and two ſmaller lateral ones at its baſe. *De Cand.*

4. A. *palmata*. Palmate Actæa. De Cand. n. 4. (Cimicifuga palmata; Michaux Boreal.-Amer. v. 1. 316. Purſh 373. Hydraſtis; Lamarck Illuſtr. t. 500, which therefore is to be ſtruck out of our article HYDRASTIS. "H. canadenſis; Poir. Suppl. to Lam. Dict. v. 3. 71, but not of Linnæus.")—Germens twelve to fifteen, in a roundiſh head. Cluſters ſomewhat panicled, forked. Leaves palmate.—In the beds of mountain rivulets in Virginia and Carolina, flowering in July and Auguſt. A very tall and handſome plant; the *leaves* very large, and the *flowers* in great abundance. *Purſh.* The whole plant is ſmooth. *Stem* erect, ſimple, hollow. *Leaves* two, alternate; the *lower one* with a broadiſh *ſtalk*, an inch and a half long; the upper nearly ſeſſile; both wedge-ſhaped at the baſe, very broad, with from three to five oval lobes, rather acute, and cut or ſerrated in their upper part. *Flowers* terminal, corymboſe; their ſtalks forked, minutely downy; ſingle-flowered and naked at the extremity; bracteated below. *Calyx* of four orbicular leaves. *Germens* diſtinct, crowded into a head. *De Cand.*

Sect. 2. *Macrotys*. "Raf. Schmaltz in Bot. Journ. v. 2. 170."

Flowers with a ſingle ſtyle. Fruit dry, burſting.

5. A. *racemoſa*. Long-cluſtered Actæa, or Black Snake-root. Linn. Sp. Pl. 722. De Cand. n. 5. Willd. n. 2. Ait. n. 2. See ACTÆA n. 2. (Cimicifuga ſerpentaria; Purſh 372. Chriſtophoriana americana procerior et longiùs ſpicata; Dill. Elth. 79. t. 67.)—Piſtil one. Cluſters very long. Fruit dry, burſting. Leaves divided in a thrice-ternate manner, ſerrated, and ſomewhat cut.—In ſhady ſtony woods, from Canada to Florida, flowering in July and Auguſt. *Purſh.* Herbage like *A. ſpicata*, but larger; *flowers* like *A. Cimicifuga*, but monogynous; *fruit* like *A. cordifolia*, but of a ſingle *capſule*. It varies however occaſionally with two *piſtils*. *Cluſters* downy, very long and denſe. *Flowers* pale, fœtid, with ſmall, thick, gibbous, ſtalked *petals*, each tipped with a briſtly point. *Capſules* of two valves. *Seeds* oblong. *De Cand.* This ſpecies is often cultivated in England, as a hardy perennial. The copious white *flowers* are ornamental, but intolerably fœtid, like the ſcent, well known to ſurgeons, of a carious bone. The plant is often ſix or ſeven feet high.

6. A. *japonica*. Japaneſe Actæa. Thunb. Jap. 221. De Cand. n. 6. Willd. n. 3.—Piſtil one. Spikes very long. Leaves in three heart-ſhaped, palmate diviſions, with from three to ſeven lobes.—Gathered in Japan by Thunberg, who deſcribes it thus. *Herb* entirely ſmooth. *Leaves* ſtalked, ternate; leaflets ſtalked, ſimple, heart-ſhaped, cut, with five or ſeven notched lobes, ſerrated, a palm in length and breadth; pale underneath. General and partial *footſtalks* ſtriated, longer than the leaflets. *Spike* from a palm to a ſpan in length. *Calyx* and *corolla* ſoon falling. *Germen* oblong, ſmooth. *Style* none. The author gives no account of the fruit, ſo that it is impoſſible to ſay whether this ſpecies belongs to the ſecond or third ſection.

Sect. 3. *Chriſtophoriana* of Tournefort.

Fruit ſingle, pulpy, not burſting.

7. A. *ſpicata*. Black-berried Actæa, or Herb Chriſtopher. Linn. Sp. Pl. 722. Willd. n. 1, α. Ait. n. 1, α. Fl. Brit. n. 1. Engl. Bot. t. 918. Bull. Fr. t. 83. Fl. Dan. t. 589. (Chriſtophoriana; Cluſ. Hiſt. v. 2. 86. Ger. Em. 979. Lob. Ic. 682.)—Piſtil one. Berry nearly globular. Petals as long as the ſtamens. Cluſter ovate. Leaves divided in a twice or thrice ternate manner; ſegments ovato-lanceolate, ſerrated and cut.—Native of moiſt and ſhady mountainous ſituations, in moſt countries of Europe; very rare in England, being confined to the north-weſt part of Yorkſhire; flowering in May. *Roots* fibrous. *Berries* always black. See ACTÆA n. 1.

8. A. *brachypetala*. Red or White-berried Actæa. De Cand. n. 8. (A. americana; Purſh 366. A. ſpicata β et γ; Willd. n. 1. Ait. n. 1. A. rubra; Willd. Enum. 561. Bigelow Boſt. 129. Aconitum baccis niveis et rubris; Cornut. Canad. 76. t. 77. Moriſ. ſect. 1. t. 2. f. 7.)—Piſtil one. Berry ovate-oblong. Petals ſhorter than the ſtamens. Cluſter ovate. Leaves divided in a twice or thrice ternate manner; ſegments ovato-lanceolate, ſerrated and cut.—In ſhady rocky woods, in rich vegetable mould, from Canada to Virginia, principally on the mountains, flowering in April and May. Known by the name of Red and White Cohoſh, and conſidered by the natives as a valuable medicine. *Purſh.* *Root* more tuberous than in the laſt. *De Cand.* *Berries* bright red, or white; there is ſaid to be a blue-berried variety alſo. A plant with ſmaller white *berries*, tipped with red, on large thickened *ſtalks*, is thought by Dr. Bigelow a diſtinct ſpecies. His ſpecimen juſtifies this opinion, and differs alſo in the terminal *leaflets* being ovate, not three-lobed. This merits further enquiry.

ACTINEA, from *ακτιν*, *a ray*; meaning merely a radiated flower; nor is there any thing unuſual or ſtriking, relative to the part in queſtion in the inſtance before us.—“ Juſſ. in Ann. du Muſ. v. 2. 425.” Willd. Sp. Pl. v. 3. 2213.—Claſs and order, *Syngeneſia Polygamia-ſuperflua.* Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* nearly flat, of many ſpreading, lanceolate, ſomewhat imbricated, nearly equal, permanent leaves, ſhorter than the florets. *Cor.* compound, radiated; *florets* of the diſk perfect, numerous, tubular, longer than the calyx, five-toothed; thoſe of the radius in a ſimple ſeries, ligulate, wedge-ſhaped, obtuſe, flat, three-cleft almoſt half way down, twice as long as the calyx. *Stam.* in the tubular florets, Filaments five, capillary, ſhort; anthers acute, united into a prominent tube. *Piſt.* in the ſame, Germen oblong, downy; ſtyle thread-ſhaped, nearly as long as the ſtamens; ſtigmas two, capitate, divaricated between the points of the anthers. In the ligulate florets, ſtyle very ſhort. *Peric.* none. *Seeds* in each floret ſolitary, oblong, hairy, crowned with ſeveral membranous long-awned ſcales. *Recept.* convex, naked.

Eſſ. Ch. Receptacle naked. Seed-down of ſeveral chaffy, pointed, awned ſcales. Calyx of many equal leaves.

1. A. *heterophylla.* Various-leaved Sun-wort. Willd. n. 1. Juſſ. as above, t. 61. f. 2.—Gathered by Commerſon at Monte Video. The *ſtem* is ſhrubby, angular, furrowed; the *branches* leafy, downy when young, ſingle-flowered. *Leaves* alternate, ſeſſile, linear-oblong, an inch or two in length, rather fleſhy, ſlightly downy on both ſides, blunt, with a ſmall point; the lower ones generally furniſhed with a ſtrong tooth at each ſide; the upper ſmaller, narrower and entire. *Flowers* ſolitary, on long, naked, downy ſtalks, at the end of each branch, erect, an inch in diameter. *Calyx* downy. *Radius* ſhort, yellow. *Diſk* broad, convex, darker coloured; the *florets* numerous, externally hairy in their upper part. Awns of the *ſeed-down* reddiſh, as long as the partial *corolla.*

This plant appears to us very nearly related to Helenium, (ſee that article,) into which genus it might, without any violence to nature, have been introduced. Even the *calyx* ſcarcely betrays a difference, for that of *Helenium* can hardly be conſidered as of one leaf, any more than thoſe of *Helianthus*, *Rudbeckia*, &c. The ſtructure of the *radius*, downineſs of the *ſeeds* and of the tubular *florets*, pointed chaffy *ſeed-crown*, all agree. We have not indeed ſeen the deſcription given by the learned author of this genus, nor will our ſpecimen admit of an inveſtigation of the more recondite parts of fructification, without injury to ſo great a rarity; but we ſhould not ſcruple to ſink *Actinea* in *Helenium*, according to our preſent means of judging.

ACTINELLA, a diminutive of Actinea, (ſee that article,) and therefore inadmiſſible, as being contrary to one of the foundeſt laws of nomenclature. Nor is this genus, probably, any more than *Actinea*, diſtinct from *Helenium*, next to which *Actinella* is placed by Purſh, Fl. Amer. Sept. 494. 560, who deſcribes it as follows, citing Perſ. Syn. v. 2. 469, and, as a ſynonym, *Actinea*, Juſſ. in Ann. du Muſ. v. 2. 425.—Claſs and order, *Syngeneſia Polygamia-ſuperflua.*

Eſſ. Ch. Receptacle naked. Seed-crown of from four to ſix chaffy-awned ſcales. Calyx of many equal leaves.

1. A. *lanata.*—Clothed all over with woolly down. Leaves linear; pinnatifid upwards. Stalks elongated, ſingle-flowered. Radiant florets with two teeth. Seeds five-ſided, ſmooth.—Found by Governor Lewis, on the high lands of the Kooſkooſky. Perennial, flowering in June and July. The whole *herb* is clothed with white woolly down. *Stem* branched, round. *Branches* alternate, ſubdivided in the upper part; their ultimate diviſions ſingle-flowered. *Leaves* of the main ſtem alternate, linear, dilated and pinnatifid upwards, toothed; thoſe of the branches linear, undivided. *Flower-ſtalks* terminal, ſwelling towards the end. *Flowers* orange-coloured, the ſize of *Tagetes erecta.* *Calyx* oblong, ſimple, of from twelve to fourteen linear-lanceolate acute leaves. *Florets* of the *radius* from twelve to fourteen, oblong, ribbed, each with two teeth; thoſe of the *diſk* tubular, of the ſame colour. *Down* of from four to ſix whitiſh, acute, chaffy ſcales, occaſionally torn. *Seeds* oblong, priſmatic, with five angles. It reſembles in habit Juſſieu's *Actinea* in Ann. du Muſ. v. 2. t. 61. f. 2. *Purſh.*

We are entirely at a loſs to account for the change in the generic name, if the genera are ſuppoſed the ſame, and it ſeems fortunate that both are likely to be ſunk in *Helenium.*

ACTINOCARPUS, from *ακτιν*, *a ray*, and *καρπος*, *fruit*, alluding to the radiating poſition and form of the capſules. Mr. Brown was obliged to invent this very expreſſive name for the *Damaſonium* of Juſſieu, becauſe the latter appellation has been adopted for another genus, in the works of Schreber and Willdenow.—Brown Prodr. Nov. Holl. v. 1. 342. (Damaſonium; Juſſ. Gen. 46. Tourn. t. 132.)—Claſs and order, *Hexandria Hexagynia.* Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Aliſmaceæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of three ovate, concave, permanent leaves. *Cor.* Petals three, roundiſh, flat, ſpreading, larger than the calyx, deciduous. *Stam.* Filaments ſix, awl-ſhaped, ſhorter than the corolla; anthers roundiſh. *Piſt.* Germens ſix or eight, erect, combined at the baſe; ſtyles ſhort, ſpreading; ſtigmas ſimple. *Peric.* Capſules as many, combined at the baſe, ſpreading in the form of a ſtar, compreſſed, pointed, of one cell, burſting at the upper edge. *Seeds* two, elliptical, ſtalked, one erect, inſerted into the bottom of the capſule, the other at its curve, horizontal.

Eſſ. Ch. Calyx of three leaves. Petals three. Capſules ſix or eight, compreſſed, combined at the baſe, ſpreading ſtar-wiſe. Seeds two.

1. A. *Damaſonium.* Great Starry-plantain. (Aliſma Damaſonium; Linn. Sp. Pl. 486. Willd. Sp. Pl. v. 2. 277. Sm. Fl. Brit. 401. Engl. Bot. t. 1615. Curt. Lond. faſc. 5. t. 28. Ait. Hort. Kew. v. 2. 332. Damaſonium ſtellatum; Dalech. Hiſt. 1058. Tourn. Inſt. 257. Raii Syn. 272. Plantago aquatica minor ſtellata; Ger. Em. 417.)—Capſules ſix, burſting lengthwiſe; without wings at the baſe.—Native of watery places on a gravelly ſoil, in England, near London, as well as in Shropſhire, Suffolk, and Suſſex. It grows alſo in France and Siberia; flowering in June and July. The *root* is perennial, of many long ſimple fibres, as uſual with aquatic herbs. *Leaves* all radical, floating, ſtalked, elliptic-oblong, ſmooth, two inches long, with a ſtrong mid-rib, and two finer ribs, at each ſide, near the margin. *Footſtalks* dilated and winged below. *Flower-ſtalks* one or two, radical, erect, taller than the leaves, round, ſimple, each bearing two or three umbels of whitiſh *flowers*, giving it a whorled appearance. The *capſules* reſemble thoſe of the *Illicium*, or Starry Aniſe, in ſize and general figure.

2. A. *minor.* Smaller Starry-plantain. Br. n. 1.—“ Capſules eight, burſting tranſverſely; with eight permanent wings at the baſe. Leaves three-ribbed.”—Native of the neighbourhood of Port Jackſon, New South Wales, where it was obſerved by Mr. Brown.

We have here admitted this genus, from deference to the authority of Mr. Brown, who eſteems it abundantly different from *Aliſma*, in the definite number of the *capſules*, their ſtellated diſpoſition, their combination at the baſe, and their two *ſeeds*. In the habit of the plants there is no difference.

The Linnæan remark that "there is rarely a genus in which one or other part of the fructification does not prove leſs conſtant, or uniform, than the reſt," *Phil. Bot. ſect.* 170; a rule too much neglected by founders of new genera in all ages and countries, ſhould teach us caution in every inſtance, and in the preſent perhaps might juſtify keeping the Linnæan Alisma entire. See that article.

ACTINOTUS, ſo named by M. Labillardiere, Nov. Holl. v. 1. 67, from ακτινωτος, *radiated*, alluding to the form of the involucrum. See Eriocalia, which laſt name is retained by Profeſſor Sprengel, in his *Prodr. Plant. Umbellif.* 27, who gives the following eſſential character of this very curious genus.

Fruit ovate, villous, with five ſlender ribs, and crowned by the calyx. Umbel capitate. Involucrum very long, woolly.

The only two ſpecies hitherto diſcovered are deſcribed in their proper place.

ACTON, ſecond article, for 853 *r.* 885. Add, Alſo, a town of Vermont, in the county of Windham, containing 245 inhabitants.

ACWORTH, l. 3, in 1810, 1523 inhabitants.

ADAIR, in *Geography*, a county in the diſtrict of Kentucky, which, with the town of Columbia, has 6011 inhabitants, including 956 ſlaves.

ADAM, Robert. For Kirkaldy, in Fifeſhire, *r.* Edinburgh; and for Edinburgh *r.* that city.

ADAMAH. For Nephtali *r.* Naphtali.

ADAMS, in *Geography*, l. 2, *r.* 1763. At the cloſe, add —Alſo, a town of New Hampſhire, in the county of Coos, containing 244 inhabitants.—Alſo, a county of Ohio, containing 9434 inhabitants.—Alſo, a townſhip of Ohio, in the county of Waſhington, having 620 inhabitants.—Alſo, a county of Pennſylvania, containing 15,152 inhabitants, of whom 71 are ſlaves.

ADANSON, Michael, in *Biography*, the article already given requires ſome correction. This celebrated botaniſt belonged to a Scottiſh family, attached to the fortunes of the Pretender. He died of *mollities oſſium*, Auguſt 3d, 1806, and not before, aged 79 years and 4 months. M. Cuvier, in the *Memoires de l'Inſtitut*, *v.* 7, has publiſhed an elaborate *eloge* of Adanſon, in which great juſtice is done to his ardour and acuteneſs in the purſuit of botany, and to his patience and magnanimity under great ſufferings and privations, incident to the political convulſions of his country. The writer of this knew him at Paris in 1786. He was evidently a man of an active and penetrating mind, but devoted to his own imaginations and hypotheſes, always attacking, as might be expected, the botanical ſyſtem of Linnæus, but betraying a weakneſs unworthy of his own talents, in contemptuouſly reprobating the whole principles and performances of the illuſtrious Swede. Yet we are poſſeſſed of two letters from Adanſon to Linnæus, both amicable and complimentary in the higheſt degree. In the firſt, dated June 28, 1754, the writer offers to communicate his diſcoveries and remarks made at Senegal, ſpeaks of Gum *Bdellium* as the *Thus*, or Frankincenſe, of Europeans, uſed for fumigation in churches, and exhorts Linnæus to continue to illuſtrate botanical ſcience. The ſecond, dated October 2, 1758, acknowledges the receipt of a moſt welcome letter from Linnæus; laments the recent death of Anthony de Juſſieu, and the illneſs of Bernard de Juſſieu, which obliged Adanſon to undertake the department of herborizing with the ſtudents. He ſubjoins an account of the African tree Baobab, which Bernard de Juſſieu had named *Adanſonia*, and gives its natural generic character at length, profeſſedly in the Linnæan manner, with ſeveral articles of information which Linnæus afterwards introduced into his account of *Adanſonia*. This letter moreover contains ſome matters relating to Zoology; mentions the great want of accuracy in the characters of almoſt all the exotic genera of plants, deſcribed by travellers, which the writer had examined at Senegal, and concludes with moſt reſpectfully thanking Linnæus for his promiſe to make Adanſon a member of the Upſal Academy of Sciences. This promiſe appears never to have been fulfilled. It might well be diſpenſed with when Adanſon, in the following year, read before the *Academie des Sciences*, at Paris, that hiſtory of botany, which now makes a part of the preface of his work, entitled *Familles des Plantes*, publiſhed in 1763. In this the ſyſtem of Tournefort is exalted above the natural as well as artificial methods of Linnæus, and the perſon whoſe correſpondence he had been courting, and to whoſe "favour and friendſhip" he had ſo lately recommended himſelf, is depreciated in the moſt contemptuous manner, in almoſt every thing he had done for the ſcience of botany. This has been attributed to the correſpondence of Adanſon being ſlighted by Linnæus; but there was hardly time for ſuch a conſequence. He rather appears to have found it expedient and popular to attack the fame of the great naturaliſt, to whoſe merit the French were then becoming ſenſible, and who threatened to eclipſe the honours ſo long enjoyed by Tournefort. Notwithſtanding Tournefort's merits, Adanſon tells us, p. 154, that "he has reaſon to think his own *Familles* will be adopted, as containing the ſum of all the knowledge acquired in the ſcience of botany." An author ſeldom errs more than when he propheſies the ſucceſs of his own works. Had Adanſon foretold that his performances would never be refuted, he had been right, for they have ſlept in almoſt total neglect. We have given a ſufficient account of his method and nomenclature, under the head of Natural Orders. We are aware that it is ſtill popular at Paris to commend him, nor would we deprive him of any praiſe which he can enjoy, without injuſtice to his predeceſſors, or without his authority leading to ſcientific error, and hiſtorical miſtake.

ADDISON, Joseph, l. 2, *r.* Ambroſbury for Abroſbury.

Addison, *County*, l. 5, contained, in 1810, 19,998 inhabitants, diſperſed in 24 townſhips.

Addison, l. 4, for 401 *r.* 1100. Add—Alſo, a town of Waſhington county, in the diſtrict of Maine, containing 399 inhabitants.—Alſo, a townſhip of Pennſylvania, in the county of Somerſet, having 678 inhabitants.

ADENANTHOS, in *Botany*, ſo named by Labillardiere, from αδην, *a gland*, and ανθος, *a flower*, on account of the glands, in the form of ſcales, attached to the permanent baſe of the corolla.—Labill. Nov. Holl. v. 1. 28. Brown Tr. of Linn. Soc. v. 10. 151. Prodr. Nov. Holl. v. 1. 367.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Cal.* Involucrum ſingle-flowered, of from four to eight ſhort, imbricated leaves. *Cor.* of one petal, inferior, tubular, cut round near the baſe, and from above that part deciduous; its limb in four deep, lanceolate, flat ſegments, turned to one ſide. Nectary four glands, united with the permanent baſe of the corolla at its inſide. *Stam.* Filaments four, ſhort, inſerted into the diſk of each ſegment of the corolla; anthers oblong, erect. *Piſt.* Germen ſuperior, roundiſh; ſtyle thread-ſhaped, longer than the corolla; ſtigma vertical, awl-ſhaped, rather thicker than the ſtyle. *Peric.* Nut tumid, of one cell, with a ſingle *ſeed*.

Eſſ. Ch. Involucrum imbricated, ſingle-flowered. Corolla four-cleft, ſplitting circularly near the baſe. Nectary of four glands, attached to the bottom of the corolla. Style longer than the corolla. Stigma vertical, awl-ſhaped. Nut tumid.

A ſhrubby New Holland genus. *Leaves* ſcattered, various in the different ſpecies. *Flowers* axillary, ſolitary, reddiſh; rarely terminal, ſomewhat aggregate, and yellowiſh. *Brown.*

1. A. *obovata.* Obovate-leaved Adenanthos. Labill. Nov. Holl. v. 1. 29. t. 37. Brown n. 1.—Leaves obovate, entire, ſmooth.—Obſerved by M. Labillardiere, as well as by Mr. Brown, on ſtony hills in Lewin's land, on the ſouth coaſt of New Holland. *Branches* round, thickly clothed with coriaceous *leaves,* near an inch long, broadly obovate, triple-ribbed, beſprinkled with blackiſh glandular dots; their lateral ribs ſending off veins towards the margin. *Flowers* axillary, ſolitary, twice as long as the leaves. *Involucrum* of ſix or eight ſmooth ſcales. Points of the *corolla* ſcarcely hairy on the inner ſide. *Style* hairy, except at the top and bottom. *Stigma* rather ſwelling. *Labill.*

2. A. *cuneata.* Wedge-leaved Adenanthos. Labill. Nov. Holl. v. 1. 28. t. 36. Brown n. 2.—Leaves wedge-ſhaped, ſilky; bluntly toothed at the extremity.—Gathered near the ſea-coaſt at Lewin's land, by Brown and Labillardiere. We have a ſpecimen from the latter. This *ſhrub* is about the height of a man. *Leaves* hardly an inch long, erect, ſtalked, ſilky and ſilvery on both ſides, with three principal ribs, ſometimes combined at the lower part; their abrupt extremity unequally and bluntly notched. *Flowers* towards the tops of the branches, axillary, ſtalked. *Involucrum* fringed, ſilky, as well as the outſide of the *corolla,* whoſe ſegments are denſely bearded on the inſide. *Style* ſwelling and hairy in the middle.

3. A. *ſericea.* Silky-leaved Adenanthos. Labill. Nov. Holl. v. 1. 29. t. 38. Brown n. 3.—Leaves thread-ſhaped, twice-ternate, ſilky. Flowers axillary, ſolitary. Style ſmooth.—Native of the ſandy ſea-coaſt of Lewin's land, where it was found by the authors cited. Our ſpecimen was gathered by Mr. Menzies, at King George's ſound, on the weſt coaſt of New Holland. The *branches* are round and ſilky, the younger ones moſt denſely leafy. *Leaves* about an inch and a half long, twice or thrice deeply three-cleft, in narrow blunt, thread-ſhaped ſegments, clothed with ſilky hairs. *Flowers* towards the tops of the branches, denſely hairy, rather longer than the leaves. *Style* ſmooth in every part, rather ſwelling in the middle.

4. A. *terminalis.* Terminal-flowered Adenanthos. Brown n. 4.—"Leaves thread-ſhaped, three-cleft; their lateral ſegments cloven; middle one undivided. Flowers terminal, ſolitary or three together. Style ſhaggy."—Gathered by Mr. Brown, at Flinder's land, on the ſouth coaſt of New Holland, in low ground near the ſea-coaſt.

ADENODUS, ſo called by Loureiro, from αδην, *a gland,* becauſe of the glands of the flower, which remain to accompany the fruit.—Loureir. Cochinch. 294.—Claſs and order, *Dodecandria Monogynia.*

Gen. Ch. *Cal.* Perianth inferior, of five lanceolate, reflexed, deciduous leaves. *Cor.* Petals five, ovate, nearly erect, the length of the calyx, divided half way down into many thread-ſhaped ſegments. Nectary five large, depreſſed, permanent, two-lobed glands. *Stam.* Filaments fifteen, ſhort, ſpreading, inſerted into the receptacle; anthers oblong, quadrangular, erect, ſplit and reflexed at the ſummit. *Piſt.* Germen ſuperior, elongated; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma acute. *Peric.* Drupa ovate-oblong, ſmall, ſmooth, ſingle-ſeeded. *Seed.* Nut oblong, rugged.

Eſſ. Ch. Calyx five-leaved, inferior. Petals five, fringed. Nectariferous glands two-lobed, permanent. Drupa with a ſingle ſeed.

1. A. *ſylveſtris.* Cây Côm tláng, of the Cochinchineſe.—Native of woods in Cochinchina. A middle-ſized *tree,* with ſpreading branches. *Leaves* alternate, ovato-lanceolate, ſerrated, ſmooth. *Spikes* nearly terminal. *Flowers* variegated with red and white. *Loureiro.*

De Theis, Gloſſaire de Botanique, 6, has anticipated us in the remark, that this plant approaches the genus ELÆOCARPUS. (See that article.) Indeed we have ſcarcely a doubt of its being one of that genus, though, having ſeen no ſpecimen, we cannot abſolutely aſſert this point. Still leſs can we determine whether Loureiro's plant be any of the ſpecies already known.

ADENOSMA, a word compoſed of αδην, *a gland,* and οσμη, *a ſcent,* which expreſſes the glandular and fragrant nature of the herbage.—Brown Prodr. Nov. Holl. v. 1. 442.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ,* Linn. *Scrophulariæ,* Juſſ. *Scrophularinæ,* Brown.

Eſſ. Ch. Calyx in five deep ſegments; the upper one largeſt. Corolla ringent; upper lip undivided, lower in three equal lobes. Anthers approaching each other. Stigma dilated. Capſule ovate, beaked, ſeparable into two parts. Receptacles united to the ſutures.

1. A. *cærulea.* Blue Adenoſma. Br. n. 1.—Gathered by ſir Joſeph Banks, and Dr. Solander, in the tropical region of New Holland. Seen by Mr. Brown in a dry ſtate only. An annual downy *herb,* beſprinkled with glands, and ſmelling like mint, turning black in drying. The *ſpike* is leafy; or the *flowers* may be termed axillary. *Calyx* rough with jointed hairs, and accompanied by a pair of *bracteas.* *Corolla* blue. *Brown.*

This author remarks, that *Ruellia uliginoſa* and *balſamea* conſtitute a genus nearly akin to the preſent, and that both are related to the order of *Acanthi,* or *Acanthaceæ,* but eſpecially *Adenoſma,* on account of its beaked *capſule.*

ADENOSTEMMA, Forſt. Gen. t. 45. See LAVENIA.

ADEODATUS, POPE, in *Biography,* denominated "Dieu donné," God's Gift, was by birth a Roman, and by profeſſion a monk. He became pope in 672, and died in 676.

ADEPS. Subjoin, See CELLULAR *Subſtance.*

ADERME, in *Commerce.* See QUINTAL.

ADIANTUM, in *Botany,* an ancient Latin name, which by Pliny's account, book 22. chap. 21, appears to have belonged to the very ſpecies of fern, *Adiantum Capillus-Veneris,* to which it is ſtill applied. But that account, like half his work, as we have it, is a manifeſt jumble of various ill-aſſorted materials. What he hints there, as well as in the beginning of the 17th chapter of his 21ſt book, relative to the permanency of the leaves, whether originally reported of the ſame plant, or of ſome other, is not contrary to truth, inaſmuch as this fern is almoſt always verdant. His derivation of the name, from α, *without,* or *contrary to,* and διαινω, *to moiſten,* becauſe water trickles off the leaves without wetting them, may ſatisfy us, for want of a better; but how much better would ſuch an explanation ſuit any glaucous herb, like the cabbage.—Linn. Gen. 560. Schreb. 757. Willd. Sp. Pl. v. 5. 427. Mart. Mill. Dict. v. 1. Swartz Syn. Fil. 120. Sm. Fl. Brit. 1138. Prodr. Fl. Græc. Sibth. v. 2. 278. Brown Prodr. Nov. Holl. v. 1. 155. Ait. Hort. Kew. v. 5. 524. Purſh 670. Juſſ. 15. Tourn. t. 317. Lamarck Dict. v. 1. 40. Illuſtr. t. 870.—Claſs and order, *Cryptogamia Filices.* Nat. Ord. *Filices dorſiferæ, annulatæ.*

Eſſ. Ch. Maſſes of capſules oblong, or roundiſh, inſerted into each marginal, reflexed, limited involucrum.

Such is the character of the original *Adiantum* of all authors, a numerous genus, from which Dr. Swartz has firſt diſtinguiſhed his CHEILANTHES, to be treated of hereafter in its proper place, whoſe character is, that the maſſes of *capſules* are really placed on the margin of the leaf itſelf, each being covered only by its reſpective *involucrum*. The difference is nice, and eſcaped every previous obſerver, but we believe it to be a very ſound one, inaſmuch as it is attended by a difference of habit, and the *involucrum* of *Cheilanthes* is not always neceſſarily interrupted, though the maſſes of capſules, *ſori*, are diſtinct.

In our former article, (ſee ADIANTUM,) forty-ſix ſpecies are briefly enumerated, with a particular account of two, which need not here be repeated. As the genus now ſtands, Willdenow has fifty-four, (beſides nineteen of *Cheilanthes*,) diſpoſed in ſections, of which we ſhall give examples, with additions of new ſpecies.

Sect. 1. *Frond ſimple.* Three ſpecies in Willdenow.

1, A. *reniforme*, Linn. Sp. Pl. 1556; 2, *aſarifolium* of Willdenow, Lamarck f. 2; and 3, *philippenſe*, Linn. Sp. Pl. 1556. We have none to add. For *A. ſagittatum*, ſee LINDSÆA.

Sect. 2. *Frond ternate.*

4, A. *triphyllum* only. Sm. Plant. Ic. t. 74.

Sect. 3. *Frond pinnate.* Twelve ſpecies in Willdenow.

5, A. *macrophyllum*, Swartz Ind. Occ. 1707; 6, *obliquum*, Willd.; 7, *lunulatum*, Willd. Phytog. t. 9. f. 1; 8, *arcuatum*, Sw.; 9, *pumilum*, Sw. Pluk. Phyt. t. 251. f. 4; 10, *caudatum*, Linn. Mant. 308; 11, *hirſutum*, Willd. from the iſland of Mauritius; 12, *rhizophorum*, Sw. Syn. 320, from the ſame country. We have two to add.

A. *platyphyllum.* Broad-leaved Maidenhair. Swartz in Stockh. Tranſ. for 1817. 74. t. 3. f. 6.—Frond pinnate; leaflets ſtalked, ovate, taper-pointed, nearly entire; oblique, and dilated upwards, at the baſe; glaucous beneath. Dots oblong, contiguous along the whole margin.—Native of ſhady woods in Braſil. *Freyreis.* A foot high, or more, conſiſting of from three to ſix alternate *leaflets*, two inches long and one broad, with numerous divaricating veins; the barren ones very inconſpicuouſly ſerrated. *Common ſtalk* ſmooth, of a ſhining black. The inſertion of the *capſules* is by no means well explained, either in the figure or deſcription.

A. *paradoxum.* Ambiguous Maidenhair. Br. n. 1.—"Frond pinnate; leaflets heart-ſhaped, oblong-ovate, or lanceolate; their veins underneath obſolete. Dots linear, uninterrupted."—Gathered by Mr. Brown, near Port Jackſon, New South Wales.

Sect. 4. *Frond partly bipinnate.* Five ſpecies.

13, A. *deltoideum*, Sw. Ind. Occ. 1705; 14, *denticulatum*, ibid. 1711; 15, *falcatum*, ibid. 1715; 16, *varium*, Willd., found by Humboldt and Bonpland, near Caripe, in South America; 17, *ſerrulatum*, Linn. Sp. Pl. 1557.

Sect. 5. *Frond three-branched, digitate, or pedate; the branches pinnate.* Seven ſpecies.

18, A. *ternatum*, Willd., found near Caripe, in South America, by Humboldt and Bonpland; 19, *radiatum*, Linn. Sp. Pl. 1556; 20, *pedatum*, ibid. 1557, ſee our former article; 21, *Lindſæa*, Cavan. Leccion. 271, gathered by Louis Née, at Quito; 22, *patens*, Willd., found by Bredemeyer at the Caraccas; 23, *pubeſcens*, Willd., which is *pedatum* of Forſt. Prodr. 83; 24, *flabellulatum*, Linn. Sp. Pl. 1557. This laſt is unqueſtionably *A. fuſcum*, Retz. Obſ. faſc. 2. 28. t. 5, the figure of which preciſely anſwers to the Linnæan ſpecimen of *flabellulatum*, except that the upper ſides of the *branches* in the latter are clothed with fine ſhort ruſty down, like velvet, which might eſcape the notice of profeſſor Retzius. The *common ſtalk*, except at the very top, is quite ſmooth and naked, as deſcribed by him.

Sect. 6. *Frond twice, thrice, or four times, pinnate.* Thirty ſpecies.

25, A. *Lancea*, Linn. Sp. Pl. 1557; 26, *ſtriatum*, Sw. Ind. Occ. 1717. Jacq. Ic. Rar. t. 646; 27, *tetraphyllum*, Willd., found by Humboldt and Bonpland near Caripe; 28, *politum*, Willdenow, found by the ſame at Cumana; 29, *pyramidale*, Willd., which is *Polypodium pyramidale*, Linn. Sp. Pl. 1554. This is *Filix ramoſa pyramidalis, pinnis parvis*, Petiv. Fil. n. 40. t. 4. f. 12, not f. 2. Linnæus adopted this ſpecies entirely from Petiver's figure, and was thus led to make it a *Polypodium*. But that figure is copied from *Lonchitis ramoſa tenuis, pediculis ſpinoſis*, Plum. Fil. 42. t. 54, where the characters and habit of an *Adiantum* are conſpicuous; 30, *melanoleucum*, Willd., adopted by this author, without ſeeing a ſpecimen, from *Adiantum lunulis albicantibus ſignatum*, Plum. Fil. 79. t. 96; 31, *criſtatum*, Linn. Sp. Pl. 1558; 32, *nervoſum*, Swartz Syn. 123. (ſee *hiſpidulum*, Br. n. 2, at the end of this ſection); 33, *hiſpidulum*, Swartz Syn. 124 and 321, ſuſpected by Mr. Brown to be the ſame as n. 32; 34, *villoſum*, Linn. Sp. Pl. 1558; 35, *monoſoratum*, Willd., gathered at the Caraccas by Bredemeyer; 36, *ſerrato-dentatum*, Willd., found by Humboldt and Bonpland near Caripe, and in Braſil; 37, *crenatum*, Willd., taken up entirely from *Lonchitis ramoſa, rotundè crenata*, Plum. Fil. 41. t. 53; 38, *pulverulentum*, Linn. Sp. Pl. 1559; 39, *umbroſum*, Willd., found by Bredemeyer, in ſhady ſituations at the Caraccas; 40, *trapeziforme*, Linn. Sp. Pl. 1559, a Weſt Indian fern, ſtrangely ſuppoſed to grow in Scotland, becauſe Sibbald's rude figure of a variety of *Aſplenium marinum* was taken for it; ſee Sm. Fl. Brit. 1128; 41, *pentadactylon*, Langſdorff and Fiſcher, Ic. Fil. t. 25, found in Braſil; 42, *affine*, Willd., which is *trapeziforme* of Forſt. Prodr. 84. "Schkuhr Crypt. t. 121. b;" 43, *Capillus Veneris*, Linn. Sp. Pl. 1558. Fl. Brit. 1138. Engl. Bot. t. 1564, ſee our former article; 44, *emarginatum*, Willd., found by Bory de St. Vincent, on rocky margins of torrents in the iſle of Bourbon; 45, *cuneatum*, Langſdorff and Fiſcher, Ic. Fil. t. 26, found in Braſil; 46, *tenerum*, Swartz Ind. Occ. 1719; 47, *fragile*, ibid. 1721; 48, *concinnum*, Willd., which is *tenerum*, Schkuhr Cryt. t. 121, (but not of other authors,) gathered by Humboldt and Bonpland in the Caraccas; 49, *fumarioides*, Willd., communicated by Flügge, from the iſle of Bourbon; 50, *æthiopicum*, Linn. Sp. Pl. 1560; 51, *trigonum*, Labill. Nov. Holl. v. 2. 99. t. 248. f. 2, conſidered by Mr. Brown as not different from the following; 52, *aſſimile*, Swartz Syn. 125 and 322. t. 3. f. 4; 53, *pallens*, Swartz Syn. 125 and 323, figured in Pluk. Phyt. t. 403. f. 2; 54, *polyphyllum*, Willd., found at the Caraccas by Bredemeyer. We ſubjoin the following.

A. *hiſpidulum.* Roughiſh New Holland Maidenhair. Br. n. 2. Swartz Syn. 124? See n. 33, above. (A. nervoſum; Swartz Syn. 123? See n. 32, above. A. pedatum; Forſt. Prodr. 83, on the authority of his herbarium.)—Frond doubly pinnate; loweſt branches divided; leaflets ovate-rhomboid, toothed in front, ſtriated, rather hairy, and rough. Involucrum nearly orbicular, hairy. Common ſtalk and ribs rough.—Gathered by Dr. White, as well as by Mr. Brown, in New South Wales, and by the latter in the tropical part of New Holland. A foot high, or more, with a ſtrong tufted *root*, whoſe crown is ſcaly. *Stalks* purpliſh-black, harſh. *Leaflets* ſomewhat ſtalked, numerous on each long partial *branch*, crowded, oblique, jagged, half an inch in length, of a fine green. *Involucrums* crowded moſt about the inner, or upper, angle of the baſe, brown, round or kidney-ſhaped, rough with fine briſtly hairs; their under ſide covered with little brown crowded *capſules*, which are quite unconnected with the leaf.

A. *formoſum*. Elegant New Holland Maidenhair. Br. n. 3.—" Frond repeatedly compound, deltoid; branches triply pinnate; leaflets rhomboid, obtuſe, ſmooth; the lower ones cut. Involucrum kidney-ſhaped. Partial ribs downy. Common ſtalk rough."—Diſcovered by Mr. Brown, near Port Jackſon, New South Wales. We know not that we have ever ſeen a ſpecimen.

A. *aſſimile*. Rounded New Holland Maidenhair. Br. n. 4. Swartz Syn. 125 and 322. t. 3. f. 4. (A. trigonum; Labill. Nov. Holl. v. 2. 99. t. 248. f. 2; ſee n. 51 and 52 above.)—Frond repeatedly compound, very ſmooth; leaflets roundiſh-rhomboid, deeply notched in front; the notches contracted, each bearing a ſmooth kidney-ſhaped involucrum. Common ſtalk and ribs perfectly ſmooth.—Gathered by Dr. White and Mr. Brown, in the neighbourhood of Port Jackſon, and by the latter, as well as M. Labillardiere, on the ſouth coaſt of New Holland, and in Van Diemen's iſland. From one to two feet high, compoſed of numerous little, fan-like, ſtalked, ribbed, bright-green *leaflets*, between whoſe rounded marginal ſegments the ſmooth, light-brown *involucrums* are ſtationed. Theſe by age become reflexed, and turn up the numerous pale *capſules* which cover their under ſurface.

A. *ſubcordatum*. Heart-leaved Maidenhair. Swartz in Stockh. Tranſ. for 1817. 75.—" Frond triply pinnate; leaflets ſtalked, ſomewhat heart-ſhaped, pointed, ſlightly crenate, with radiating veins. Involucrums at each margin, roundiſh-creſcent-ſhaped."—Gathered by Mr. Freyreis, in ſhady woods in Braſil. *Common ſtalk* round, dark purple, ſmooth and poliſhed. *Frond* eighteen inches long, its outline ovate, or deltoid. Primary and ſecondary *branches* alternate, widely ſpreading, ſtraight, round, ſmooth, the colour of the ſtalk. *Leaflets* alternate, rather diſtant, ſome regular, others oblique and dilated at the upper angle of the baſe, an inch in length, with a long point to each; ſmooth on both ſides; ſtreaked beneath with copious, forked, radiating veins, and ſlightly glaucous; the margin obſcurely ſerrated. *Common rib* ſlightly zigzag, poliſhed. *Dots* at the upper and under edges, not at the baſe or apex, roundiſh, diſtinct, covered by brown creſcent-ſhaped *involucrums*. *Swartz*. This mode of expreſſion muſt not be taken literally, for then the plant would be a *Cheilanthes*. The author adds, that this ſpecies is very diſtinct in the ſhape of its *leaflets*; for ſo only can we underſtand "*forma pinnarum*," as meaning *pinnularum*.

A. *intermedium*. Intermediate Maidenhair. Swartz in Stockh. Tranſ. for 1817. 76.—" Frond doubly pinnate; leaflets halved, wedge-ſhaped, oblong-rhomboid, obtuſe, ribbed and ſtriated; with a right angle at the upper ſide of the baſe; ſerrated and fructifying at the front and apex. Stalk and ribs rough and downy."—Gathered by Mr. Freyreis in low woods, in the interior part of Braſil, in September. *Root* creeping. *Common ſtalks* a foot high, triangular, rigid, roughiſh, browniſh-black, beſet with ruſty hair. *Fronds* half as long, deltoid: firſt diviſions oppoſite, linear-lanceolate, curved upwards, of three pair of *leaflets*, half an inch in length, beſides an odd one rather longer, all ſomewhat ſtalked, ſlightly falcate, obtuſe, crowded, ſmooth on both ſides, of a browniſh-green. *Dots* four or five, diſtinct, each with a ſemicircular, curved, brown *involucrum*. Intermediate, as it were, between *criſtatum* of Linnæus, and *nervoſum* of Swartz, n. 31 and 32, but differing from the former in having the *common ſtalk* not rough with prominent points, nor the lower *branches* deeply divided; from the latter in having wedge-ſhaped *leaflets*, ſomewhat falcate in front, and other particulars. It is perhaps too nearly related to *A. acuminatum* of Deveaux. *Swartz*.

ADJIDSING. See BUNDELA and REWAH.

ADIPOCIRE, in *Chemiſtry*, is deſcribed at length in the Cyclopædia; but the curious fact that this ſubſtance forms a principal ingredient in ſome ſpecies of BILIARY *Calculi* has been omitted under both articles.

ADJUSTMENT, the ſettling of the averages or loſſes on policies of aſſurance. See AVERAGE.

ADONIS, in *Botany*, was ſo named in memory of the favourite of Venus, reported by the poets to have been changed, by that goddeſs, into a flower. But whether ours is the very plant, known by this name to the ancients, would be almoſt as difficult to prove as the original fact. Our former article requires correction, in conſequence of the publication of De Candolle, by which we have profited ſo much in ACONITUM, ACTÆA, &c.—De Cand. Syſt. v. 1. 220. Linn. Gen. 281. Schreb. 377. Willd. Sp. Pl. v. 2. 1303. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 586. Prodr. Fl. Græc. Sibth. v. 1. 379. Ait. Hort. Kew. v. 3. 350. Juſſ. 232. Lamarck Illuſtr. t. 498. Gærtn. t. 74.—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Cand.

Gen. Ch. *Cal.* Perianth inferior, of five obtuſe, concave, cloſe-preſſed, ſomewhat coloured, deciduous leaves, ſometimes with a ſmall ſpur at the baſe. *Cor.* Petals from five to fifteen, oblong, obtuſe, poliſhed, with ſimple naked claws. *Stam.* Filaments numerous, very ſhort, awl-ſhaped, inſerted into the baſe of the receptacle; anthers oblong, inflexed. *Piſt.* Germens numerous, ovate, inſerted into the oblong-conical receptacle, crowded, above the ſtamens, each pointed with a very ſhort, partly decurrent, ſtyle; ſtigmas acute, reflexed. *Peric.* none. *Recept.* oblong, ſpiked. *Seeds* numerous, irregular, angular; gibbous at the baſe; reflexed at the point, rather prominent, without awn or wing.

Eſſ. Ch. Calyx of five leaves. Petals from five to fifteen, deſtitute of nectaries. Seeds naked.

Herbaceous plants, with leafy *ſtems*. *Leaves* deeply cut, in a pinnate manner, their lobes many-cleft, in very numerous, linear ſegments. *Involucrum* none. *Flowers* ſolitary, at the ſummits of the ſtem, or branches, yellow, ſcarlet or crimſon, never blue.

All the ten ſpecies are found in Europe, or in the adjoining countries of northern Africa and Aſia; thoſe of the firſt ſection in cultivated plains; of the ſecond in rugged mountainous ſpots.

The perennial kinds have acrid, bitteriſh, purgative *roots*, capable of ſupplying the place of Hellebore. The annual ones are almoſt inactive.

The genus is diviſible into two ſections, by the habit and duration, confirmed by differences in the *flowers* and *fruit*, as follows.

Sect. 1. *Adonia*. De Candolle.

Adonis of C. Bauh. Pin. 178.

Petals from five to ten, concave or flat. *Stam.* eighteen or twenty. *Seeds* collected into an ovate or cylindrical ſpike, always ſmooth, each beaked with a ſtraight conical ſtyle. *Roots* pale, annual, tapering, but little divided. All theſe annual ones are ſo nearly akin, that they have been taken by ſeveral authors, perhaps not improperly, for varieties of one ſpecies. The following ſynonyms therefore are equally applicable to all of them.

Adonis. Matth. Valgr. v. 2. 257.

Flos Adonis, aliis Eranthemum. Bauh. Hiſt. v. 3. p. 1. 125, 126.

Adonis radice anna. Linn. Hort. Cliff. 231, not 321. Sauv. Monſp. 253.

A. annua. Lamarck Dict. v. 1. 45. Brot. Luſit. v. 2. 376.

A. n. 1158. Hall. Hiſt. v. 2. 66.

The following plants may, in M. De Candolle's opinion, be eſteemed, with equal propriety, either ſpecies or varieties. He therefore propoſes them with heſitation, recommending them to the obſervation of practical botaniſts. Whatever difficulties may attend ſome of theſe, we are perſuaded that they cannot all be united, even though the *autumnalis* and *æſtivalis* ſhould prove the only two that are permanently diſtinct, and the foundations of all the reſt.

1. A. *autumnalis.* Corn Adonis, or Pheaſant's-eye. Linn. Sp. Pl. 771. De Cand. n. 1. Willd. n. 2. Sm. Prodr. Fl. Græc. Sibth. n. 1263. Fl. Brit. n. 1. Engl. Bot. t. 308. Curt. Lond. faſc. 2. t. 37. (Flos Adonis; Cluſ. Hiſt. v. 1. 336. Raii Syn. 251. Park. Parad. 293. f. 5. Ger. Em. 387. Lob. Ic. 283. Adonis; Camer. Epit. 647. A. hortenſis, flore minore atrorubente; Moriſ. ſect. 6. t. 8. f. 1. Eranthemum flore rubro; Beſl. Eyſt. æſtiv. ord. 5. t. 11. f. 2.)—Calyx ſmooth. Petals concave, converging, ſcarcely larger than the calyx. Seeds ſomewhat reticulated, collected into an ovate head. Stem branched.—Native of corn-fields in various parts of Europe, from Germany to Greece, flowering through the ſummer to the end of autumn; not frequent in England, except in gardens, where it is often cultivated amongſt other hardy annuals, and as De Candolle obſerves, preſerves itſelf unaltered from ſeed. The *root* is ſomewhat ſpindle-ſhaped. *Stem* branched, buſhy, round, ſtriated, occaſionally downy. *Leaves* alternate, dark green, thrice compound, with innumerable, crowded, rather ſhort ſegments. *Calyx* pale green; ſometimes purpliſh. *Corolla* of that peculiar intenſe crimſon, or blood-colour, which gave occaſion to the name of Pheaſant's-eye, and probably to the original application of the fable to this very plant, whoſe beauty well merits the compliment. Each *petal* has a violet-coloured baſe. *Petals* inverſely heart-ſhaped, uſually about eight. *Fruit* ovate-oblong, meaſuring hardly an inch. *Calyx-leaves* gibbous below their inſertion. M. De Candolle remarks, that there is occaſionally, though rarely, a paler variety. This ſeems, by Dr. Withering's ſpecimens, to be what he found on Saliſbury plain, and took for *æſtivalis.* Its *petals* are rounded, and do not extend beyond the *calyx.*

2. A. *flava.* Yellow Field Adonis. Villars Cat. Straſb. 247. De Cand. n. 2. (A. flore pallido; Camer. Epit. 648. "A. ſylveſtris, flore citrino; Tabern. Ic. t. 790." A. ſylveſtris, flore luteo, foliis longioribus; Mill. Ic. t. 14. f. 2? *De Cand.*)—Calyx ſmooth, with ſhort ſpurs. Petals flat, oblong, twice the length of the calyx. Seeds nearly ſmooth, collected into an oblong head. Stem ſcarcely branched.—Common in corn-fields and vineyards in every part of France, and apparently in Germany alſo, flowering in June and July. The *ſtem* is almoſt always quite ſimple. *Flowers* yellow, or lemon-coloured, rarely pale orange. *Calyx-leaves* elongated and unattached at the baſe, almoſt as in *Sedum* and *Myoſurus.* *Petals* flat, nearly linear. The *flowers* generally almoſt rival the ſize of *A. vernalis,* but there is a variety only half as large; they run into each other. *De Candolle.*

3. A. *micrantha.* Small-flowered Adonis. De Cand. n. 3.—Calyx ſmooth; not ſpurred at the baſe. Petals flat, oblong, rather longer than the calyx. Seeds ſomewhat reticulated, collected into an ovate head. Stem ſomewhat branched.—Found in the ſouth of France, in fields about Toulouſe, Avignon, &c., flowering in May and June. A doubtful ſpecies. *Flower* ſmall, yellow, or flame-coloured. *Germens* few, from ſeven to ten, compoſing a very ſhort head. *Stem* ſimple at the baſe, but often a little branched at the ſummit. *De Candolle.*

4. A. *microcarpa.* Small-fruited Adonis. De Cand. n. 4. (A. annua, flore minimo, ſpicâ tenui longiſſimâ; Moriſ. ſect. 6. t. 9. f. 4?)—Calyx ſmooth. Petals flat, oblong, twice the length of the calyx. Seeds reticulated, collected into an oblong head. Stem nearly ſimple.—Native of corn-fields in Spain, near Tudela; *Dufour:* in the iſle of Ivica; *Delaroche:* in Teneriffe; *Brouſſonet.* Perhaps not diſtinct from *flava,* n. 2. It appears to differ in the *ſtem* not being half ſo tall, with more crowded *foliage.* The *calyx* is ſcarcely, or not at all, ſpurred at the baſe. *Seeds* about half the ſize of *flava,* more numerous, and much more reticulated, in a head eight or nine lines long. The *corolla* is either of a lemon-yellow, or ſomewhat flame-coloured. *De Candolle.* We take the liberty of introducing Moriſon's ſynonym, which ſeems to anſwer beſt to this ſpecies, though applied by De Candolle to the ſeventh.

5. A. *citrina.* Lemon-coloured Adonis. Hoffm. Germ. v. 1. 251, under n. 1. De Cand. n. 5. (Ranunculus arvenſis, foliis chamæmeli, flore minore luteo; Tourn. Inſt. 291? *De Cand.*)—Calyx hairy at the baſe. Petals flat, oblong, longer than the calyx. Seeds collected into an ovate-oblong head. Stem nearly ſimple. Flower almoſt ſeſſile among the leaves.—Native of corn-fields in France, Germany, Teneriffe, &c. A ſmall plant, with an erect, moſtly ſimple, *ſtem,* and little yellow ſolitary *flowers.* Baſe of the *calyx* rough with hairs. Perhaps the ſynonyms may rather belong to *microcarpa,* or to *micrantha.* *De Candolle.*

6. A. *flammea.* Flame-coloured Adonis. Jacq. Auſtr. t. 355. De Cand. n. 6. Willd. n. 3. Ait. n. 3. Hoſt. Syn. 308. Hoffm. Germ. v. 1. 251. (Eranthemum flore flammeo; Beſl. Eyſt. æſtiv. ord. 5. t. 11. f. 3?)—Calyx hairy at the baſe. Petals flat, oblong, ſomewhat acute, longer than the calyx. Seeds collected into a cylindrical head. Stem branched. Flowers ſtalked.—Native of corn-fields in Auſtria, flowering in ſummer; *Jacquin.* In Brunſwick; *Hoffmann.* The *ſtem* is two feet or more in height, branched from the bottom all the way up, furrowed, ſmooth or hairy. *Footſtalks* hairy. *Leaves* light-green, with lanceolate ſegments. *Flowers* large, on long ſtalks. *Calyx* acute, jagged, reddiſh. *Petals* eight or nine lines in length, ſomewhat obovate, but more or leſs acute, and frequently toothed; their colour orange-ſcarlet.

7. A. *æſtivalis.* Tall Scarlet Adonis. Linn. Sp. Pl. 771. De Cand. n. 7. Sm. Fl. Brit. 587, note. Tour on the Continent ed. 2. v. 3. 16. Prodr. Fl. Græc. Sibth. n. 1262. (A. miniata; Jacq. Auſtr. t. 354. Hoffm. Germ. v. 1. 251. A. annua, flore majore phœniceo; Moriſ. ſect. 6. t. 9. f. 3. A. ſylveſtris, flore phœniceo; Bauh. Pin. 178. Anemone tenuifolia; Cord. Annot. 151, good.)—Calyx hairy at the baſe. Petals flat, oblong, obtuſe, twice the length of the calyx. Seeds reticulated, collected into a long cylindrical ſpike. Stem ſlightly branched. Abundant in corn-fields of the ſouth of Europe, France, Italy, &c.; frequent in Greece, according to Dr. Sibthorp, who from that circumſtance, and its coincidence with a figure in the famous old manuſcript copy of Dioſcorides, at Vienna, was led to conſider this ſpecies as the αργεμωνη of that ancient botaniſt.

This *Adonis* is one of the talleſt, with a copiouſly-branched, furrowed *ſtem*; light-green *leaves*; and long-ſtalked *flowers*, which we cannot, with De Candolle, term ſmall ones, being, as far as we have ſeen, of the full ſize of any annual ſpecies of its genus. The *petals* are uſually numerous, of a moſt vivid ſcarlet. *Fruit* long, but not interrupted, except by accident. We cannot but conſider our friend M. De Candolle as having cited Moriſon, on the preſent occaſion, with leſs accuracy than uſual, and we have made an alteration herein; ſee ſpecies 4th.

8. A. *dentata*. Toothed-ſeeded Adonis. "Delile Egypt. 17. Deſcr. t. 53. f. 1." De Cand. n. 8.—"Calyx hairy at the baſe. Petals flat, oval-oblong, rather longer than the calyx. Seeds reticulated; tuberculated and toothed at the baſe; diſpoſed in a long uninterrupted ſpike."—Native of corn-fields and barren ground, in Egypt and Cyprus; as well as in Provence, between Digne and Colmars. The *ſtem* is angular and ſtriated, firm, branched. *Flowers* on ſhort ſtalks. In the Egyptian ſpecimens, the *petals* are oval, yellow, with blackiſh claws; *ſeeds* furniſhed at the baſe with tooth-like prickles, finely corrugated, leſs creſted at the back, and diſpoſed in a ſlender ſpike. In the Provence variety, the *petals* are oblong, and flame-coloured; *ſeeds* leſs toothed or tuberculated at the baſe, more crowded, lying over each other with their creſts, ſo as to form a continued ſpike an inch long. *De Candolle.*

Sect. 2. *Conſiligo*. Matthioli, De Candolle.

Petals from eight to fifteen, always oblong, flat. *Stamens* from 25 to 30. *Seeds*, collected into an ovate head, each ovate, beaked with its hooked recurved ſtyle. *Roots* perennial, thick at the crown, blackiſh, with cluſtered fibres.

9. A. *vernalis*. Spring Adonis. Linn. Sp. Pl. 771. De Cand. n. 9. Willd. n. 4. Ait. n. 4. Curt. Mag. t. 134. Lamarck f. 3. (A. apennina; Jac. Auſtr. t. 44. Elleborus niger verus; Trag. Hiſt. 406, not 206. Helleborinum; Cord. Annot. 93. Helleborus niger ferulaceus; Lob. Ic. 784. Park Parad. 291. f. 6. Ger. Em. 746.)

β. Mentzelii; De Cand. excluding the ſyn. of Linnæus. (Helleborus niger ferulaceus, caule geniculato, flore magno, tulipæ minoris inſtar; Mentz. Pugill. t. 3; copied in Moriſ. ſect. 6. t. 9. f. 2.)

γ. Sibirica, *Patrin*; De Cand. (A. n. 43; Gmel. Sib. v. 4. 200.)

Root ſomewhat tuberous. Stem branched from the bottom. Petals ten, fifteen, or more, elliptic-lanceolate. Calyx downy. Seeds hairy.—Native of mountainous or alpine ſituations, or open hills, in the iſle of Oeland, Germany, the ſouth of France, Switzerland, and Italy. Frequent with us in gardens, flowering in the early ſpring. The tuberous crown of the black perennial *root*, ſends down many long, ſimple, rather ſtout fibres. The *ſtems* are herbaceous, a foot high, ſtriated, leafy, more or leſs branched from the lower part, in an alternate order, rarely beſprinkled with a few looſe ſcattered hairs. *Leaves* crowded, ſeſſile, alternate, ſmooth, in many three-cleft, linear, acute, entire ſegments; channelled above. *Flowers* terminal, ſolitary, nearly ſeſſile, large and handſome, an inch and a half or two inches broad, of a bright ſhining yellow. *Calyx-leaves* concave, ovate, downy, ſtriated. *Petals* twice as long, ſometimes above an inch, uſually ten or twelve, but ſometimes, even in a wild ſtate, above twenty; purpliſh beneath; varying in breadth, but always ſomewhat elliptical, either obtuſe or acute, a little crenate. *Stamens* numerous, capillary, ſhort, with vertical quadrangular *anthers*. *Germens* numerous, ovate, compreſſed, more or leſs covered with ſhort ſoft hairs, and hooked with the recurved *ſtyles*, collected into a globular head, the *ſtalk* much elongated as the *fruit* ripens. We readily follow De Candolle in thinking the plant of Mentzelius, (ſee β.) a very inconſiderable variety, differing only in having ſhort and ſimple *ſtems*, with larger *flowers*: but Linnæus has ſurely committed a great error in referring this plant to his *apennina*. The γ of De Candolle is ſaid to have likewiſe a large flower.

10. A. *apennina*. Apennine Adonis. Linn. Sp. Pl. ed. 1. 548, excluding Mentzelius's ſynonym, ed. 2. 772. Willd. n. 5.—Root ſomewhat tuberous. Stem branched at the top. Petals fifteen, obovate. Calyx ſmooth. Seeds fringed.—Native of Siberia and the Apennines, according to Linnæus, who cultivated this plant at Upſal, as appears by the original ſpecimen in his herbarium. He always conſidered this ſpecies as very near the laſt, and has been unuſually preciſe in marking their differences. The *ſtem* of the preſent is fifteen or eighteen inches high, with ſeveral branches about the upper part, not from the lower. *Segments* of the *leaves* more numerous, lanceolate, and ſhining. *Calyx* yellowiſh, ſmooth, flat, without veins. *Petals* obovate, imbricated, generally more numerous. *Stamens* much reflexed. The *germens* ſeem to be fringed only, not all over downy. Linnæus concludes by obſerving that the former is entirely a vernal plant, as we find it; but the preſent laſts far into the ſummer. Nevertheleſs our intelligent friend M. De Candolle, who never ſaw this ſpecies but in the Linnæan collection, was induced, probably by the ſynonym of Mentzelius, which cannot be the ſame, to reduce it to *vernalis*. We find more difficulty in underſtanding the two following.

11. A. *volgenſis*. Wolga Adonis. De Cand. n. 9. *addend. 545. ("A. apennina; Pallas Nov. Act. Petrop. v. 10." *Steven*, who ſent ſpecimens to De Candolle.)—"Radical and lower ſtem-leaves reduced to ſlightly ſheathing ſcales; middle and uppermoſt leaves ſeſſile. Seeds ſomewhat downy. Calyx externally hairy. Petals ten or twelve, oblong."—Gathered by Mr. Steven, near the banks of the Wolga. Perennial. Intermediate between *vernalis* and *pyrenaica*, differing from the former in having a branched *ſtem*, more diſtant *leaves*, often wanting on the lower part of the *branches*, and much leſs downy *ſeeds*. From the latter it is diſtinguiſhed by having its lower *leaves* abortive, like ſcales, and the *ſeeds*, at leaſt while young, ſomewhat downy. From both it differs in the *calyx* being externally downy or finely hairy, not ſmooth. Mr. Steven met with *A. vernalis* likewiſe in Tauris. *De Candolle.* Theſe remarks of our learned friend cauſe us no ſmall perplexity. All our ſpecimens of *A. vernalis*, from Switzerland and the ſouth of France, as well as the authentic Linnæan ſpecimen, and one from profeſſor Jacquin, have a downy *calyx*, and moſt of them branched *ſtems*. The half-ripe *ſeeds* in Jacquin's plant are ſparingly downy all over; the *germens* of thoſe from Switzerland ſcarcely downy at all.

12. A. *pyrenaica*. Pyrenean Adonis. De Cand. n. 10. "Fl. Franc. v. 5. 635." (A. apennina; Gouan Illuſtr. 33.)—"Radical leaves on long ſtalks, ternate; leaflets in many deep ſegments: upper leaves ſeſſile. Fruit ſmooth. Petals eight or ten, oblong-wedgeſhaped, undivided."—Found by Gouan in the valley of Eynes, in the eaſtern Pyrenees, flowering in July. The other places of growth, mentioned by De Candolle, are all beſt omitted. He directs us in his *Addenda* to ſtrike out the reference to Pallas, as belonging to *A. volgenſis*; and perhaps alſo that of Fiſcher, *A. chærophylla*. To the latter alteration we heartily aſſent. Dr. Fiſcher's own ſpecimen, ſeen in our hands by De

Candolle, has nothing but ſcales in the place of radical *leaves*, and certainly agrees in every reſpect with Jacquin's ſpecimen of *vernalis* above-mentioned. The *calyx* is in the ſame manner hairy at the baſe only, a circumſtance, indeed, on which, the more we enquire into it, the leſs we find reaſon to rely. Our ſpecimen will not admit of an examination of the *germens*. M. De Candolle ſpeaks of his *pyrenaica*, (a ſpecies entirely unknown to us,) as "akin to *vernalis*, but moſt certainly diſtinct. The *ſtem* is often above a foot high, and branched. *Radical leaves* on long three-cleft *footſtalks*. *Flower* nearly ſeſſile, at its firſt expanſion among the uppermoſt leaves. Head of *ſeeds* raiſed on a greatly elongated ſtalk. *Petals* eight to ten, ſmaller and more obtuſe than in *A. vernalis*. *Fruit*, even before it is ripe, ſmooth."

We do not preſume to form any deciſive opinion concerning the perennial ſpecies of *Adonis*, without the examination of ſufficiently perfect ſpecimens, in every ſtate of growth; but it appears to us that they are by no means well determined at preſent, nor do we perceive that any characters hitherto ſuggeſted are ſufficient for the purpoſe. The *vernalis* and *pyrenaica* are probably very diſtinct, for which we have the weighty opinion of De Candolle; but whether the latter may not be found in many other countries, and confounded by the generality of botaniſts with *vernalis*, is a point we cannot ſatisfactorily determine.

ADPRESSA FOLIA, Cloſe-preſſed Leaves, are ſuch as have the upper ſurface cloſely applied to the ſtem, or branch, on which they grow. This is ſo complete in ſome plants, ſuch as *Paſſerina hirſuta*, that only the under ſurface of each leaf being expoſed to the air and light, the latter part appears to perform the functions proper to the upper ſurface of moſt leaves, and, in the inſtance juſt mentioned, aſſumes the deep green hue, and poliſhed cuticle, uſual on the upper ſide of leaves in general. Such is likewiſe the caſe with *Xeranthemum proliferum* and *ſeſamoides* of Linnæus, now referred to ELICHRYSUM. See LEAF.

ADRASTÆA, ſo named by profeſſor De Candolle, from Adraſtea or Adraſtia, a ſurname of the goddeſs Nemeſis, who was a daughter of Oceanus; becauſe the plant in queſtion is a native of New Holland, which has been called by ſome perſons *Oceania*.—De Cand. Syſt. v. 1. 424.—Claſs and order, *Decandria Digynia*. Nat. Ord. *Magnoliæ*, Juſſ. *Dilleniaceæ*, De Cand.

Eſſ. Ch. Calyx inferior, of five permanent pointed leaves. Petals five, oval, ſhorter than the calyx. Filaments flat. Anthers linear, of two cells burſting lengthwiſe. Germens two, globoſe. Styles ſtraight, cloſe together, awl-ſhaped; conical at the baſe. Capſules membranous, of one cell. *Seeds* ſolitary?

1. A. *ſalicifolia*. Willow-leaved Adraſtæa.—Native of bogs in New South Wales. Deſcribed by De Candolle from a dried ſpecimen in Mr. Lambert's collection. This is a ſmall ſhrub, approaching HIBBERTIA, (ſee that article,) in general appearance. The *branches* are round, long and ſlender, reddiſh-brown; downy when very young, but caſting their cuticle in long portions when old. *Leaves* linear, entire, except three or five callous teeth at the extremity, the point being callous; their baſe ſomewhat contracted; their upper ſurface ſmooth, without veins; the under hoary with ſhort ſilky hairs: their length is an inch and a half; breadth three lines; and they reſemble the leaves of *Salix alba*, or of the Olive. *Flowers* at the ends of the young branches, ſolitary or in pairs, ſeſſile between three or four crowded leaves, which exceed them in length. *Calyx-leaves* keeled, covered with cloſe ſilky hairs; their margin membranous; their point tipped with a briſtle. *Stamens* ten, half the length of the calyx. *Germens* ſmooth.

ADRIANOPLE, col. 2, l. 3, *r*. 1453.

ADVICE, in *Commerce*, denotes the information given by *letter* of a bill drawn by one merchant upon another.

ADVOCATE, l. 24, *r*. paſſed A.U. 549. Col. 2, l. 8, *r*. revived.

AECIDIUM, in *Botany*, from αικια, *a wound or injury*, becauſe the parts of a plant to which this genus of paraſitical *fungi* attaches itſelf, always, in conſequence, become diſeaſed, diſcoloured, and either tumid, or, as it were, blaſted.—Perſ. Obſ. Mycol. faſc. 1. 97. Syn. Fung. 204. —Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Head conſpicuous, ſeſſile, round, membranous, at length burſting, with a toothed orifice. Seeds mealy, naked.

This genus is always paraſitical on the backs of the leaves, or on the ſtem, of certain plants. In addition to what is ſaid of it already, we ſhall ſubjoin illuſtrations of a few ſpecies. Perſoon defines twenty, in two ſections.

Sect. 1. *Aggregate. Heads aſſembled in patches, forming blotches on various leaves.* Fourteen ſpecies.

Ae. *cornutum*. Horned Aecidium. Perſ. n. 1. Obſ. Mycol. faſc. 2. 22. t. 4. f. 2, 3. Sowerb. Fung. t. 319. (Lycoperdon corniferum; Fl. Dan. t. 838. L. corniculatum; Ehrh. Crypt. 200.)—Baſe yellowiſh. Heads nearly cylindrical, very long, curved, greyiſh-olive.—Found in autumn, on the leaves of the Mountain Aſh. On the upper ſide of the leaf is ſeen an orange-coloured ſpot; on the under a ſwelling, out of which proceed ſix or ſeven briſtle-like *heads*, a line and a half in length; each rather tumid at the baſe; contracted at the point, where it burſts irregularly.

Ae. *cancellatum*. Reticulated Aecidium. Perſ. n. 2. Sowerb. Fung. t. 410. (Lycoperdon cancellatum; Jacq. Auſtr. v. 1. 13. t. 17. Fl. Dan. t. 704.)—Baſe tawny. Heads oblong, ſplitting into fibrous maſſes, cohering at the ſummit.—Not rare on the leaves of garden pear-trees. We firſt ſaw it on a baking pear at ſir A. Hume's, Wormleybury, many years ago, where it ſtill frequently occurs, without injury to the tree or fruit. The *heads* are much thicker and ſhorter than the foregoing, and when ripe, diſcharge their powdery *ſeeds* between the tough, browniſh, permanent fibres of the *head*, which laſt as long as the leaf, and actually ſeem an extenſion of its woody fibres. We cannot but conceive Mr. Sowerby's t. 409 to be a different plant, belonging to the genus SPHÆRIA (ſee that article); or rather perhaps NÆMASPORA, to be hereafter deſcribed.

Ae. *oxyacanthæ*. White-thorn Æcidium. Perſ. n. 3. (Ae. laceratum; Sowerb. Fung. t. 318. Lycoperdon penicillatum; Fl. Dan. t. 839?)—Baſe unequal, ruſty. Heads aſh-coloured, cylindrical, ſplitting nearly from top to bottom, into numerous, fibrous, ſpreading ſegments.—Found on the leaves, or young buds, of Common Hawthorn. Perſoon deſcribes his ſpecimens as divided to the very baſe, and therefore preſumes the plant of *Fl. Dan.*, which appears not ſplit half way down, may be another ſpecies; but Mr. Sowerby's ſeems intermediate between both, and we can ſcarcely doubt his being the ſame as Perſoon's.

Ae. *tuſſilaginis*. Colt's-foot Æcidium. Perſ. n. 10. Relh. 546. Sowerb. Fung. t. 397. f. 1. (Lycoperdon epiphyllum; Linn. Sp. Pl. 1655. Fl. Suec. ed. 2. 459. With. v. 4. 383.)—Baſe tawny-purple. Heads ſunk, level-topped, with a many-cleft, reflexed border.—On the under ſide of the leaves of Colt's-foot and Butterbur, extremely common, in the form of broad orange-coloured ſpots, beſprinkled with the little ſtarry whitiſh orifices of the *heads*, full of orange powder. *Lycoperdon epiphyllum* of Hudſon and Lightfoot are different from this, and perhaps from each other. *Uredo tuſſilaginis* reſembles our plant in general aſpect, but on near examination will be found leſs diſtinct, in the form of an orange powder, intermixed with the cotton of the Colt's-foot leaf, without diſtinct white ſtarry heads.

Ae. *berberidis*. Barberry Æcidium. Perſ. n. 11. Sowerb. Fung. t. 397. f. 5. (Lycoperdon poculiforme; Jacq. Coll. v. 1. 122. t. 4. f. 1.)—Baſe orbicular, ſcarcely convex. Heads cylindrical, ſomewhat elongated, yellow.—Found on leaves of the Barberry, in cold wet autumnal weather, ſometimes in the ſpring, conſiſting of very conſpicuous and prominent tawny ſpots, the *heads* projecting much. The orifice of each is neither dilated, nor conſpicuouſly toothed or jagged. The whole turns brown, or black, in decay, and may be obſerved in that ſtate on the fallen leaves during winter.

Sect. 2. *Simple. Heads ſcattered, not combined by any diſtinct cruſt, or baſe.* Six ſpecies.

Ae. *euphorbiæ*. Spurge Aecidium. Perſ. n. 15. "Humb. Friberg. 128." ("Lycoperdon euphorbiæ; Schrank. Bavar. v. 2. 631." Eſula degener; Rivin. Tetrap. Irr. t. 113. f. 2.)—Simple, crowded. Heads pale, cylindrical, reflexed at the margin. Powder orange-coloured.—Frequent in ſummer on the leaves of *Euphorbia Cypariſſias*, in Germany, France, and Switzerland, cauſing the whole plant to aſſume a diſeaſed appearance, and often to fail of producing flowers. We ſcarcely think Rivinus, as Perſoon hints, meant to conſider this diſeaſed *Euphorbia* as a diſtinct ſpecies.

Ae. *tragopogi*. Goat's-beard Æcidium. Perſ. n. 15, *b*. Sowerb. Fung. t. 397. f. 2.—Scattered. Heads ſomewhat elliptical, with an irregularly torn white margin. Powder yellow.—On the ſtem and leaves of *Tragopogon pratenſis*. Conſpicuous for its ſhort white heads. *Perſoon.* That author certainly means to deſcribe this as a diſtinct ſpecies from the laſt, though by an error, which ought to have been corrected in printing, he has given the ſame number to both. Hence he has really twenty ſpecies in all, though apparently but nineteen.

Ae. *anemones*. Wood-Anemone Æcidium. Perſ. n. 17. Uſt. Annal. v. 20. 135. (Lycoperdon anemones; Pulten. Tr. of Linn. Soc. v. 2. 311.)—Simple, ſcattered. Heads cylindrical, rather prominent, pale, moſtly toothed, filled entirely with white powder.—Found in the ſpring on leaves of *Anemone nemoroſa*, rendering the plant ſickly, and often barren. Dr. Pulteney obſerved that this *fungus* originates under the cuticle, and may be ſeen, in a young ſtate, through that membrane. At length each individual aſſumes a nearly globular form, burſting with lacerated edges, the cavity being lined with white powdery *ſeeds*, intermixed with minute fibres. In fading, each turns yellowiſh, then brown, and finally "each *fungus* is reſolved into a farinoſe particle, reſembling the fructification of a Polypody." *Pulteney.* The *Æ. fuſcum*, Relh. Cant. 546. Sowerb. Fung. t. 53, found on the leaves and petals of the ſame ſpecies of *Anemone*, without injuring the plant, is the *Puccinia anemones*, Perſ. Syn. Fung. 226, a genus deſcribed as deſtitute of a head, or *peridium*. In this reſpect we find it difficult to draw a line between Mr. Sowerby's figure, and his various repreſentations of *Æcidia*, t. 398, though we doubt not the ſpecific difference of the above two plants. Which of them is the "Conjurer of Chalgrave's Fern," Dill. in Raii Syn. 124. t. 3. f. 1, may be doubted; but we rather ſuppoſe the *Puccinia*.

Ae. *punctatum*. Yellow-Anemone Æcidium. Perſ. n. 18. Uſt. Annal. v. 20. 135. (Ae. anemones; Hoffm. Germ. v. 2. t. 11. f. 1.)—"Simple, ſcattered. Heads partly ſunk, their border nearly cloſed. Powder compact, browniſh."—Found rarely on the leaves of *Anemone ranunculoides*, which it marks with brown dots. The border of the orifice is but ſlightly, if at all, toothed. *Seeds* cheſnut-coloured. *Perſoon.* We have not heard of this ſpecies in Britain.

Mr. Sowerby has repreſented ſeveral more ſpecies of this genus in his *Engliſh Fungi*, t. 397, 398, ſuch as *Æ. corni, confluens, rubi, fragariæ, menthæ, ſalicis, cardui, rhei;* but we do not ſee clearly how the generic difference between *Æcidium* and *Puccinia* is, in moſt of them, to be determined.

ÆGÆ, l. 4, *r.* M. Gebelin.

AEGERITA, in *Botany*, ſo called from αιγειρος, *a Poplar*, or rather *Alder tree*, becauſe the firſt-diſcovered ſpecies of this minute genus grows on the wood of the Alder, and was thence called *Sclerotium Aegerita*, which laſt word, on the eſtabliſhment of the preſent genus, was taken for its generic name.—Perſ. Syn. Fung. 684.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eſſ. Ch. Seſſile granulations ſolid, filled with a ſomewhat mealy powder.

1. Ae. *candida*. White Aegerita. Perſ. Diſp. Fung. 40. (Sclerotium Aegerita; Hoffm. Germ. v. 2. t. 9. f. 1.)—Crowded, ſmooth, pure white.—Found not unfrequently in autumn, on the dry rotten wood of Alder, in moiſt ſituations. This *fungus* conſiſts of numerous little crowded granulations, the ſize of millet-ſeed, globular or elliptical, as white as ſugar-plums, ſolid but friable, the internal ſubſtance appearing, when highly magnified, full of ſeed-like bodies. *Hoffmann.*

2. Ae. *pallida*. Pale Aegerita. Perſ. ibid.—Scattered, pale, ſomewhat warty.—On the fallen branches of Oaks. Diſtinguiſhed by the inequality of its ſurface. *Perſoon.*

3. Ae.? *cæſia*. Grey Doubtful Aegerita. Perſ. n. 3.—Scattered, glaucous or whitiſh.—On the trunks of trees in winter. Reſembles ſmall pale dots, of a ſoftiſh ſubſtance; diſappearing when dried. *Perſoon.*

AEGIALITIS, αιγιαλῖτις, *an inhabitant of the coaſt*, alluding to its place of growth.—Brown Prodr. Nov. Holl. v. 1. 426.—Claſs and order, *Pentandria Pentagynia.* Nat. Ord. *Aggregatæ*, Linn. *Plumbagines*, Juſſ. *Plumbagineæ*, Brown.

Eſſ. Ch. Calyx of one leaf, coriaceous, five-toothed, with folded angles. Petals five, their claws combined at the baſe, bearing the ſtamens. Stigmas capitate. Pericarp prominent, angular, nearly cylindrical, coriaceous, without valves. Seed germinating, without albumen. Plumula conſpicuous.

1. Ae. *annulata*. Gathered by Mr. Brown, in the tropical part of New Holland, growing among *Rhizophoræ*, near the ſea-ſhore. A perfectly ſmooth *ſhrub*, of humble growth, having round, brittle *branches*, marked with annular ſcars, where the leaves have been. *Leaves* alternate, without *ſtipulas*, flat, coriaceous, ovate, entire; their *footſtalks* bordered, dilated and ſheathing at the baſe. *Spikes* panicled. *Flowers* white, alternate, ſomewhat imbricated, with three *bracteas*. *Brown.*

Akin to STATICE. See that article, and TAXANTHEMA.

AEGICERAS, ſo called from αιξ, *a goat*, and κερας, *a horn*, in alluſion to the horn-like ſhape of the curved ſeed-veſſel, the following is to be ſubſtituted in the place of our original article.—Gærtn. v. 1. 216. t. 46. Schreb. Gen. 156. Willd. Sp. Pl. v. 1. 1183. Mart. Mill. Dict. v. 1.

Konig Ann. of Bot. v. 1. 132. t. 3. Brown Prodr. Nov. Holl. v. 1. 534.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Myrſineæ*, Brown.

Gen. Ch. reformed. *Cal.* Perianth inferior, of five roundiſh-oblong, concave, coriaceous, permanent leaves, thickeſt at the baſe, obliquely imbricated at the margin. *Cor.* of one petal, ſalver-ſhaped, ſomewhat coriaceous; tube the length of the calyx, nearly cylindrical, thickiſh, rounded at the baſe; limb the length of the tube, in five deep, ovate, pointed, equal, reflexed ſegments. *Stam.* Filaments five, prominent, awl-ſhaped, twice the length of the tube, united at the bottom into a ring, attached to the baſe of the corolla; anthers arrow-ſhaped, incumbent, verſatile, of two lobes and two cells, burſting longitudinally. *Piſt.* Germen ſuperior, linear-oblong, compreſſed, dotted, with rudiments of ſeveral ſeeds; ſtyle erect, the length of the ſtamens, tapering, permanent; ſtigma ſimple. *Peric.* Follicle cylindrical, coriaceous, curved, pointed, of one cell. *Seed* ſolitary, oblong, nearly filling the pericarp, and germinating there, attached by a thin flat umbilical cord, of its own length, which is dilated into a hood-like, pointed, partial tunic, cloſely covering the minute cotyledons, and part of the radicle; albumen none; embryo erect; radicle very large.

Eſſ. Ch. Calyx in five deep imbricated ſegments. Corolla ſalver-ſhaped, five-cleft, reflexed. Filaments joined at the baſe. Stigma ſimple. Follicle coriaceous, cylindrical. Seed ſolitary, with a hooded tunic.

1. Ae. *fragrans.* Fragrant Aegiceras. Konig as above. Br. n. 1. (Ae. majus; Gærtn. as above. Willd. n. 1. Rhizophora corniculata; Linn. Sp. Pl. 635. Burm. Ind. 108. Pou-Kandel; Rheede Hort. Malab. v. 6. 65. t. 36. Mangium fruticans corniculatum; Rumph. Amboin. v. 3. 117. t. 77.)—Native of the maritime woods and thickets of the Eaſt Indies, as well as of the tropical and eaſtern coaſts of New Holland. The *ſtems* are rather ſhrubby than arboreſcent, ſeveral from the ſame root, ten to fourteen feet high, three or four inches in diameter, with numerous ſlender ſpreading branches. *Leaves* alternate, or imperfectly oppoſite, ſtalked, obovate, or ſomewhat elliptical, emarginate, entire, coriaceous, ſmooth, ſingle-ribbed, from one to four inches long. They are reported to have a briny taſte; and Mr. Browne noticed a ſaline efflореſcence, or excretion, on their upper ſurface. *Flowers* white, fragrant, about half an inch broad before their *corolla* is reflexed, collected into *umbels* at the ends of the ſhort lateral, as well as principal, branches. *Seed-veſſel* near an inch and a half long, pointed, curved, but not ſpiral, as the generic name would ſeem to imply.

This ſhrub, which Linnæus confounded with his *Rhizophora*, is the only known ſpecies of a very diſtinct genus; the *Æ. minus*, Gærtn. t. 46, having been ſhewn by Mr. Konig to be *Connarus ſantaloides* of Vahl, Symb. v. 3. 87, *Santaloides*, Linn. Zeyl. 192. n. 408, a totally different plant in genus and natural order, though Gærtner has quoted for a ſynonym, *Umbraculum maris*, Rumph. Amboin. v. 3. 124. t. 82. This laſt, as well as *Mangium floridum* of the ſame writer, v. 3. 125. t. 83, appear very nearly related to our *Ægiceras fragrans;* inſomuch that, without ſpecimens, no one can ſafely diſtinguiſh them from it, or from each other, for the difference of ſize in their reſpective *flowers* is of no avail in Rumphius's, always variouſly diminiſhed, plates.

AEGINETIA, a reſtored genus, firſt founded by Linnæus, ſubſequently reduced by himſelf to OROBANCHE, and originally named in honour of PAUL ÆGINETA. (See thoſe articles.)—Linn. Gen. ed. 5. 280. Dryandr. in Roxb. Coromand. v. 1. 63. Willd. Sp. Pl. v. 3. 346.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ*, Linn. *Pediculares*, Juſſ.

Gen. Ch. *Cal.* Perianth ſheath-like, inferior, of one leaf, ovate, concave, inflated, coloured, permanent. *Cor.* of one petal, tubular, longer than the calyx; tube globular at the baſe, bent horizontally towards the middle, ſwelling upwards; limb ſpreading, in five ſhort, rounded, equal ſegments. *Stam.* Filaments four, incurved, two ſhorter than the reſt; anthers oblong, ſimple, converging in pairs, ſlightly bent. *Piſt.* Germen ſuperior, ovate; ſtyle ſimple, curved, the length and poſition of the ſtamens; ſtigma capitate, large. *Peric.* Capſule ovate, pointed, of two valves? with many cells. *Seeds* numerous, minute. *Receptacles* ſeveral, convoluted, attached to the valves.

Eſſ. Ch. Calyx of one leaf, opening lengthwiſe. Corolla with five equal ſegments. Capſule of many cells. Seeds numerous.

1. Ae. *indica.* Indian Aeginetia. Linn. Sp. Pl. v. 1. 632. Roxb. Coromand. v. 1. 63. t. 91. Willd. n. 1. (Orobanche Aeginetia; Linn. Sp. Pl. ed. 2. 883. "Tſiem-cumulu; Rheede Hort. Malab. v. 11. 97. t. 47.")—Native of Malabar, in the hilly parts of the Circars, but rare. *Roxburgh.* *Root* of many ſimple fibres, probably paraſitical and annual. *Stems* ſeveral, purpliſh, a ſpan high, ſimple, ſingle-flowered, and naked, except a lanceolate, brown, ſheathing ſcale at the bottom of each. *Calyx* ruſty-coloured, an inch long, turning green as it fades. *Corolla* half as long again as the calyx, and more ſlender, of a violet purple; the tube pale; deciduous. *Style* permanent as the fruit ripens, curved, projecting laterally out of the calyx. *Seeds* and *receptacles* tawny.

The generic diſtinctions between this plant and *Orobanche* are obvious enough; the ſingle-leaved ſpathaceous *calyx*, regular *corolla*, undivided *ſtigma*, and many-celled *capſule*, whoſe internal ſtructure Dr. Roxburgh ſays he could never well determine, but the numerous convoluted *partitions*, or *receptacles*, which he deſcribes, are ſufficiently different from *Orobanche.* As to habit, theſe genera nearly agree, both having a ruſty pubeſcence, a purple hue, and, if we miſtake not, paraſitical *roots;* though the *infloreſcence*, and the form of the *calyx*, differ in each. *Aeginetia* appears to want the nectariferous *gland*, found at the baſe of the *germen*, in front, in *Orobanche;* it wants alſo the *bracteas*, obſervable in every ſpecies of the laſt-named genus, except the *uniflora*.

ÆGISSUS. See ÆGYPTUS.

AEGLE, in *Botany*, the name of one of the HESPERIDES, (ſee that article,) choſen by Mr. Correa de Serra for this genus, as Linnæus had already dedicated one to her ſiſter *Arethuſa.*—Correa Tr. of Linn. Soc. v. 5. 222. Ait. Hort. Kew. v. 3. 284.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Aurantia*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, ſmall, with five ſhallow lobes, at length deciduous. *Cor.* Petals five, ovate, acute, ſpreading, many times longer than the calyx. *Stam.* Filaments numerous, ſhort, awl-ſhaped, inſerted into the external part of the elevated receptacle of the flower; anthers oblong, erect, heart-ſhaped at the baſe. *Piſt.* Germen ſuperior, ovate; ſtyle ſhort, thick; ſtigma oval, obſcurely furrowed. *Peric.* Berry coated, globular, ſmooth, almoſt woody when ripe, not burſting, of ten or twelve cells obliterated as the pulp arrives at maturity. *Seeds* ovate, compreſſed, numerous in each cell, in a ſimple row, each inſerted by a ſhort partial ſtalk into the central column; albumen none.

Eſſ. Ch. Petals five. Calyx five-cleft, inferior. Berry coated, of numerous cells. Seeds many.

1. Ae. *Marmelos.* Thorny Aegle, or Bengal Quince. Correa as above, 223. Willd. n. 1. Roxb. Coromand. v. 2. 23. t. 143. (Cratæva Marmelos; Linn. Sp. Pl. 637. Willd. Sp. Pl. v. 2. 853. Cydonia exotica; Bauh. Pin. 435. Cucurbitifera trifolia indica, fructûs pulpâ Cydonii æmula; Raii Hiſt. v. 2. 1665. Pluk. Phyt. t. 170. f. 5. Bilacus; Rumph. Amboin. v. 1. 197. t. 81. Covalam; Rheede Hort. Mal. v. 1. 37. t. 37. *Maredoo* of the Telingas.)—Native of the mountainous parts of the coaſt of Malabar, ſometimes of the low lands, flowering during the hot ſeaſon. This is a rather large tree, whoſe *trunk* is nearly erect, clothed with aſh-coloured *bark*. *Branches* ſcattered. *Spines* ſtipulary, in pairs, awl-ſhaped, pungent, ſtrong, an inch in length, ſometimes wanting. *Leaves* irregularly ſcattered, on downy *ſtalks*, ternate; *leaflets* elliptic-oblong, with a blunt point, ſerrated, ſingle-ribbed, veiny, ſmooth; tapering at the baſe; unequal in ſize; the odd one largeſt, about three inches long. *Flowers* of a dirty white, in ſhort, aggregate, terminal and axillary, cluſters. *Fruit* the ſize of a large orange, with a hard ſmooth greyiſh ſhell, from which the Dutch in Ceylon are ſaid to prepare a perfume. Dr. Roxburgh ſpeaks of this *fruit* as delicious to the taſte, and exquiſitely fragrant, of a laxative quality, which renders it particularly ſerviceable in habitual coſtiveneſs. A clear tenacious gum, enveloping the ſeeds, makes a good cement. The wood of the tree is hard and durable, of a light chocolate colour, variegated with dark veins, and ſerves for many purpoſes. Mr. Correa mentions another, likewiſe arboreous, ſpecies of *Aegle*, found in the Eaſt Indies, and preſerved in ſir J. Banks's herbarium, but of this he has unfortunately neglected to give either a name or deſcription, nor have we ſeen any ſpecimens. See FERONIA for a genus next akin to the above.

AEGOPOGON, already mentioned and explained, in its proper place, as a ſynonym of the *Spiræa Ulmaria*, or rather perhaps *S. Aruncus*, is now adopted for the generic appellation of a South American genus of graſſes, by Willdenow, after Humboldt and Bonpland.—Willd. Sp. Pl. v. 4. 899. Paliſot de Beauvois Agroſt. 122. t. 22. f. 3, 4. Kunth Nov. Gen. et Sp. v. 1. 132.—Claſs and order, *Polygamia Monoecia*. (Rather *Triandria Digynia*.) Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two valves, ſingle-flowered; the valves cloven, with an intermediate awn. Corolla of two valves; the outer with three awns; inner with two. Seed ſolitary, unconnected with the glumes. One or two lateral male flowers.

1. Ae. *cenchroides*. Spreading Aegopogon. Willd. n. 1. Paliſ. de Beauv. as above, f. 3. Kunth n. 1. t. 42.—Cluſter lax. Flowers all equally ſtalked.—Gathered by Humboldt and Bonpland, on the expoſed ſummit of mount Avila, near the town of Caraccas; alſo in Quito; flowering from January to April. *Root* perennial. *Stems* numerous, branched at the baſe, forming a tuft; thoſe which do not flower, about as long as the finger; the reſt a ſpan in height, naked above, denſely leafy below. *Leaves* linear; the lowermoſt an inch, or an inch and a half long; the upper ones ſhorter. *Sheaths* ſtriated, ſmooth, ſlightly membranous at the edges. *Stipula* divided. *Cluſter* ſimple, rather turned to one ſide, but ſpreading looſely. This graſs has the aſpect of *Cenchrus ciliaris*, or of *Lappago racemoſa*. *Willdenow*. We know it only from this author's deſcription, and the figures cited. From M. de Beauvois our knowledge of the following ſpecies is entirely derived.

2. Ae. *puſillus*. Small Aegopogon. Paliſ. de Beauv. as above, f. 4.—Cluſter denſe, turned one way. Perfect flower ſeſſile.—Native country not recorded. The perfect *flowers* of this ſpecies, whoſe *cluſter* is repreſented about half the ſize of the foregoing, are ſeſſile, their *calyx* apparently of two equal, awl-ſhaped, undivided glumes. The two lateral, or male, *flowers* are elevated on equal, ſlender, parallel ſtalks, twice their own length, though but half as long as the intermediate perfect *flower*. The inner valve of their *calyx* ſeems entire, though awned. Their *corolla* conſiſts of two entire, not cloven, valves, one of which only is awned. We do not pretend, without the inveſtigation of ſpecimens, to reconcile theſe contradictions of the generic character, nor to judge how far M. de Beauvois is right in uniting with this genus Mr. Brown's AMPHIPOGON, hereafter to be noticed in its proper place.

3. Ae. *geminiflorus*. Twin-flowered Aegopogon. Kunth as above n. 2. t. 43.—Male flower ſolitary.—Gathered by Humboldt and Bonpland, on the banks of the river Orinoco, between Cerro Duida and Rio Tamatama, near Eſmeraldam, flowering in May. Habit much like the firſt ſpecies, but the *ſpikelets* are conſiderably ſmaller, while the central awn of one valve of the perfect *flower* is remarkably long, ſtout, and rough. Each *flower* is ſupported by a ſhort partial ſtalk, and there are only two to each *ſpikelet*, not three as in the two foregoing ſpecies.

ÆOLUS, in *Mechanics*, ſubjoin, ſee VENTILATOR.

ÆON, l. 4, add—Homer Π. v. 453. Pindar Olym. A. v. 18. Hence by an eaſy figure it is uſed to denote the cuſtoms and manners of life. Eſper. ii. 2.

AERIDES, in *Botany*, from αηρ, *aër*, *air*; becauſe one of the principal plants of this genus has long been celebrated, under the name of *Flos aëris*, for living entirely, as was ſuppoſed, upon air. This plant, and ſeveral others agreeing with it in habit, though not all perhaps in generic character, have been ſent from the Eaſt Indies to Europe, in baſkets, without earth or any other apparent ſource of nutriment, and have not only ſurvived, but bloſſomed during their voyage, as well as after their arrival. Their ſtout fibrous roots, always more than half naked as they run over the branches of trees, having entwined themſelves among the ſticks of the baſket, might perhaps imbibe ſuſtenance from the air in thoſe circumſtances, as readily as in their natural ſituation; juſt as a pea will germinate and grow in moiſt cotton.—Loureir. Cochinch. 525. Swartz in Schrad. Journ. v. 2. 233. t. 2. f. 4. Ejuſd. Neues Journ. v. 1. 88. Kon. Tracts 195. t. 8. f. Y. Willd. Sp. Pl. v. 4. 130. Ait. Hort. Kew. v. 5. 213.—Claſs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. reformed. *Cal.* Perianth of three equal, ſpreading, coloured leaves, gradually dilated upwards, ſomewhat wavy, rather obtuſe. *Cor.* Petals two, much like the calyx-leaves in colour, ſize, and figure. Nectary a lip without a ſpur, ſhorter than the petals, inſerted into the baſe of the ſtyle, gibbous underneath like a bag, often reverſed over the column. *Stam.* Anther a vertical, hemiſpherical, moveable, deciduous lid, of two or four cells; maſſes of pollen globular, ſtalked, in pairs. *Piſt.* Germen inferior, oblong; ſtyle erect, ſemi-cylindrical, concave in front; ſtigma in front, near the anther. *Peric.* Capſule obovate-oblong, with three large and three intermediate angles, of one cell and three valves, ſeparating between the angles. *Seeds* numerous, minute, each inveſted with a chaffy tunic.

Eſſ. Ch. Calyx and corolla ſpreading, nearly uniform. Lip pouch-like, without a ſpur. Anther a vertical moveable lid.

no reference to this, or to any other particular plant whatever.

AEROSTATION, col. 5, l. 39, for 84 *r.* 840; col. 27, l. 17, for circumference *r.* diameter.

ÆRUGINOSUS, in *Ornithology*. See *Moor* BUZZARD.

ÆSCHYLUS, col. 2, l. 24, for wrote *r.* choſe; l. 29, for furious *r.* ferocious; l. 36, for referred *r.* tranſferred.

ÆSOP, col. 2, l. 60, *r.* lived more than 350 years, &c.

Æsop, CLODIUS, l. 2, after Rome, add, B.C. 79.

AESTIVATIO, in *Botany and Vegetable Phyſiology*, a term uſed by Linnæus for the mode in which the petals, or the ſegments, of a *corolla* are arranged with reſpect to each other, particularly before they expand. (See COROLLA.) The word comes from *æſtas*, ſummer, and *æſtiva*, ſummer-quarters, ſummer being the uſual flowering ſeaſon, and the *corolla* the ſhelter or accompaniment of the organs of fecundation. So *Vernatio* expreſſes the arrangement of the leaves of plants in the bud, or, in other words, their vernal condition. *Æſtivatio imbricata*, expreſſes the diviſions of the *corolla* being imbricated, or folded over each other, either from left to right, that is, with the motion of the ſun, as in *Ciſtus;* or the reverſe, of which latter Linnæus has in his manuſcripts mentioned *Phlox* as one example, and we would point out *Hypericum* as another. *Æſtivatio valvata* is when the diviſions of the *corolla* meet in the bud like valves, ſide by ſide, as in *Protea* and its allies. Of this *Periploca* is an inſtance, notwithſtanding the obliquity obſervable in the ſegments of that flower after expanſion. Linnæus, in the MSS. above cited, ſpeaks of *Pæonia* as having, like its near relation *Aconitum*, one petal exterior to all the reſt, though the *corolla* is what would be termed regular in the firſt genus, and very irregular in the ſecond. Such a diverſity indeed is of ſmall moment, for Mr. Correa has obſerved that every natural order, as far as he could examine, poſſeſſes irregular and regular flowers. In general the direction of the parts of a *corolla*, as to their æſtivation (if we may uſe that word), are invariably alike in genera of the ſame natural order. But HERMANNIA, (ſee that article,) affords a remarkable exception, every one of its ſpecies that we have ſeen bearing two *flowers* on the ſame ſtalk, has the *petals* of one of thoſe flowers rolled to the right, while thoſe of the other are diſpoſed in a contrary poſition. Mr. Brown, in his learned *Prodromus* of New Holland plants, has paid more attention to the æſtivation, in defining his natural orders, than any other botaniſt, and the term *æſtivatio valvata* is, if we miſtake not, his own invention.

ÆTH, l. 4, inſert after Bruſſels. It is the chief place of a canton, in the department of Jemappe, and diſtrict of Tournay. The place contains 7634, and the canton 14,828 inhabitants. The territory includes 115 kiliometres, and 11 communes. See ATH.

AETHIONEMA, in *Botany*, ſo named by Mr. Brown, apparently in alluſion to ſome tawny or ſun-burnt tinge in the ſtamens, from αιθω, *to ſcorch*, and νημα, *a ſtamen*. We perceive in our dried ſpecimens an occaſional purple hue in theſe parts. It may perhaps be more remarkable in the ſpecies we have not ſeen.—Brown in Ait. Hort. Kew. v. 4. 80.—Claſs and order, *Tetradynamia Siliculoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch with boat-like winged valves (ſometimes not burſting). Longer filaments either combined, or finely toothed towards the top. Inſertion of the calyx unequal. *Brown.*

1. Ae. *ſaxatile.* Rock Aethionema. Ait. n. 1. (Thlaſpi ſaxatile; Linn. Sp. Pl. 901. "Schkuhr Handb. v. 2. 223. t. 180." See THLASPI, n. 6.)—Longer filaments diſtinct. Leaves oblong, tapering at the baſe.—Native of the ſouth of Europe. Cultivated by Miller in 1759.

2. Ae. *monoſpermum.* One-ſeeded Aethionema. Ait. n. 2.—"Pouch ſingle-ſeeded, without valves. Leaves oval or obovate."—Native of Spain. Cultivated in 1778, by Lee and Kennedy, at Hammerſmith. A hardy biennial, flowering in July and Auguſt. We have ſeen no ſpecimen of this ſpecies. Our doubts reſpecting the genus may be found under THLASPI.

AFER, DOMITIUS, col. 2, l. 11, for vanity *r.* variety.

AFFINITY, in *Chemiſtry*. The celebrated doctrine of Bergman is the laſt in order diſcuſſed under the article AFFINITY in the Cyclopædia: ſince that time, however, very important changes in opinion have taken place, among chemiſts, reſpecting the nature and cauſe of chemical affinity. Some of theſe are mentioned in ſubſequent parts of the Cyclopædia, eſpecially in the articles *Chemical* PROPORTIONS, SIMPLE *Bodies*, and *Atomic* THEORY; but it may not be deemed ſuperfluous to give a ſummary and connected view of the whole in this place.

Bergman's doctrine of *elective* affinity, ſo amply explained in the article above referred to, was univerſally admitted among chemiſts till 1803, when Berthollet publiſhed his Diſſertation on Affinity in the Memoirs of the Inſtitute, and about the ſame time his Chemical Statics. Berthollet conſidered affinity as an *attraction* exiſting between combining bodies. This attraction he appeared to conſider as ſimilar in its nature to that which exiſts between the planets, or in ſhort, the principle of gravitation. It conſequently, in his opinion, increaſed with the *maſs* of bodies. According to this doctrine, therefore, bodies which have an affinity or attraction for one another, have a tendency always to combine, in a greater or leſs degree, chiefly in proportion to their maſs. Thus, though barytes appears to poſſeſs a ſtronger affinity for ſulphuric acid than potaſh, yet if we preſent a great quantity of potaſh to a ſmall quantity of ſulphate of barytes, the potaſh will ſeparate a portion of the acid.

According to Berthollet, therefore, affinity is not *elective*. A ſubſtance which has a ſtronger affinity is not capable of ſeparating entirely thoſe which have a weaker, unleſs ſome other cauſe than mere ſtrength of affinity operates. Inſtead of ſeparating entirely the weaker body, it divides with it the baſe to which that body was united, each combining with a part of ſuch baſe in the compound proportion of the ſtrength of its affinity and of its quantity.

But no facts in chemiſtry are better eſtabliſhed than thoſe in which the addition of a third body frequently ſeparates two ſubſtances previouſly united, the third body taking the place of one of the conſtituents, which is thereby ſeparated altogether. Thus, if ſulphuric acid be dropped into a ſolution of nitrate of barytes, or potaſh into a ſolution of nitrate of lime, the ſulphate of barytes and the lime will precipitate, leaving, in the firſt inſtance, the nitric acid in a free ſtate, and in the ſecond, the potaſh combined with the nitric acid inſtead of the lime. Theſe and many other well-known facts appearing, at firſt ſight, contrary to Berthollet's doctrine, it was neceſſary for him to reconcile them to it. For this purpoſe, he called in the aid of the different modes of exiſtence of bodies. According to him, therefore, whenever decompoſition takes place, it is owing either to the *inſolubility* or the *elaſticity* of the ingredient which ſeparates. Sulphate of barytes being inſoluble in water, while nitrate of barytes and nitric acid are ſoluble in that liquid, it muſt happen, when the ſubſtances are mixed, that the inſoluble ſalt precipitates, on account of its inſolubility. It is the inſolubility of lime that cauſes it to precipitate when potaſh is dropped into nitrate of lime. Accordingly, when potaſh is dropped into nitrate of ſoda, no precipitation whatever takes place, becauſe both the potaſh and the ſoda are very ſoluble in water; but if we concentrate the ſolution ſufficiently by evaporation, cryſtals of nitrate of potaſh will be depoſited, becauſe that ſalt is much leſs ſoluble in water than nitrate of ſoda. So alſo, when nitric acid is poured upon carbonate of lime, the carbonic acid is diſengaged, and flies off, becauſe its elaſticity induces it to ſeparate from the ſolid, and aſſume the gaſeous ſtate as ſoon as the nitric acid weakens the attraction, by means of which it was attached to the lime.

"Thus," ſays Dr. Thomſon, to whom we have been particularly indebted in the compilation of the preſent article, "we have two doctrines reſpecting affinity oppoſite to each other. According to Bergman, affinity is *elective.* The body which has the ſtronger affinity diſplaces that which has a weaker, and the ſtrength of affinity may be meaſured by decompoſition. According to Berthollet, affinity is *not elective.* It never produces decompoſitions, but only combinations, and the decompoſitions which take place are owing to the agency of other cauſes. The ſtrength of affinity is not an abſolute quantity, but increaſes with the maſs of the attracting body. Berthollet's doctrines lead to the opinion, that bodies are capable of uniting together indefinitely in any proportion whatever: Bergman's, that they unite only in determinate proportions, and that theſe proportions are independent of the relative quantities of the combining ſubſtances which are preſent." See *Atomic* THEORY.

A moſt important fact reſpecting the combination of bodies was aſcertained by Richter. This was illuſtrated in an elaborate work, publiſhed at different times between 1792 and 1802, which contains the reſult of his reſearches on the decompoſitions and combinations of chemical bodies. He obſerved, that when two neutral ſalts, which mutually decompoſe each other, are mixed together, the two newly formed ſalts ſtill retain the ſame neutral ſtate as the two original ones, from which they were formed. He likewiſe obſerved, that the ſame proportions of baſes that ſaturate a given weight of one acid, ſaturate all the other acids; and the ſame proportion of acids that ſaturate one baſe, ſaturate all the other baſes; which law enabled him to explain why two neutral ſalts form, as above-mentioned, two new ſalts, likewiſe neutral. Theſe experiments and obſervations of Richter likewiſe enabled Fiſcher to attach a ſet of numbers to the acids and baſes, indicating the weight of each which will ſaturate the numbers attached to all the other acids and baſes.

Mr. Dalton, without being aware of the law already diſcovered by Richter, turned his attention to the ſubject about two years afterwards, and was ſtruck with the ſmall number of proportions in which ſimple ſubſtances are capable of combining, and the conſtancy of theſe proportions. This led him to form the doctrine of definite proportions, or atoms, as it is uſually termed, and which, as well as Gay Luſſac's modification of it, our readers will find fully explained in the article *Definite* PROPORTIONS.

About the ſame period, that is, in the year 1803, the grand law reſpecting the agency of the galvanic battery in the decompoſition of bodies was diſcovered by Berzelius and Hiſinger. This law is, that *oxygen and acids* are accumulated round the *poſitive pole;* while *hydrogen, alkalies, earths*, and *metals*, are accumulated round the *negative pole.* From this general law Berzelius deduced the conſequence, that the decompoſitions in ſuch inſtances were owing to the attractions exiſting between the bodies and the reſpective electricities. This opinion was afterwards extended by Davy, and the opinion in its extended form ſubſequently adopted by Berzelius himſelf. According to theſe celebrated chemiſts, chemical affinity is identical with electrical attraction, and bodies which unite chemically poſſeſs different kinds of electrical attractions. Every body, in their opinion, poſſeſſes a permanent elective ſtate, either reſinous or vitreous. Two bodies in the ſame ſtate of electricity have no affinity for each other. Thoſe in oppoſite ſtates have an affinity, and the ſtrength of the affinity is proportional to the degree of intenſity of the different electricities in the two bodies; and in order to make bodies ſeparate from each other, we have only to bring them into the ſame electrical ſtate, by making them both vitreous or both reſinous. See ELECTRICITY and GALVANISM.

Such is a ſummary account of the revolutions in opinion which have taken place reſpecting the nature of chemical affinity, and the principal diſcoveries which have given origin to theſe changes ſince the time of Bergman. We ſhall conclude this article with a few general remarks upon the ſubject.

In the firſt place, the queſtion whether the affinities of ſubſtances for one another be definite quantities capable of being repreſented by numbers, cannot, in the preſent ſtate of chemical ſcience, be ſatisfactorily determined. For though ſome ſubſtances always appear capable of ſeparating others, as, for example, barytes, potaſh; yet the reaſon may be, that the ſalts of barytes are leſs ſoluble than the ſalts of potaſh. Again, iron, as is well known, ſeparates oxygen from water at all temperatures; but, on the other hand, it has been equally well aſcertained, that the oxyd of iron is reduced when heated in hydrogen gas: "hence," ſays Dr. Thomſon, "we have no data for determining whether iron or hydrogen have the greateſt affinity for oxygen; each ſeeming capable of depriving the other of oxygen in the very ſame circumſtances."

In certain caſes, alſo, of double decompoſitions, it is often equally difficult to diſtinguiſh on which ſide the ſtrongeſt affinities lie. Thus, as is well known, carbonate of barytes and ſulphate of potaſh, when digeſted together, decompoſe each other, and are converted into ſulphate of barytes and carbonate of potaſh; but on the other hand, it has been equally ſatisfactorily ſhewn by Mr. Philips, that carbonate of potaſh is capable of decompoſing the ſulphate of barytes.

Pfaff, however, has ſhewn, that the tartrate of lime and the oxalate of lead are completely decompoſed by the addition of no more ſulphuric acid than is neceſſary to form ſulphate of lime and ſulphate of lead; and hence he infers, that the affinity of ſulphuric acid for lime and lead is actually ſuperior to the affinities of tartaric and oxalic acids for the ſame baſes reſpectively.

Berthollet has attempted to account for the firſt of the above experiments by the effect of *maſs;* and the experiments of Pfaff he endeavours to explain by the ſolubility of tartrate of lime and oxalate of lead, and the inſolubility of the ſulphate of lime and ſulphate of lead in acids. And this brings us,

In the ſecond place, to make a few remarks upon the ſuppoſed effects of *maſs*, and the *modes of exiſtence* of bodies in modifying chemical decompoſitions. With reſpect to the effects of *maſs*, though at firſt ſight there appear to be ſome circumſtances favouring the opinions of Berthollet reſpecting its influence in chemical operations, yet we can by no means agree in ſuppoſing its influence ſo great as repreſented by that eminent chemiſt. No quantity of water, for example, would decompoſe ſulphate of magneſia, though the affinity of ſulphuric acid for water is very great, and though the inſoluble nature of magneſia would, according to Berthollet's views, favour the union of the water with the acid. *Maſs* here, therefore, either does not operate at all, or very feebly; and there are numerous analogous inſtances, well known to every chemiſt, to which the ſame remarks are equally applicable.

Again, it has been ſufficiently eſtabliſhed, that gaſes unite with reference to their volume, and cannot be made to unite in intermediate proportions, even although the reſult of their union be likewiſe a gas. Thus, for example, one volume of chlorine gas and one volume of hydrogen gas unite together, and form, without any condenſation, or other apparent phyſical change, two volumes of muriatic acid gas, nor can they be made to unite in any other proportions. Here then is an example of chemical union, in which the effects of *maſs* and *mode of exiſtence* are quite out of the queſtion.

From theſe, and particularly from many recently eſtabliſhed facts, we think it proved beyond a doubt, that the power which determines bodies to combine in certain proportions is a property inherent in the original cauſe of their union, and conſequently is a power totally different from that exerted by maſs or other external circumſtance, though it is not perhaps altogether independent of their influence. For further information, we refer our readers to ſir Humphry Davy's Elements of Chemical Philoſophy, where, beſides an excellent account of the ſubject in general, they will find a maſterly refutation of Berthollet's doctrines.

AFORE, l. 2, for ſtern *r.* ſtem; l. 4, ditto.

AFZELIA, in *Botany*, (ſee that article,) is *Gerardia caſſioides*, Purſh 424. (G. Afzelia; Michaux Boreal.-Amer. v. 2. 20. Anonymos caſſioides; Walt. Carolin. 171.)—"Panicled, with wand-like branches. Leaves pinnatifid, with linear briſtle-like ſegments."—In dry ſandy woods of Carolina and Georgia. Annual, flowering in July and Auguſt. *Flowers* ſmall, yellow. *Purſh.*

AFZELIA, Sm. Tr. of Linn. Soc. v. 4. 221, ſo named in honour of its diſcoverer, Adam Afzelius, M.D. Demonſtrator of Botany at Upſal, author of ſeveral diſſertations on Swediſh Roſes, and of other learned botanical treatiſes, is a very noble genus, of which we have long expected from Dr. Afzelius himſelf an illuſtration of the ſpecies. They are all natives of Sierra Leone. — Claſs and order, *Decandria Monogynia.* Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx tubular; limb in four deciduous ſegments. Petals four, with claws; the uppermoſt very large. Two upper ſtamens imperfect. Legume with many cells. Seeds with a tunic at the baſe.

This genus conſiſts of trees with large, ſmooth, abruptly pinnate, alternate *leaves.* The *flowers* are racemoſe, crimſon, with ſmall *bracteas.* *Legumes* woody and ponderous, ſmooth, ovate, acute. *Seeds* near an inch long, parallel, ovate, black, the lower half of each inveſted with a fleſhy *tunic*, of a brilliant permanent ſcarlet, and a rather waxy appearance. The native Africans remove this tunic, and uſe the ſeeds for beads.

AGASTACHYS, from *αγαςός*, *remarkable*, and *ςαχυς*, *a ſpike*; alluding to the abundance of its ſpiked flowers.—Brown Tr. of Linn. Soc. v. 10. 158. Prodr. Nov. Holl. v. 1. 371.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juſſ.

Eſſ. Ch. Corolla regular, of four petals, cohering at the baſe, bearing the ſtamens in the middle. Filaments diſtinct. Nectary none. Germen ſeſſile, triangular, ſingle-ſeeded. Stigma unilateral.

1. A. *odorata.* Fragrant Agaſtachys. Br. n. 1.—Found in the ſouthern part of Van Diemen's iſland, near Adventure bay, by Mr. David Nelſon, and afterwards by Mr. George Caley. A *ſhrub*, perfectly ſmooth in every part. *Leaves* ſcattered, entire, flat. *Spikes* numerous, ſimple, terminal, as well as axillary from the upper leaves. *Flowers* alternate, ſeſſile, with a ſolitary, hooded, permanent *bractea* to each. *Corolla* yellowiſh, deciduous. *Piſtil* ſhorter than the *ſtamens.* The *fruit* has not yet been examined. *Brown.*

AGATE, col. 2, l. 15. They are conveyed from Germany in blocks; and cut by means of diamond powder into leaves for making caps for the pivots of mariners' needles, and other purpoſes.

AGATHARCHUS, in *Biography*, a painter of the iſle of Samos, who is ſaid to have been inſtructed by Æſchylus in the art of introducing perſpective into the decorations of theatres, and to have been the firſt who wrote on this ſubject, and communicated the art to Democritus and Anaxagoras.

AGDESTIS, in *Botany*, a fanciful name, adopted by De Candolle, from the authors of an unpubliſhed Mexican Flora, whom he cites as Moç. and Seſſé. It is applied to a doubtful genus, related to *Meniſpermum*, and perhaps a ſort of *luſus naturæ*, having ſtamens and piſtils in the ſame flower, which is almoſt unexampled in this tribe. The above denomination is that of a fabulous monſter, ſaid to have been male as well as female, and produced by Jupiter from the ſtone *Agdos.* This genus therefore being not clearly underſtood, and as yet very little known, may hereafter be aboliſhed as well as its name.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Sarmentaceæ*, Linn. *Meniſperma*, Juſſ. *Meniſpermeæ*, De Cand.

Eſſ. Ch. Calyx inferior, of four leaves. Petals none. Filaments thread-ſhaped. Anthers oblong, cloven at each end, incumbent. Germen and ſtyle with four furrows. Stigmas four, ſpreading. Capſules four, combined.

1. A. *clematidea.* Bowery Agdeſtis.—Native of New Spain. A ſmooth ſhrub, with a branched, twining, round, ſtriated *ſtem.* *Leaves* alternate, diſtant, ſtalked, exactly heart-ſhaped, entire, pointed; their lobes very obtuſe. *Flowers* reddiſh, corymboſe, axillary and terminal; their ſtalks three-cleft. *Fruit* unknown. This plant appears very nearly akin to *Clematis.*

AGGREGATÆ, the title of the 48th order in Linnæus's fragments of a natural ſyſtem, placed between the *Stellatæ* and *Compoſitæ.* (See AGGREGATE.) This is a very miſcellaneous and ill-defined order, of which it is by no means eaſy to ſeize the idea, much leſs to give any definition, or diſtinctive character. Vaillant firſt laid the foundation of this order, in the Memoires de l'Acad. des Sciences for 1722. "The natural order of *Aggregatæ*," ſays Linnæus, *Præl. in Ord. Nat.* 528, "was firſt inveſtigated by Vaillant, in the *Mem. de l'Acad. des Sciences.* They agree with the *Compoſitæ* in having generally a common calyx as well as receptacle, collecting together many ſeſſile florets, each of which has always an inferior germen. But there is a total difference with reſpect to the remaining parts of fructification, nor can theſe two orders be, by any means, united. The *calyx*, as above ſaid, is common to many flowers, or florets. The *common receptacle* is either naked, villous, hairy, or ſcaly. In the place of a *partial calyx* is the *corolla*, generally monopetalous, either regular or irregular, four-cleft or five-cleft, rarely polypetalous. *Stamens* four, with ſeparate *anthers*. *Germen* inferior (with reſpect to each floret). *Fruit* ſingle-ſeeded. The *flower* is therefore complete in this tribe, except only *Valeriana*, whoſe *calyx* is ſcarcely apparent. The *leaves* are often oppoſite. *Stem* often ſhrubby."

The genera which compoſe this order at the end of *Gen. Pl.* are, Sect. α. *Statice* only. β. *Hartogia*, *Brunia*, *Protea*, *Globularia*, *Leucadendron*, *Hebenſtretia*, *Selago*, *Cephalanthus*, *Dipſacus*, *Scabioſa*, *Knautia*, *Allionia*. But in his own copy Linnæus has drawn a line between *Selago* and *Cephalanthus*, removing the β to that place, and characterizing his ſection α "*alternifoliæ inferæ*," the remainder of the whole order beginning with *Cephalanthus*, being "*oppoſitifoliæ ſuperæ*." γ. *Valeriana*, *Morina*, *Boerhavia*, *Circæa*, to which *Mirabilis* is added in MSS. δ. *Lonicera*, *Chiococca*, *Trioſteum*, *Mitchella*, *Linnæa*, *Morinda*, *Conocarpus*, *Loranthus*, *Viſcum*, to which *Liſianthus* and *Hillia* are added, certainly with no propriety.

This order in fact is not one of our great botaniſt's moſt finiſhed or happy performances. It comprehends Juſſieu's *Dipſaceæ*, *Proteaceæ*, *Caprifolia*, with various ſolitary genera from different orders. *Statice* was always a ſtumbling block with Linnæus, nor does it aſſimilate with any thing among the *Aggregatæ*, being itſelf, however natural a genus, and as we think improperly ſubdivided by Tournefort and others, compoſed of ſpecies whoſe infloreſcence is eſſentially different among themſelves.

In his manuſcripts Linnæus has extended his firſt ſection as far as *Selago* incluſive, eraſing *Hartogia*, and giving the characters of alternate leaves, and a ſuperior germen to this ſection. To the ſecond ſection, which begins with *Cephalanthus*, he attributes oppoſite leaves, and an inferior germen. He thought *Statice* akin to *Brunia*, and *Protea* the ſame genus as *Leucadendron*. To his third ſection he more happily adds *Mirabilis*; but to the fourth he very unfortunately introduces *Liſianthus* and *Hillia*.

The intelligent botaniſt will without difficulty trace the numerous errors of the above arrangement to various cauſes. Several natural orders, now well defined, had not entered into the conception of Linnæus, ſuch as the very natural and diſtinct one of *Proteaceæ*; and of the *Caprifolia*, ſketched in his fourth ſection, he had evidently but an obſcure perception. Of the differences of the Proteaceous genera he had ſcarcely any knowledge. That he ſhould not have formed a right idea of *Hebenſtretia* and *Selago*, whoſe affinities are ſtill in ſome uncertainty, is not wonderful; but they are unqueſtionably much out of place here. See DIPSACEÆ for further obſervations reſpecting ſome of the *Aggregatæ*.

AGLABITES, l. 5, add, and governor in Africa, Heg. 184, A.D. 800. This dynaſty laſted till the year of the Hegira 296, A.D. 908, and poſſeſſed the country which extended from Egypt to Tunis.

AGLAIA, in *Botany*, αγλαια, *ſplendour and beauty*, alluding to the ſhining verdure of the leaves, and elegance of the whole plant.—Loureir. Cochinch. 173.—Claſs and order, *Pentandria Digynia*, Lour. (rather perhaps *Pentandria Monogynia*.) Nat. Ord. *Trihilatæ*, Linn. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, with five notches, minute, permanent. *Cor.* Petals five, ovate, concave, fleſhy, converging almoſt cloſely into the form of a globe. Nectary tubular, with five plaits, rather ſhorter than the petals. *Stam.* Filaments none; anthers five, ovate, included in the folds of the nectary. *Piſt.* Germen ovate, ſuperior; ſtyle none; ſtigmas two, oblong, erect. *Peric.* Berry ovate, ſmooth, watery, of one cell. *Seed* ſolitary, ovate, ſlightly compreſſed, with four furrows.

Eſſ. Ch. Calyx inferior, five-toothed. Petals five, converging in the form of a globe. Berry with one ſeed.

1. A. *odorata*. Fragrant Aglaia. *Cây ngâu* of the Cochinchineſe. (Camunium ſineuſe; Rumph. Amboin. v. 5. 28. t. 18. f. 1.)—Native of Cochinchina and China. Commonly cultivated in the latter country, for the ſake of its great beauty and agreeable ſcent. Rumphius ſays it was imported from thence to Amboyna, where it ſtill retained the Chineſe name of *Tsjiulang*, and was continually in leaf and bloſſom; being eaſily propagated by cuttings of the larger branches, whoſe bark muſt be bruiſed ſlightly, and then covered for the ſpace of a month with good earth and dung, till roots are thrown out, which are then to be cut off and tranſplanted. Loureiro deſcribes this plant as a *tree* eight feet high, with a yellowiſh hard *wood*, thin brown *bark*, and ſpreading *branches* forming a very denſe head. *Leaves* pinnate with an odd one, conſiſting of three or five oval, entire, ſmooth, ſhining *leaflets*, tapering at the baſe, on ſhort footſtalks. *Cluſters* axillary, oblong. *Flowers* yellow, very minute, globoſe, odoriferous. *Berry* ſmall, red.

Rumphius deſcribes the *flowers* orange-coloured, never producing fruit in Amboyna.

We cannot find that this plant of Rumphius is taken up by any author, nor is his deſcription ſufficient to procure it a place in any ſyſtematic work. Loureiro, however, has furniſhed us with ſufficient characters to enable us to judge of its natural order, and to determine that it is not, as he ſuſpected, the ſame genus with Thunberg's *Bumalda*.

AGNES, ST., l. *ult.*, for E. *r.* N.

AGNESI, MARIA GÆTANA. See GÆTANA.

AGRA, col. 2, l. 3, *r.* N. lat. 27° 15'. E. long. 78° 28'.

AGRICULTURE, col. *ult.*, after See BOARD of AGRICULTURE, add and SOCIETY.

AGRIPHYLLUM, in *Botany*, ſo called by Juſſieu, from αγρια, *the holly*, and φυλλον, *a leaf*, becauſe its ſinuated prickly leaves reſemble that ſhrub. Juſſ. Gen. 190. See BERCKHEYA hereafter.

AGUJARI, LUCRETIA. See FILER *un Son.*

AGUILLAS, CAPE. *Dele Cape* NEEDLES.

AGUILLAS *Bank*, a bank on the ſouthern coaſt of Africa, ſtretching from Cape Point acroſs the entrance of Falſe bay to the mouth of Rio Infanta, or Great Fiſh River, and to the 37th parallel of Southern latitude. Mr. Barrow conjectures that this bank at one time formed a part of the continent.

AHM, in *Commerce*. See STUBGEN.

AHMEDABAD. For AGMED'*s r.* AHMED'*s*; l. 6, *r.* Sebermathy.

AHMEDNAGUR, l. 2, *r.* Dowlatabad.

AHOUAS. Add—This was once a large and flouriſhing city, the capital of a province of the ſame name, and the winter reſidence of Artabanes, the laſt of the Parthian kings; but it is now a wretched town, containing 600 or 700 inhabitants, and ſituated on the banks of the river Karoon; 48 miles S. of Shuſter.

AIDAN, col. 2, l. 18, for biſhop *r.* king.

AIDERBEITZAN. At the cloſe add—It is ſeparated from Armenia by the river Araxes, and from Irak by the Kizilozoin, or Golden ſtream. This province, including Erivan with the Karabag and Karadag, is divided into twelve diſtricts, *viz.* Urumea, Ardebil, Tabreez, Maraga Khoee, Kulkham, Serab, Gumrood, Sa Bulagh, Karadag, Erivan, Nuckſhivan, and Miſkeen, yielding a revenue of 89,405 tomauns. The moſt pictureſque, and at the ſame time moſt flouriſhing diviſion of Aiderbeitzan, or Azerbijan, lies along the N. and W. borders of the lake Urumea from Tabreez to the confines of Armenia, in which direction are the towns of Shebuſter, Taſoui (in ruins), Selmaſt, Khoee, and Urumea.

AIDIA, in *Botany*, a genus of Loureiro's, unknown to us but from his deſcription, whoſe name, from αιδιος, *eternal*, alludes to the indeſtructible nature of the wood.—Loureir. Cochinch. 143.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Caprifolia*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, tubular, five-toothed, erect. *Cor.* of one petal, ſalver-ſhaped; mouth of the tube woolly; limb in five deep lanceolate ſegments. *Stam.* Filaments none; anthers five, linear, inſerted into the corolla between its ſegments. *Piſt.* Germen ovate, inferior; ſtyle on a level with the anthers; ſtigma ovate-oblong. *Peric.* Berry ovate, "calycine," (meaning crowned by, and confluent with, the calyx,) ſmall, umbilicated, of one cell. *Seed* ſolitary, ovate.

Eſſ. Ch. Corolla ſalver-ſhaped, woolly in the throat. Anthers linear, ſeſſile between the ſegments of the corolla. Berry calycine, ſingle-ſeeded.

1. *A. cochinchinenſis.* Everlaſting-wood. *Cây Tlai* of the Cochinchineſe.—Native of Cochinchina. A large *tree*, with ſpreading *branches*. *Leaves* oppoſite, lanceolate, entire, ſmooth. *Flowers* white, in ſhort, lax, axillary *cluſters*. The *wood* is white, heavy, compoſed of thick fibres, and not handſome. Its chief uſe is for building the lower parts of houſes, and foundations of bridges, being extremely durable, either under ground or in water. *Loureiro.*

AIMONTE. Add, See AYEMONTE.

AINSWORTH, ROBERT, l. 2, for Woodyale *r.* Woodyate.

AIR, col. 11, l. 44, inſert elaſtic, and *r.* whatever elaſtic matter, &c.

AIR, *Atmoſpheric*, in *Chemiſtry*. The moſt recent experiments ſhew that atmoſpheric air is compoſed by bulk of about 21 *per cent.* of oxygen and 79 *per cent.* of azote; and this coincides ſo nearly with four volumes of azote and one of oxygen, that Dr. Prout has been induced to conſider this proportion as the true compoſition of atmoſpheric air, and conſequently that it is a real chemical compound compoſed of one atom oxygen and two of azote. Upon this ſuppoſition, and the ſuppoſition that the atom of oxygen be 10 and the atom of azote be 17.5, atmoſpheric air will be compoſed by weight of

$$\left.\begin{array}{ll}\text{Oxygen} & 22.22\\ \text{Azote} & 77.77\end{array}\right\}\text{ and by bulk of }\left\{\begin{array}{l}20\\ 80\end{array}\right.$$

And the ſpecific gravity of oxygen gas will be 1.1111 and of azote .9722, atmoſpheric air being 1.000. See ATOMIC *Theory*, *Addenda.*

The reaſons upon which the above opinion is chiefly founded are, in the firſt place, the impoſſibility of accounting on any other than chemical principles for the remarkable uniformity obſerved in the compoſition of atmoſpheric air all over the world. This fact is univerſally admitted, and no one can adduce even the ſlighteſt argument why this uniformity ſhould be explained on principles different from thoſe which govern other definite compounds, as, for example, water.

Secondly, experiment coincides extremely near with the above ſuppoſition, perhaps as nearly as it has ever done in any ſimilar example, even in thoſe on which the doctrine of volumes itſelf was founded by M. Gay Luſſac. Thoſe verſed in eudiometry, and who know the imperfections of all eudiometrical methods hitherto advanced, will feel little inclined to vouch for the *perfect* accuracy of their reſults, and to deny the poſſibility of an error of one *per cent.* Beſides, when we reflect how liable the atmoſphere is to contaminations of every kind, the chance of ſuch an error is ſtill further increaſed.

About the ſame time (November 1815) that the above opinion was advanced by Dr. Prout, a ſimilar opinion was publiſhed by Dobereiner, in a paper inſerted in Schweigger's Journal. Thomſon's Annals of Philoſophy, vol. vi. p. 321.

AIR, in *Muſic*, l. 5, for rhyme *r.* rhythm.

AIR-*Lamp*, col. 2, l. 4, for driven *r.* drive it.

AIR-*Pump*, *Laws of Rarefaction*, &c., col. 4, l. 11 from the bottom, add—Some of the experiments above recited, as having been made in *vacuo*, would only ſucceed in a very imperfect ſtate of exhauſtion, as is evinced from other experiments detailed in the ſequel of the article.

AIR,—Experiments for ſhewing the elaſticity or ſpring of the air, col. 2, exp. 6, add to ſquare phial A, of thin glaſs. —Miſcellaneous experiments, N° 5, l. *ult.*, *r.* it will not be extinguiſhed.

AIR, in *Geography*, a townſhip of Pennſylvania, in the county of Bedford, containing 1179 inhabitants.

AIRY. See AERY.

AITZEMA, l. 2, *r.* Dockum.

AKISKA, in *Geography*, one of the Turkiſh pachalics of Armenia, which lies near the limits of the Turkiſh empire, and has the Black ſea to the W., Immeritia to the N., Kars and Erzeroom to the S., and Georgia to the E. It extends a conſiderable way along the banks of the Kur, and contains much arable land, with many cities and villages, and minerals in its mountainous parts. Akalzike (new Caſtle) or Akiſka, which gives name to the province, is the capital: it is a populous and commercial city, without walls or fortifications, and only defended by a ruined citadel, ſtanding in an open valley on the left bank of the Kur, and inhabited by Jews, Turks, Greeks, Armenians, and Georgians.

ALA, in *Botany*, l. 4, for upwards *r.* downwards.

ALANGIUM, ſo denominated by Lamarck, by a ſlight alteration of one of its Malabar names, *Alangi;* and if any barbarous generic appellations are to be tolerated, this certainly may.—Lamarck Dict. v. 1. 174. Juſſ. Gen. 323. Vahl Symb. v. 2. 61. Willd. Sp. Pl. v. 2. 1174. Ait. Hort. Kew. v. 3. 302.—Claſs and order, *Icoſandria Monogynia.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, ſhort, permanent, with from ſix to ten ſmall erect teeth. *Cor.* Petals from ſix to ten, linear, undivided, much longer than the calyx into which they are inſerted, ſpiral in the bud, afterwards recurved. Nectary cup-ſhaped. *Stam.* Filaments ten or twelve, inſerted into the calyx, erect, thread-ſhaped, hairy below, ſcarcely half the length of the petals; anthers terminal, vertical, linear, obtuſe, rather broader and longer than the filaments, burſting at each ſide longitudinally. *Piſt.* Germen turbinate, inferior; ſtyle cylindrical, erect, rather longer than the ſtamens; ſtigma capitate, lobed, very large. *Peric.* Berry globular, with a rather coriaceous coat, crowned with the calyx, internally fleſhy, of one cell. *Seeds* from one to three, nearly lenticular.

Eſſ. Ch. Calyx ſuperior, with from ſix to ten teeth. Petals from ſix to ten. Berry coated, of one cell, with few ſeeds.

Obſ. We do not ſcruple to remove this genus from the claſs *Polyandria*, where Willdenow has placed it, but with which the inſertion of the ſtamens does not agree, to *Icoſandria*, where it ranges with its natural allies. LEMNISCIA (ſee that article) anſwers in habit, and in ſeveral characters, to *Alangium;* but its fruit is not ſufficiently known to allow of an abſolute deciſion, nor do the anthers agree.

1. A. *decapetalum.* Sage-leaved Alangium. Lamarck n. 1. Willd. n. 1. Ait. n. 1. Vahl Symb. v. 2. 61. (Grewia ſalvifolia; Linn. Suppl. 409. Angolam; Rheede Hort. Malab. v. 4. 39. t. 17. Arbor indica baccifera, fructu umbilicato rotundo, ceraſi magnitudine dicocco; Raii Hiſt. v. 2. 1497.)—Flowers with ten petals. Branches becoming ſpinous.—Native of the Eaſt Indies. Kœnig ſent ſpecimens to Linnæus, and in the year 1779 he alſo communicated ſeeds from Ceylon to Kew garden; but their progeny has not yet flowered, if it be ſtill alive. Rheede deſcribes this as a handſome *tree*, an hundred feet high, and twelve in circumference, with ſpreading branches, white hard wood, and a bitteriſh, acrid, aromatic bark. The *root* is fungous, reddiſh, fragrant and bitter, with a yellowiſh bark. The *branches* bear leaves and flowers together, and finally aſſume a ſharp ſpinous termination. *Leaves* alternate, on ſhort downy ſtalks, ovate-oblong, obtuſe, entire, ribbed, veiny, four or five inches long, pliant, fragrant; ſmooth and ſhining above; paler, reticulated, and roughiſh, beneath. *Flowers* axillary, either ſolitary, or two or three together, on ſimple, ſhort, downy ſtalks. *Calyx* downy. *Petals* rather ſilky externally; white within. *Anthers* bright red. *Fruit* the ſize of a large cherry; downy when young; purpliſh when ripe, full of ſweet fragrant pulp, which is eſteemed very delicious, and contains one, two, or three black *ſeeds.* The inhabitants of Malabar compare the *flowers* to an imperial diadem, and therefore conſider this tree as an emblem of royalty. The expreſſed juice of the root is purgative, and uſed for expelling inteſtinal worms. Its powder is thought an antidote for the bites of ſerpents, and other venomous animals.

2. A. *hexapetalum.* Broad-leaved Alangium. Lamarck n. 2. Willd. n. 2. Vahl Symb. v. 2. 62. (Kara Angolam; Rheede Hort. Malab. v. 4. 55. t. 26. Arbor indica prunifera, fructu umbilicato corticoſo perſici ſimili; Raii Hiſt. v. 2. 1483.)—Flowers with ſix petals. Branches not ſpinous.—Native of the coaſt of Malabar, in ſtony, ſandy, mountainous places, always in flower and leaf. Its trunk is of lofty ſtature, but inferior to the former. *Leaves* broader, more ovate, and pointed, ſmooth, bitter and acrid, but not aromatic; paler beneath. *Flowers* ſmaller, whitiſh, nearly ſeſſile, with only ſix *petals. Fruit* globoſe, the ſize of a ſmall apple, having a thick, downy, purple coat, and viſcid acid pulp.

3. A. *tomentoſum.* Downy Alangium. Lamarck n. 3.—“Branches ſcarcely ſpinous. Leaves oblong, bluntiſh; their ribs downy beneath, like the footſtalks.”—Found in the Eaſt Indies by Sonnerat. Allied to the firſt ſpecies in the form of its *leaves*, and to the ſecond in the nature of its *fruit.* The *flowers* are unknown. The young ſhoots, ſtalks, calyx, and ribs of the leaves, are clothed with ſhort cottony down. *Lamarck.*

AL-ARAF, l. 5, for Alcoran *r.* Koran.

ALASAN, in *Geography*, the *Auxan* of Strabo, a river of Georgia, which ſeparates this province from Shirvan, and taking its riſe near that of the Araqui, not far from the gates of Caucaſus, purſues a S.E. courſe, until it meets the Kur or Cyrus at Douhizil. About 30 miles above this place it is joined by the Kabri or Yari, which fertilizes the greateſt part of the province of Kaket.

ALBA Longa, l. 8, for furrowed *r.* farrowed.

ALBANIA, col. 2, l. 5, add—Mr. Hobhouſe rates the population of Albania at about 1,200,000 ſouls.

ALBANS, St., a townſhip of America, l. 3, for 256 *r.* 1669.

ALBANY. Add after Saratoga—It is now reſtricted to an area of 462 ſquare miles, or 295,689 acres. By the cenſus in 1810, its population conſiſted of 34,661 ſouls, its ſenatorial electors were 2971, and the number of ſlaves was 772.

Albany, l. 4. This city and ſuburbs in 1812 contained about 12,000 inhabitants, 1800 houſes and ſtores, 10 houſes for public worſhip, and ſeveral public buildings.

Albany, a townſhip of the diſtrict of Maine, in the county of Oxford, with 165 inhabitants.

ALBEMARLE, a county of America, &c. contained, in 1810, 18,268 inhabitants, of whom 9226 were ſlaves.

ALBERT I., l. 9, for between *r.* with. Col. 2, l. 11 from the bottom, for Rhees *r.* Reus, and *dele* near Schaffhauſen.

Albert's or *Current Dollar*, with ½ and ¼ ditto, Dutch ſilver coins valued at 50, 25, and 12½ ſtivers, each about 1 *per cent.* agio. Albert's dollar is alſo uſed as a money of account at Riga. See Rix-dollar.

ALBUMEN, in *Chemiſtry.* Conſiderable additions have been made to our knowledge reſpecting this important animal principle ſince the firſt volume of the Cyclopædia was publiſhed. Theſe we ſhall briefly notice here.

The firſt thing deſerving to be mentioned is the diſtinction between *coagulation*, *gelatinization*, and *precipitation*, terms which had been always confounded till Dr. Boſtock defined their difference. By *coagulation* is now underſtood the paſſing of a ſubſtance from a fluid to a ſolid ſtate by the agency of heat only, or, in ſome inſtances, without the immediate co-operation of any external agent; as, for example, in the *coagulation* of the fibrin of the blood. *Gelatinization* is the property which a warm ſolution of jelly poſſeſſes of becoming concrete as it cools. *Precipitation* is the effect which different ſubſtances or re-agents produce by combining and forming ſolid compounds with the principles operated upon.

The next circumſtances deſerving of notice are the effects of galvaniſm upon albumen, as aſcertained by Mr. Brande.

Mr. Brande found, that when albumen was expoſed to the action of a galvanic battery, an apparent coagulation took place at the negative pole, as well as at the poſitive. The effects of this agent, however, were different, according to its intenſity. Thus, with a comparatively high power, the coagulation went on rapidly at the negative pole, and ſlowly at the poſitive; whereas, with a very low power, the coagulation was comparatively rapid at the poſitive pole, while at the negative pole no coagulation took place, the ſmall proportion of albumen being retained in ſolution by the alkali attracted thither. Dr. Murray, however, who ſaw theſe experiments repeated in a general manner by Mr. Ellis, thinks that Mr. Brande was deceived, and that the appearance of coagulation was produced only from the numerous aërial bubbles entangled in the viſcid albumen.

The opinion entertained by chemiſts at preſent reſpecting the coagulation of albumen, does not differ much from that of Bucquet, who conſidered it as a ſort of ſoap, the animal matter being retained in ſolution by the ſoda preſent. An opinion, cloſely reſembling this, has been ſucceſſively advanced by Dr. Thomſon, ſir Humphry Davy, and Mr. Brande, who appear to conſider this albumen as merely a ſolution of an animal matter in water and ſoda, and that all the agents known to coagulate or precipitate it, act by abſtracting the ſoda and water.

The effects of acids and other re-agents upon albumen, although they have been mentioned in a general manner in the Cyclopædia, deſerve to be more fully detailed here, as much additional light has been thrown on the ſubject within the laſt few years, from the labours of Berzelius and others.

Acids, as is well known, precipitate albumen immediately; at leaſt this is the caſe with all the mineral acids when concentrated. Dilute phoſphoric, fluoric, and acetic acids, however, do not precipitate albumen. Coagulated albumen, according to Berzelius, is charred by concentrated ſulphuric acid; but when diluted with ſix or ſeven times its weight of water, and digeſted with it, the acid aſſumes a reddiſh colour, but diſſolves ſcarcely any thing. The portion not diſſolved he conſiders as a compound of albumen with exceſs of acid. On depriving it of this exceſs of acid, by waſhing it with pure water, a neutral combination is obtained, which is ſoluble in water. This ſolution reddens litmus paper, and yields a precipitate with acids as well as alkalies, the former being combinations of the albumen with the acid employed, and which may be again rendered ſoluble by waſhing in water, the latter being again ſoluble with a ſlight exceſs of alkali. Hence he conſiders ſulphuric acid to be capable of combining with albumen in two proportions; one in which the acid is neutralized, and which is ſoluble in water; the other, in which the acid is in exceſs, and which is inſoluble in water. In dilute muriatic acid ſcarcely any of the albumen is diſſolved, even by boiling, neither does the acid liquor afford any precipitate with ammonia, or pruſſiate of potaſh. Evaporated to dryneſs, a browniſh reſidue is obtained, from which potaſh diſengages a little ammonia. Concentrated muriatic acid decompoſes albumen by boiling, and produces a red or violet-coloured ſolution. The albumen that has been digeſted in weak muriatic acid, by waſhing repeatedly with water, is converted into a gelatinous maſs, which is perfectly ſoluble in tepid water: this is to be conſidered as a neutral combination of albumen with the acid, while the former one contains an exceſs. The ſolution has the ſame properties nearly as that of ſulphuric acid above-mentioned. Nitric acid of ſp. gr. 1.25, digeſted with albumen, renders it yellow, and diminiſhes its coheſion. The fluid becomes yellow, and a ſmall quantity of fatty matter is formed. During this proceſs, azotic gas is given out in abundance. After twenty-four hours, the albumen is converted into a pulverulent maſs of a pale citron colour, which is depoſited at the bottom. This matter being ſeparated and well waſhed acquires a deep orange colour, which Berzelius conſiders as the *acide jaune* of Fourcroy and Vauquelin, who obtained it by digeſting muſcular fleſh with nitric acid. This is ſoluble in alkaline leys, and imparts to them an orange colour; and it is alſo ſoluble in acetate of potaſh and ſoda. Thus, according to Berzelius, albumen is capable of exiſting with the nitric acid, as well as with the other acids, in two diſtinct ſtates of combination, the one having an exceſs of acid, and of a pale yellow colour, and the other neutral, and of an orange hue. Berzelius ſeems to conſider the different nature of the compounds formed with nitric acid to depend upon the formation of the malic acid, by the action of the nitric acid upon the albumen, which at the ſame time combines with it. Hence, in his opinion, they are triple compounds of albumen, nitric and malic acids. Mr. Hatchett found, that if albumen, after being ſteeped in diluted nitric acid, be waſhed, and then boiled in water, it is diſſolved, and forms a pale yellow liquid, which gelatinizes when properly concentrated, and has all the properties of gelatine. Perhaps this boiling deprives it of the malic acid above-mentioned, or perhaps the malic acid was not formed by the dilute nitric acid; for Berzelius, who ſeems not to have been acquainted with this fact, found alſo, that when albumen was precipitated from its ſolution in acetic acid by the nitric acid, the yellow precipitate was rendered gelatinous by waſhing, and ſoluble in water, like the compounds of albumen with the other acids above-mentioned; all which compounds are probably ſimilar to the above, and which was conſidered by Mr. Hatchett as gelatine. The acetic acid readily diſſolves albumen by the aſſiſtance of heat, firſt converting it, if previouſly coagulated, into a tremulous jelly. The ſolution is colourleſs, and of a mawkiſh and ſlightly acid taſte. When ſufficiently evaporated, it again becomes gelatinous; and when completely exſiccated is a tranſparent maſs which reddens litmus, but is inſoluble both in hot and cold water, without a freſh addition of acetic acid. Ammonia and pruſſiate of potaſh produce from this ſolution in acetic acid a whitiſh precipitate. Alkalies alſo produce a precipitate which is again diſſolved on their being added in ſlight exceſs. Sulphuric, muriatic, and nitric acids produce precipitates, which are compounds of the albumen with the acid employed, the acid being in exceſs; hence, if they are waſhed in water, as before obſerved, they become neutral, and capable of ſolution in water, like gelatine.

Solutions of the different earths, and even ſome of their ſalts, as alum, ſulphate of magneſia, and ſilicated potaſh, were found by Dr. Thomſon to have no effect upon albumen when diſſolved in water, in the proportion of one white of an egg to a pint of water. The caſe, however, was very different with the metallic ſalts and oxyds, moſt of which were found to have a powerful effect upon it, eſpecially the ſulphates, muriates, and nitrates of the metals, while the pruſſiates, and one or two others, had no effect. One of the moſt delicate teſts of albumen, according to Dr. Boſtock, is a ſolution of oxymuriate of mercury: a ſingle drop of this, let fall into water, containing only $\frac{1}{20000}$ parts of its weight of albumen, produces an evident milkineſs, and a curdy precipitate falls. Heat renders the operation of this teſt more effectual. Perhaps the teſt of albumen leaſt liable to ambiguity, is that recommended by Berzelius above-mentioned; namely, the addition of the pruſſiate of potaſh to a ſolution of albumen in acetic acid. Albumen is compoſed of hydrogen, carbon, oxygen, and nitrogen or azote, in the proportions, according to the experiments of Gay Luſſac and Thenard, of

Hydrogen - -	7.540
Carbon - - -	52.883
Oxygen - - -	23.872
Azote - - -	15.705
	100.000

Albumen never exiſts in an abſolutely pure ſtate in animal bodies, but is always combined with other animal matters, and various ſalts. See Blood and *Animal* Fluids.

ALBURGH, in *Geography*, a town of America, in Vermont, and county of Grand Iſle, containing 1106 inhabitants.

ALBUS, in *Commerce*, a ſmall coin and money of account at Caſſel, Cologne, and other places in Germany. The whole principality of Heſſe keeps accounts in rix-dollars of 32 albuſes, ſubdivided into 9 pfenings, or 12 hellers current. A ſpecie rix-dollar is worth $42\frac{2}{3}$ Heſſian albuſes. Coins in ſilver are, pieces of 8, $5\frac{1}{3}$, 4, $2\frac{2}{3}$, and $1\frac{1}{3}$ albuſes; and in copper, pieces of 1 and 2 albuſes. Cologne keeps accounts in rix-dollars ſpecie of 80 albuſes, or rix-dollars current of 78 albuſes; the albus being reckoned at 12 hellers: and albuſes are ſilver coins.

ALCEDO *Capenſis*, l. 2, for ſhort-tailed *r.* long-tailed. A. *rudis*, l. 3, *r.* long-tailed.

Alcedo. Add—Dr. Shaw has deſcribed ſome other ſpecies, and referred ſome of thoſe above-mentioned to other titles under *Alcedo*, and to *Galbula*. The A. *gigantea* is the *fuſca* above-noted: the *afra* is the *maxima:* the *amazona* is gloſſy-green, white beneath; the ſides of the neck white; thoſe of the body variegated with green, and the wing and tail feathers ſpotted with white; the amazonian K. of Latham, about the ſize of the belted K., or A. *alcyon:* a native of Cayenne. A. *Malimbica*, ſea-green or beryl K. with the throat and belly white; the wing-coverts and ſtreak acroſs the eyes black: is much allied to the A. *capenſis* in the form of its belt and diſtribution of its colours; numerous in Malimba, about the ſea-coaſts, feeding on worms and fiſh. A. *javanica*, blue K., with ſea-green back, yellowiſh-white head, neck, and body; the crown of the head ſtreaked with black. (See A. *leucocephala.*) A. *canerophaga*, greeniſh-blue K., yellowiſh beneath, with black wing-coverts and eye-ſtripe, and ferruginous bill; crab-eating K. of Latham: native of Senegal, where it is called Crab-eater. (See A. *Senegalenſis.*) A. *Coromanda*, pale-violaceous roſe-coloured K., ruſeſcent beneath, with the rump marked by a longitudinal blueiſh-white band, and white throat: a native of Coromandel, an elegant ſpecies. A. *collaris*, blue-green K., white beneath, with white collar; Latham's variety of A. *ſacra:* a native of the Philippine iſlands. A. *bicolor* of Gmelin, referred to A. *inda*. A. *capiſtrata*, white-collared K. of Latham. (See A. *cærulea* above.) A. *albiroſtris* referred to Galbula. A. *cyanocephala*, deſcribed under A. *cæruleo-cephala*. A. *tribrachys*, tridigitated K. of Nat. Miſc., deep-blue K., ferruginous beneath, with blackiſh wings and three-toed feet; a native of New Holland: to this the azure K. of Latham is much allied.

ALCINA, in *Botany*, Cavan. Ic. v. 1. 10. t. 15, ſo named by that author, in memory of Francis Ignatius Alcina, a learned Spaniſh Jeſuit, who reſided long in the Philippine iſlands, and devoting his leiſure hours to natural hiſtory, left a folio MS., of which Cavanilles ſpeaks as likely to be publiſhed. This ſuppoſed genus, however, is now ſunk in Wedelia; ſee that article.

ALCOHOL, in *Chemiſtry*. A new analyſis of alcohol has been lately publiſhed by M. de Sauſſure. He employed for his analyſis alcohol of the ſp. gr. .8302, at the temperature of 62.8, obtained by rectifying common ſpirits. This alcohol he conſidered as a compound of 13.8 water, and 86.2 of the Richter's abſolute alcohol; and the water being ſubtracted from the products obtained, the reſidue gave the compoſition of the abſolute alcohol of Richter. His method of analyſis was to paſs the vapour of alcohol through a red-hot porcelain tube, and along a glaſs tube ſurrounded by ice nearly ſix feet in length. The products were carefully collected and weighed. There was a little charcoal depoſited in the porcelain tube, and a very little oil in the glaſs tube. The water obtained amounted to $\frac{1000}{3464}$ of the weak alcohol employed, which was 1256.7 grs., and it contained $\frac{1}{281.5}$ of its weight of abſolute alcohol. The combuſtible gas weighed 912.3 grs., and there was a loſs of 55.82 grs. The gas was proved to poſſeſs the properties of olefiant gas. Hence it follows that alcohol may be conſidered as compoſed of olefiant gas and water; and the reſult of the analyſis was, that the abſolute alcohol of Richter is compoſed of

Hydrogen - - -	13.70
Carbon - - -	51.98
Oxygen - - -	34.32
	100.00

Or the compoſition may be ſtated thus:

Olefiant gas - -	61.63
Water - - -	38.37
	100.00

If, with Dr. Thomſon, we ſuppoſe alcohol to be a compound of one volume of olefiant gas, and one volume of vapour of water, condenſed into one volume, its ſpecific gravity in a ſtate of vapour will be juſt equal to that of theſe two elaſtic fluids added together. The ſpecific gravity of theſe two bodies is,

Olefiant gas - - -	.974
Vapour of water - -	.625
	1.599

And M. Gay Luſſac determined by experiment the ſpecific gravity of the vapour of alcohol to be 1.613, which very nearly coincides with the above. Hence there is every reaſon for preſuming that the above is the true compoſition of alcohol, which, ſtated more correctly on this ſuppoſition, will be as follows:

3 atoms hydrogen -	3.75
2 atoms carbon -	15.
1 atom oxygen -	10.
	28.75

Or *per cent.* of

Hydrogen - - -	13.04
Carbon - - -	52.17
Oxygen - - -	34.79
	100.00

Or,

Olefiant gas - -	60.86
Vapour of water -	39.14
	100.00

See Fermentation, *Addenda*.

Alcohol *of Sulphur*, now generally termed *ſulphuret of carbon*, is a curious compound of ſulphur and carbon, firſt deſcribed by Lampadius. See Carbon, and particularly Sulphur, in the Cyclopædia; where the recent experiments of Berzelius and Dr. Marcet on this ſubſtance are detailed.

ALDRICH, col. 2, l. 5, *r.* aſcribed to him, but, as ſome ſay, erroneouſly.

ALE, col. 2, l. 28, after parliament, add—The groſs duty on ale, or ſtrong beer, is 10*s.* *per* barrel, with an allowance of 10*d.*, ſo that the nett duty is 9*s.* 2*d.* For table-beer not worth more than 24*s.* the groſs duty is 2*s.* *per* barrel, with an allowance of 2*d.*, ſo that the nett duty is 1*s.* 10*d.*

By 48 Geo. III. c. 143. the ſeveral duties impoſed upon ale-licences by former acts were repealed, and a new duty of 2*l.* 2*s.* impoſed. All perſons who ſhall ſell ale or beer by retail, or ſhall ſell cyder or perry, to be conſumed in their houſes or premiſes, ſhall firſt take out an exciſe-licence, within the limits of the chief office of exciſe in London, under the hands and ſeals of two or more of the commiſſioners of exciſe in England, or of ſuch perſons as they, or the major part of them, ſhall appoint for that purpoſe: and in other parts of England, the licences are to be granted under the hands and ſeals of the ſeveral collectors and ſupervifors of exciſe within their reſpective diſtricts. The duration of ſuch licences is limited to the 10th of October next enſuing the time of granting thereof. All licences granted at the general licenſing day ſhall be made for one year only, to commence on the 29th day of September.

Ale-*Houſes*, l. 4, after houſes, add—under penalty of 3*l.* 6*s.* 8*d.* 5 & 6 Ed. VI. c. 25. 26 Geo. II. c. 31.

L. 9, after coſts, add—But no perſon ſhall be liable to the ſaid penalty, for ſelling ale or beer in caſks containing not leſs than five gallons, or in bottles, not leſs than two dozen quarts, not to be drank in his houſe, out-houſe, yard, garden, orchard, or other place. 38 Geo. III. c. 54. Penalties may be mitigated for the firſt offence; and all penalties ſhall be ſued for and determined within ſix months after the offence committed.

L. 15, after only, add—The day and place for granting licences ſhall be appointed by two or more juſtices for the diviſion, by warrant under their hands and ſeals, at leaſt ten days before ſuch meeting, directed to the high conſtables, requiring them to order their petty conſtables, or other peace officers, to give notice to the ſeveral inn-keepers and alehouſe-keepers within their reſpective conſtablewicks, of the day and place of ſuch meeting: and all licences granted at any other time and place ſhall be void. And no licence ſhall be granted to any perſon not licenſed the year preceding, (except in cities or towns corporate,) unleſs he produce a certificate under the hands of the miniſter and the major part of the churchwardens and overſeers, or elſe of three or four reputable and ſubſtantial houſeholders of the place, ſetting forth that ſuch perſon is of good fame and of ſober life and converſation; and it ſhall be mentioned in ſuch licence that ſuch certificate was produced, otherwiſe the licence ſhall be void. No juſtice of the peace, being a common brewer of ale or beer, inn-keeper, or diſtiller, or a ſeller of and dealer in ale or ſpirituous liquors, or intereſted in any of the ſaid trades, or being a victualler or maltſter, ſhall be capable or have any power to grant licences for ſelling ale or beer, or any other liquors, but the ſame ſhall be void. All mayors, town-clerks, and other perſons whom it may concern, ſhall make out ale-licences duly ſtamped before the recognizance be taken; on pain of 10*l.*, half to the king, and half to the proſecutor, with coſts. 6 Geo. c. 21. 1 Ann. ſtat. 2. c. 22.

L. 18, after tippling, &c. add—1 Jac. c. 9. 1 Ch. c. 4. By 21 Jac. c. 7. innkeepers who ſuffer tippling are diſabled from keeping an ale-houſe for three years. By 30 Geo. II. c. 24. if any perſon licenſed to ſell any ſorts of liquors, or who ſhall ſell or ſuffer the ſame to be ſold in his houſe, out-houſe, ground, or apartment thereto belonging, *ſhall knowingly ſuffer* any gaming with cards, dice, draughts, ſhuffle-boards, miſſiſſippi, or billiard-tables, ſkittles, nine-pins, or with any other implement of gaming in his houſe, out-houſe, ground, or apartment thereunto belonging, by any journeymen, labourers, ſervants, or apprentices, and ſhall be convicted thereof on confeſſion, or oath of one witneſs, before one juſtice, within ſix days after the offence committed; he ſhall forfeit for the firſt offence 40*s.* and for every other offence 10*l.* by diſtreſs by warrant of ſuch juſtice; three-fourths of which ſhall be to the churchwardens for the uſe of the poor, and one-fourth to the informer.

And if any journeyman, labourer, or apprentice, or ſervant, *ſhall game* in any houſe, out-houſe, ground, or apartment thereto belonging, wherein any liquors ſhall be ſold, and complaint thereof ſhall be made on oath before one juſtice where the offence ſhall be committed, he ſhall iſſue his warrant to the conſtable or other peace-officer of the place wherein the offence is charged to have been committed, or where the offender ſhall reſide, to apprehend and carry the offender before ſome juſtice of the place where the offence ſhall be committed, or where the offender ſhall reſide; and if ſuch perſon ſhall be convicted thereof by the oath of one witneſs or confeſſion, he ſhall forfeit not exceeding 20*s.* nor leſs than 5*s.* as the juſtice ſhall order, every time he ſhall ſo offend, and be convicted as aforeſaid, one-fourth to the informer, and three-fourths to the overſeers for the uſe of the poor; and if he ſhall not forthwith pay down the ſame, ſuch juſtice ſhall commit him to the houſe of correction, or ſome other priſon of the place where he ſhall be apprehended, to be kept to hard labour for any time not exceeding one month, or until he ſhall pay the forfeiture.

If any perſon (allowing for ſome excepted caſes under 1 J. c. 9.) ſhall continue drinking or tippling in any inn, victualling-houſe, or ale-houſe, he ſhall on conviction thereof before a mayor or juſtice of the peace on view, confeſſion, or oath of one witneſs, forfeit for every offence 3*s.* 4*d.*, to be paid within one week next after the conviction to the churchwardens, who ſhall be accountable for the ſame to the uſe of the poor; and if he ſhall refuſe or neglect to pay the ſame, it ſhall be levied by diſtreſs. And if he be not able to pay the forfeiture, then the mayor, juſtice, or court where the conviction ſhall be, may puniſh the offender, by ſetting him in the ſtocks for every offence by the ſpace of four hours. 1 J. c. 9. 4 J. c. 5. ſ. 4. 21 J. c. 7. ſ. 2. 1 C. c. 4.

If any alehouſe-keeper ſhall be convicted of the ſaid offence, he ſhall moreover for the ſpace of three years be diſabled to keep any ſuch ale-houſe. 7 J. c. 10. 21 J. c. 7. ſ. 4.

ALECTORIA, in *Botany*, ſeems to derive its name from αλεκτωρ, *unmarried*, becauſe nothing has been made out reſpecting the male flowers. This is one of the tribe of filamentous Lichens, eſtabliſhed as a genus by Acharius, (ſee Lichenes,) and we ſhall endeavour to explain its characters.—Achar. Syn. 291. Lichenogr. t. 13. f. 1—4. Sm. Prodr. Fl. Græc. Sibth. v. 2. 323.—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes.*

Eſſ. Ch. Frond cartilaginous, branched; ſpongy within. Shields ſeſſile, thick, bordered, flattiſh, of the ſubſtance of the frond; their diſk ſlightly coloured.

1. A. *jubata*. Wiry Alectoria, or Rock-hair. Achar. n. 1. Prodr. Fl. Græc. n. 1. (Parmelia jubata; Achar. Meth. 272. Lichen jubatus; Linn. Sp. Pl. 1622. Achar. Prodr. 219. Weſtring Lich. 183. t. 14. Engl. Bot. t. 1880. Schrad. Journ. v. 1. 83. t. 3. f. 4. Uſnea jubata nigricans; Dill. Muſc. 64. t. 12. f. 7.)

β. Lichen chalybeiformis; Linn. Sp. Pl. 1623. Achar. Prodr. 220. (Uſnea rigida, horſum-vorſum extenſa; Dill. Muſc. 66. t. 13. f. 10. Parmelia jubata δ; Achar. Meth. 273.)

Frond thread-ſhaped, ſmooth, very much branched, of a ſmoky-a ſmoky-brown; branches capillary, compreſſed at their ſubdiviſions. Shields ſeſſile, blackiſh, with an entire margin; at length convex and rugged. Warts tumid, powdery, white.—Found on the trunks and branches of old trees, eſpecially of the fir kind, throughout Europe, from Lapland to the Bithynian Olympus. β. On pales, rocks, and ſtones. The ſhields are extremely rare. The older ſpecimens hang in long blackiſh tufts, like the mane of a horſe, from aged trees in mountain foreſts; the variety β grows proſtrate and entangled. There is no central fibre, the inſide being hollow, or ſlightly ſpongy. White powdery *warts* are frequent and conſpicuous on the pendulous variety, but theſe are not now conſidered by Acharius as having any ſhare in the fructification. The matter has not been decided either way by ſufficient experiments. The learned author, whom we have juſt named, reckons up four more varieties, by the names of *capillaris* (which is *Lichen ſetiformis* of Ehrhart); *laneſtris*; *cana* (figured by Weſtring above cited, at his t. 14. f. B.); and *ſetacea*. Theſe we have not examined. The *cana*, which is hoary, with pale fleſh-coloured ſhields, appears to have ſome claims to ſpecific diſtinction.

2. A. *crinalis*. Mane Alectoria. Achar. n. 2. Lichenogr. 594.—"Frond ſlightly compreſſed, much branched, greyiſh, very brittle; branches thread-ſhaped, roundiſh towards the upper part. Shields? convex, brown."—Found often mixed with other filamentous Lichens, on the trunks and branches of trees. *Acharius*.

3. A. *uſneoides*. Flattened Alectoria, Arabian Uſnea. Achar. n. 3. (Parmelia uſneoides; Achar. Meth. 270. Lichen Uſnea; Linn. Mant. 131. Swartz Ind. Occ. 1912. Uſnea ceratoides candicans, glabra et odorata; Dill. Muſc. 71. t. 13. f. 14? and certainly t. 84. f. 10.)—Frond compreſſed, flat, longitudinally ſtriated, much branched, pale and whitiſh; the branches ſomewhat fibrous. Shields flat, entire, of the ſame colour.—On trees in warm countries, in Aſia, Africa, and America. Generally pendulous, always ſpreading, from ſix to eighteen inches long, linear, flat, cream-coloured, very ſmooth to the touch; fragrant and muſky when freſh; eaſily ſplitting when old and dry into two flat layers, expoſing a pure white internal powder. The *ſhields* are very ſmall. By age the whole becomes of a dirty-buff colour. The Arabian phyſicians uſed this moſs as a cordial, and thought it alſo procured ſleep. See our n. 6.

4. A. *ſarmentoſa*. Trailing Alectoria. Achar. n. 4. (Parmelia ſarmentoſa; Achar. Meth. 271. Lichen ſarmentoſus; Achar. Prodr. 180. New Stockh. Tranſ. v. 16. 212. t. 8. f. 2. Schrad. Journ. v. 1. 83. t. 3. f. 4. Engl. Bot. t. 2040. L. longiſſimus, ex cinereo candicans, rugoſus et mollior, receptaculis florum ruſeſcentibus; Mich. Gen. 77. t. 39. f. 2. Uſnea loris longis dichotomis, extremitatibus tenuioribus; Dill. Muſc. 59. t. 11. f. 2. U. dichotoma; Hoffm. Pl. Lich. t. 72.)—Frond roundiſh, ſomewhat angular and pitted, much branched, forked and divaricated, whitiſh; ultimate branches capillary and lax. Shields livid, rather concave, with a pale entire border.—Native of mountainous tracts in various parts of Europe, on trees or rocks. Mr. Borrer and Mr. Hooker met with it on the mountains of Inverneſs-ſhire in 1808. The *fronds* are of an ivory white, creeping, widely divaricated, ſometimes powdery, hollow; their ultimate branches peculiarly fine and numerous. *Shields*, communicated by Dr. Acharius, ſmall, with a greeniſh fleſh-coloured hollow diſk, finally becoming flattened and dilated.

5. A. *thrauſta*. Brittle Alectoria. Achar. n. 5. Lichenogr. 596.—"Frond round, ſomewhat compreſſed, branched, white; black at the baſe; branches unequal, zigzag, minutely fibrous and ſomewhat tendril-like."—Native of France and Switzerland. *Acharius*.

6. A. *arabum*. Arabian Alectoria. Achar. n. 6. Lichenogr. 596. (Uſnea ceratoides candicans, glabra et odorata; Dill. Muſc. 71. t. 13. f. 14.)—Frond round, ſomewhat compreſſed, branched, white; branches forked; the ultimate ones pointed and curved.—Native of the Eaſt Indies, St. Helena, and Madagaſcar. Profeſſor Acharius adopts this from Dillenius without examining a ſpecimen, conſidering it a diſtinct ſpecies from his *uſneoides*, n. 3, with which other botaniſts have confounded it. He relies alſo on Dillenius for the preſent plant being the true *Uſnea* of the Arabians. But as Dillenius confounded the two, and had no authority for taking one more than the other for the Arabian *Uſnea*, we cannot place any reliance on him in this reſpect. How far the two plants, ſo very ſimilar in his figures, are ſpecifically diſtinct, can only be known by an examination of the ſpecimen of his t. 13. f. 14. at Oxford. The other is ſufficiently well known, and was drawn by him from the herbarium of Mr. Charles Du Bois.

7. A. *canarienſis*. Canary Alectoria. Achar. n. 7. (Uſnea dichotoma compreſſa, ſegmentis capillaceis teretibus; Dill. Muſc. 72. t. 13. f. 15. Muſcus arboreus aurantiacus, ſtaminibus tenuiſſimis, ex inſulis Fortunatis; Pluk. Almag. 254. Phyt. t. 309. f. 1.)—Frond compreſſed, branched, orange-coloured; branches ſimply or triply forked; their ultimate ſegments round and capillary. —Native of the Canary iſlands. Acharius adopts this ſpecies entirely from Dillenius, who deſcribes it from a ſpan to a foot in length, compreſſed, undivided in the lower part, but in the upper copiouſly and repeatedly branched; the branches occaſionally three together, and their ſummits very fine. The whole is neither very rigid, nor ſoft, ſmoothiſh, of a dull yellow inclining to red. It tinges the ſaliva with a reddiſh-orange colour, but has no particular ſmell.

ALEMBERT, col. 4, l. 28, for Memoires *r.* Membres.

ALEPYRUM, in *Botany*, *α*, *without*, *λεπυρον*, *a bark*, *ſhell*, or *covering*, alluding to the want of corollaceous glumes, by which this genus is diſtinguiſhed from DEVAUXIA of the ſame author, to be deſcribed in its proper place hereafter.—Brown Prodr. Nov. Holl. v. 1. 253.—Claſs and order, *Monandria Polygynia*. Nat. Ord. *Reſtiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of two concave, keeled, permanent valves, claſping each other at the baſe, containing one or more flowers. *Cor.* none. *Stam.* Filament one, capillary, drooping, about as long as the calyx; anther ſimple, oval. *Piſt.* Germens ſeveral, from ſix to eighteen, ovate-oblong, ſuperior, inſerted into one ſide of a central oblong receptacle, and all turned one way; ſtyles as many, thread-ſhaped, combined at the bottom, ſpreading or deflexed at the upper part; ſtigmas linear, downy. *Peric.* Capſules as many as the germens, membranous, oval, of one valve and one cell, burſting longitudinally at one ſide. *Seed* ſolitary, obovate, pendulous.

Eſſ. Ch. Sheath of two valves. Corolla none. Anther ſimple. Germens unilateral. Capſules burſting longitudinally at one ſide. Seed ſolitary.

A genus of ſmall herbaceous plants, nearly allied to the more numerous one of *Devauxia*, and, in Mr. Brown's own opinion, ſcarcely to be ſeparated therefrom, the want of petals in *Alepyrum* being the only difference. The three ſpecies deſcribed by this author are all natives of the ſouth coaſt of New Holland, where he gathered them himſelf; nor do they appear to have been met with by any other botaniſt or collector. The *roots* are fibrous. *Leaves* radical, ſimple, linear-lanceolate, or ſetaceous. *Flower-ſtalks* radical, unbranched, ſingle-flowered.

1. A. *polygonum.* Many-jointed Alepyrum.—Sheath ſingle-flowered; the outer valve with a leafy point. Germens from fifteen to eighteen. Stalk twice or thrice the length of the leaves.

2. A. *Pumilio.* Dwarf Alepyrum. — Sheath ſingle-flowered; the outer valve with a leafy point. Germens from ſix to nine. Stalk the length of the leaves.

3. A. *muticum.* Pointleſs Alepyrum.—Sheath with a few flowers; the outer valve pointed.

ALEXANDER, in *Geography*, a townſhip of Ohio, in the county of Athens, having 765 inhabitants.

ALEXANDRIA, col. 6, l. 24, for Anaſtaſius *r.* Anatolius.

ALEXANDRIA, a town of New Ruſſia, &c. add—Alſo, the principal Ruſſian ſettlement in the Fox iſlands, and the reſidence of the governor on the iſland of Kodiak. (See KODIAK and FOX *Iſlands.*) The harbour is excellent, and ſheltered by ſeveral ſmall iſlands lying to the S.W. It conſiſts of about 50 houſes built of logs, the rooms of which are caulked with moſs, and covered with graſs. This is the principal depôt of the African company, where the furs are collected. This town is named St. Paul by captain Liſianſky. It has a church, a barrack for the Ruſſian convicts, a ſchool, and ſeveral ſtore-houſes belonging to the N.W. Company. Campbell's Voyage round the World, p. 108.

ALEXANDRIA, in Grafton county, &c. for 298 *r.* 409.

ALEXANDRIA, in Hunterdon county, &c. for 1503 *r.* 2271; and for 40 *r.* 46.

ALEXANDRIA, in Pennſylvania. Add, containing, in 1810, 156 inhabitants.

ALEXANDRIA, a town of the diſtrict of Columbia, having 7227 inhabitants, of whom 1488 are ſlaves. The county of the ſame name, excluſive of the town, has 1325 inhabitants, including 353 ſlaves.

ALFORD, l. 2, for 577 *r.* 322.

ALFORD, a town of America, in the diſtrict of Maine and York county, containing 1106 inhabitants.

ALFRED, l. 7, for tenth *r.* fourth.

ALFRED, *of Beverley.* Subjoin—See ALRED.

ALGEBRA, *Specious*, l. 4 from bottom, for four *r.* three. Col. 2, l. 22, for + *r.* —, or $a + b - c - d$. Line 35, for $a + b$ r. $a + c$.

ALGOA BAY. Subjoin—By Barrow's chart, Cape Recif in this bay is in S. lat. 34° 10′. E. long. 25° 40′. Variation 26° 40′.

ALIEN. Subjoin—It is alſo continued by the parliament of 1818.

ALIENS *Duty.* Add—See BOOK *of Rates.*

ALKALI, *New fixed*, in *Chemiſtry.* See LITHION.

ALKALI, *New Compound from Opium.* See MORPHIA and OPIUM.

ALKALINE ACRIMONY, l. 3, for four *r.* ſour.

ALL SFUGITA *r.* ALLA *Sfugita.*

ALL SOULS, l. *ult.*, for Joxtin *r.* Jortin.

ALLALITE. See MINERALOGY, *Addenda.*

ALLANITE. See MINERALOGY, *Addenda.*

ALLANTODIA, in *Botany*, from αλλας, αλλαντος, *a ſauſage*, alluding to the tumid oblong figure of the *Sori*, or lines of capſules, wrapped in their membranous coverings. —Brown Prodr. Nov. Holl. v. 1. 149. — Claſs and order, *Cryptogamia Filices.* Nat. Ord. *Filices.*

Eſſ. Ch. Fructification in ſcattered oblique lines, accompanying a vein. Involucrum vaulted, originating laterally from the vein, and inſerted into it by both margins; at length ſeparating at the inner one.

The habit of this genus, ſays Mr. Brown, is between NEPHRODIUM and DIPLAZIUM. (See thoſe articles.) *Polypodium umbroſum*, Hort. Kew. ed. 1, affords an example of it, and there are ſome unpubliſhed ſpecies. The cylindrical *involucrum* prohibits its union with *Aſpidium* or *Athyrium* of various authors, and that membrane, being inſerted by both margins into the ſame vein, and truly burſting, differs from the *involucrum* of *Aſplenium*, whoſe upper edge is not connected with the frond.

We ſelect the examples indicated by the author, not being quite ſatisfied of the limits of this genus, which is reduced to *Aſpidium* in the ſecond edition of Hort. Kew. poſſibly not with Mr. Brown's concurrence, his moſt indubitable genus of WOODSIA (ſee that article) being likewiſe there rejected.

We are poſſeſſed of many, perhaps of all, the nondeſcript *Allantodiæ* of which he ſpeaks. To theſe ſome other *Aſpidia* of Hort. Kew. may be akin; but *A. æmulum*, placed next to *umbroſum*, is not one of them, any more than a few of the neighbouring ſpecies, referred by the writer of this article to *Cyathea* in Fl. Brit. whoſe *involucrum* ſurely does not anſwer to the above character, their *ſori* being orbicular.

A. *umbroſa.* Madeira Wood Sauſage-fern. (Polypodium umbroſum; Ait. Hort. Kew. ed. 1. v. 3. 466. Aſpidium umbroſum; ed. 2. v. 5. 513. Willd. Sp. Pl. v. 5. 283. A. axillare; Schkuhr Crypt. t. 61.)—Frond triply pinnate; ultimate ſegments lanceolate, decurrent, deeply ſerrated; the lower ſerratures cloven. Lines contiguous; finally confluent.—Gathered in ſhady woods in Madeira, by the late Mr. Maſſon, who ſent roots to Kew, in 1779, and gave ſpecimens to the younger Linnæus. An elegant finely divided *fern*, about three feet high, with roughiſh *ſtalks*. *Leaflets* two or three inches long, and nearly one broad, pointed, pinnatifid almoſt to the mid-rib; the ſegments numerous, parallel, oblong, obtuſe, decurrent, veiny, ſmooth, of a fine green; moſt ſerrated at their extremity and upper margin; one or two of the lower ſerratures often cloven at the point. *Lines* moſt copious about the lower part of each leaflet. *Capſules* brown. *Involucrums* pale, variouſly torn and reflexed.

A. *auſtralis.* Southern Sauſage-fern. Br. n. 1.—Frond doubly pinnate, deltoid, membranous, flaccid. Leaflets pinnatifid, tapering at the point; lobes oblong, obtuſe, deeply ſerrated, many-flowered. Involucrum oblong.—Native of Van Diemen's iſland.

A. *tenera.* Tender Sauſage-fern. Br. n. 2. — Frond doubly pinnate, membranous, flaccid. Leaflets pinnatifid; lobes oblong, obtuſe, ſerrated, flowering at the baſe. Spots linear.—Gathered by Mr. Brown, in the neighbourhood of Port Jackſon, New South Wales.

The *Aſpidium axillare*, Willd. Sp. Pl. v. 5. 278. Ait. ed. 2. v. 5. 512, ſhould ſeem, if the ſpecific character of Willdenow were right, to belong to the preſent genus. But we ſuſpect that character to have been taken from ſomething elſe. The *ſori* are by no means *recti*, or ſtraight, but remarkably recurved, much beyond kidney-ſhaped, finally aſſuming almoſt the peltate form of a real *Aſpidium.* In an early ſtate indeed they are ſtraight; but the inner margin is looſe, dilated, and fringed. In habit nothing can be more cloſely allied to *Allantodia umbroſa* than this *Aſpidium axillare.*

ALLASIA, from αλλάς, *a ſauſage*, or *black-pudding*, in reference to the ſhape and colour of the fruit.—Loureir. Cochinch. 84. — Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Cucurbitaceæ*, Linn. Juſſ.

Gen. Ch. *Cal.* of one leaf, inferior; tube ſhort; limb in five, rather acute, hairy ſegments. *Cor.* ſuperior, of four ſmall, roundiſh, concave, very hairy petals. *Stam.* Filaments four, awl-ſhaped, thick, about the length of the calyx; anthers inverted, two-lobed, each lobe of two cells. *Piſt. Germen* roundiſh, between the calyx and corolla; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma acute. *Peric.* Berry large, oblong, obtuſe, ſmooth, fleſhy, pendulous, of one cell. *Seeds* numerous, ovate, tumid, ſomewhat compreſſed, imbedded in pulp.

Eſſ. Ch. Berry with numerous ſeeds. Germen between the five-cleft calyx, and corolla of four petals.

1. A. *payos.* Black-pudding tree. *Muringuiringue* of the Africans.—Obſerved by Loureiro, at Mozambique, near the eaſtern coaſt of Africa. A large *tree*, with ſpreading *branches*, deſtitute of thorns. *Leaves* oppoſite, digitate, of five oval, entire, hairy leaflets. *Stalks* many-flowered, nearly terminal. *Fruit* reddiſh-brown. A cataplaſm of the leaves, applied to the back, below the kidneys, is ſaid to promote delivery. Loureiro compares his plant, as to the leaves and fruit, with the *Jaracatia*, Piſ. Braſ. 160. It is eaſy to trace the natural order of this *Allaſia*, and its relationſhip to *Carica.* Having ſeen no ſpecimens, we cannot undertake to correct ſome apparent inaccuracies, nor to define the real character of the genus; neither is it neceſſary here to criticiſe, or to alter, the generic or ſpecific name.

ALLEGANY, in *Geography*, a county of New York, containing 1942 inhabitants, of whom 21 are ſlaves.

ALLEGHANY, or ALLEGHANY *County*, l. 5, for 10,309 *r.* 25,317, and for 159 *r.* 24.

ALLEGHANY, in Maryland, l. 5, for 4809 *r.* 6909, and for 258 *r.* 620. Add—Alſo, a townſhip of Pennſylvania, in Cambria county, having 610 inhabitants.—Alſo, a townſhip of Pennſylvania, in the county of Armſtrong, containing 820 inhabitants.—Alſo, a townſhip of Pennſylvania, in Somerſet county, having 271 inhabitants.—Alſo, a townſhip of Pennſylvania, in the county of Venango, having 299 inhabitants.—Alſo, a townſhip of Huntingdon county, in Pennſylvania, with 1159 inhabitants.

ALLEN, a townſhip of Pennſylvania, in Cumberland county, having 1837 inhabitants.

ALLENSTOWN, l. 2. for 254 *r.* 346.

ALLEN-TOWN, for 90 houſes *r.* 1291 inhabitants.

ALLIGATOR, after LACERTA inſert, ſee LIZARD.

ALLIUM, in *Botany*, an ancient Latin name, of which many different etymologies have been propoſed, but none has been thought perfectly ſatisfactory, is deduced by De Theis from the Celtic, *all*, ſignifying hot, pungent, or burning, than which nothing can be more ſuitable, whether we conſider the various kinds of Garlic, Onions, &c. in common uſe, or the numerous wild ones. Several ſpecies require to be added to the fifty-ſeven enumerated by our predeceſſor, the late Dr. Woodville, in the firſt volume of this work. (See ALLIUM.) We ſhall indicate their reſpective places in each ſection, interſperſing, in the ſame order, a few remarks concerning other ſpecies.

Sect. 1. *Stem leafy. Leaves flat. Umbel bearing capſules only.*

1. A. *Ampelopraſum.* Willd. Sp. Pl. v. 2. 63. n. 1. Engl. Bot. t. 1657. Fl. Græc. t. 312, unpubl. Curt. Mag. t. 1385.

β. Smaller, with ſweet-ſmelling bright crimſon flowers.—This variety is a native of the Cape of Good Hope, being the *A. Ampelopraſum* of Thunb. Prodr. 65. It muſt not be confounded with the β of Curt. Mag. 1385, Waldſt. and Kitaib. Hung. v. 1. 84. t. 82, which Mr. Ker now thinks a variety of *arenarium*, deprived of its flower-bulbs. The ſame botaniſt, ſo deeply ſkilled in the plants of this natural order and their allies, has expreſſed, like Linnæus, an opinion of the real *Ampelopraſum* not being ſpecifically diſtinct from the garden Leek, *A. Porrum*, n. 2. It ſeems to us that the ſimply ſheathed biennial *root* of this latter is eſſentially different from the large, globoſe, aggregate, perennial *bulbs* of the other; and the keels of the *petals* in *Porrum* are certainly much leſs rough, if ever at all ſo, than thoſe of *Ampelopraſum*. A good figure of *A. Porrum* is much wanted.

Between 2 and 3. A. *Dioſcoridis.* Sibth. in Prodr. Fl. Græc. n. 764. (μωλυ; Dioſc. book 3. chap. 4.)—Found in denſe buſhy ſhady ſituations, in Caria, Myſia, and Cyprus. "The *ſtem*, in a rich ſoil, ſometimes attains the height of five or ſix feet. *Umbel* large. *Flowers* white, ſomewhat reſembling thoſe of *Peganum Harmala*, as Dioſcorides obſerves in ſpeaking of the latter plant, book 3. chap. 53." Such is all the information afforded by Dr. Sibthorp's MSS., for he has left no ſpecimen nor drawing of this intereſting plant, ſuppoſed by him to be the μωλυ, or *Moly*, of Dioſcorides. He has not afforded us any materials for a ſpecific character. Can his plant be the A. orientale latifolum, flore magno lacteo; Tourn. Cor. 26? Of this a ſpecimen may perhaps be found, in the collections at Paris or Oxford.

Sect. 2. *Stem leafy. Leaves flat. Umbel accompanied by bulbs.*

Here perhaps ought to have been inſerted, on account of its near affinity to *roſeum*, our *ambiguum*, figured in Curt. Mag. t. 978, and deſtined to appear in Fl. Græc. t. 327. See Sect. 4.

Sect. 3. *Stem leafy. Leaves nearly cylindrical. Umbel bearing capſules only.*

20, 21. A. *margaritaceum.* Pearly Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 770. Fl. Græc. t. 315, unpubl.—Stem bearing round leaves and an umbel of capſules. Leaves channelled. Stamens three-pointed, prominent. Petals obovate, obtuſe.—Gathered by Dr. Sibthorp, about Pruſa in Bithynia, as well as on mount Athos, and in the iſlands of Naxos, Cyprus, and Cimolis. The *bulb* is about the ſize of a filberd, coated with brown ribbed ſcales. *Stem* ſolitary, a foot high, erect, round, ſlender, leafy in its lower half. *Leaves* about four, ſpreading, tapering, as thick as a crow's quill, rather glaucous, ſmooth, ſix inches long; channelled along the upper ſide; ſheathing at the baſe; the two lowermoſt ſhorter and ſoon withering. *Umbel* erect, oval, obtuſe, denſe, attended at the baſe by ſeveral ſhort, reflexed, jagged, white involucral ſcales. *Flowers* on ſlender, aſcending or upright, ſimple *ſtalks*, an inch long at moſt. *Petals* obovate, concave, not a quarter of an inch in length, converging, ſtreaked with green, white at the edges, purple at the keel. *Stamens* white; three of them ſimple, awl-ſhaped; three linear, with two long, lateral, ſpreading, narrow ſegments. *Germen* turbinate, with ſix prominent angles.

26, 27. A. *caucaſeum.* Crimſon Caucaſian Garlick. Ker in Curt. Mag. at the end of p. 1143. (A. paniculatum; ibid. t. 973, but not t. 1432. A. globoſum; Redout. Liliac. t. 179, not t. 96!)—Stem bearing thread-ſhaped ſheathing leaves, and an umbel of capſules. One valve of the ſheath elongated and cylindrical. Stamens ſimple. Petals ovate, acute. Germen globoſe.—Native of mount Caucaſus. Raiſed by Mr. Loddiges, from ſeeds imported from Ruſſia. The cylindrical *leaves*, globoſe *umbel*, ſhorter *involucrum*, ovate, not obovate *petals*, and round, even, not oblong and channelled, *germen*, as well as the roſe-coloured *flowers*, are ſufficient marks of diſtinction between this plant and *A. paniculatum*, of which an imperfect figure, repreſenting the *leaves* as cylindrical (contrary to nature and the deſcription) is given in Curt. Mag. t. 1432.

A. *montanum*. Crimſon Olympian Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 775. Fl. Græc. t. 319, unpubl. (A. montanum, radice oblongâ; Tourn. Inſt. 384, according to Sibthorp.)—Stem bearing nearly cylindrical leaves, and an umbel of capſules. Sheath elongated, deflexed. Stamens ſimple. Flower-ſtalks uniform.—Found in the graſſy paſtures of the Bithynian Olympus, by Dr. Sibthorp. The *bulb* is ovate-oblong, red, with a ribbed angular coat, fibrous at the ſummit. *Stem* four or five inches high, ſmooth, round, bearing about two ſlender, ſmooth, graſs-green *leaves*, a little channelled on their upper ſide, one of them riſing above the *umbel*, which is rather lax. *Petals* obovate, pale roſe-coloured with a crimſon mid-rib. *Germen* ovate-oblong, with ſix deep furrows.

A. *ſtaticiforme*. Thrift-like Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 776. Fl. Græc. t. 320, unpubl.—Stem bearing nearly cylindrical leaves, and an umbel of capſules. Stamens ſimple. Germen three-lobed. Umbel many-flowered, ſomewhat capitate.—Gathered by Dr. Sibthorp, in the iſle of Cimolis. The *bulb* is globular, about the ſize of a hazel nut, with ſeveral lateral offsets. *Stem* a ſpan high, reddiſh. *Leaves* about three, ſhorter than the ſtem, recurved, with ſtriated reddiſh ſheaths. *Umbel* denſe, of about an inch and a half in diameter, roſe-coloured. *Petals* obovate. *Germen*, as well as the *capſule*, turbinate, abrupt, of three rounded lobes.

A. *piloſum*. Hairy-leaved Crimſon Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 777. Fl. Græc. t. 321, unpubl.—Stem bearing nearly cylindrical leaves, and an umbel of capſules. Stamens ſimple. Leaves and their ſheaths very hairy.—Found by Dr. Sibthorp in the iſland of Cimolis, and we believe in the Peloponneſus alſo. *Bulb* globular, ſmall, purpliſh. *Stem* a ſpan high. *Leaves* about four, ſpreading, tapering, remarkably rough with ſpreading hairs, as are likewiſe their long, ſtriated, purpliſh *ſheaths*. *Umbel* lax, hemiſpherical, many-flowered, ſmooth, the *flowers* and their *ſtalks* of a pale purpliſh crimſon. *Petals* elliptic-obovate, obtuſe. *Germen* of three hemiſpherical lobes, not turbinate.

A. *junceum*. Ruſh-leaved Purple Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 778. Fl. Græc. t. 322, unpubl.—Stem bearing thread-ſhaped leaves, and an umbel of capſules. Three alternate ſtamens five-cleft. Umbel capitate.—Diſcovered in the iſland of Cyprus, by Dr. Sibthorp, who took it for *A. Schoenopraſum*, from which, however like at firſt ſight, it differs eſſentially. Our plant is more allied to *A. aſcalonicum*, but ſtill diſtinct, and the *ſtem* is truly leafy. *Bulbs* aggregate, ovate, with dark-brown, ſtriated, elongated coats. *Stem* a foot high, ſlender, erect, leafy about one-third of its height. *Leaves* two, nearly as tall as the ſtem, very ſlender, tubular, quite round, ſmooth, a little glaucous, ſomewhat ſpreading at the top. *Umbel* globular, denſe, its *ſheath* of two broad, ovate, acute, concave, cloſe leaves, ſhorter than the flowers. *Flower-ſtalks* green, but half the length of the *petals*, which are elliptic-oblong, acute, purpliſh, with a darker mid-rib. *Stamens* white; three of them ſimple, awl-ſhaped; the intermediate ones flat, dilated upwards, terminating in two taper vertical teeth, on each ſide of a ſimilar one bearing the *anther*. *Germen* elliptical, with three ſlight furrows.

Sect. 4. *Leaves radical. Common Flower-ſtalk naked.*

35. A. *inodorum*. Carolina Garlick. Ait. Hort. Kew. ed. 1. v. 1. 427. ed. 2. n. 25. Willd. n. 33. Curt. Mag. t. 1129. (A. fragrans; Venten. Hort. Celſ. t. 26. Redout. Liliac. t. 68. Purſh n. 2.)—"Stalk naked, obſcurely triangular. Leaves linear, flat; keeled at the back. Umbel level-topped, capſule-bearing. Stamens ſimple."—On the mountains of Virginia and Carolina, flowering in June. Perennial. *Flowers* white, with red veins. *Purſh*, who had ſeen it living. It is marked in *Hort. Kew.* as a hardy perennial, flowering in March and April, and introduced by the late Ducheſs Dowager of Portland, in 1776. We preſume Dr. Solander to be the author of the above characters, given in *Hort. Kew*, and that the plant of the Botanical Magazine and that of Redouté are the ſame, though in the former work the *petals* are obovate, and remarkably elongated at the baſe; in the latter ovate, without any ſuch elongation. One or other is a great, and very material, error, but not having ſeen the plant, we know not where the fault lies. There are errors alſo in the detail of its hiſtory. *Redouté t.* 6 for 68; *Venten. Malmaiſ.* copied by Purſh from the Magazine, for *Venten. Hort. Celſ.*, which proving that the work was not conſulted by Purſh, takes away our confidence in that author, as to ſynonyms. The name *inodorum* is acknowledged to expreſs the want of the Garlick fœtor in the herbage, while that of *fragrans* alludes to the ſweet ſcent of the *flowers*. We retain the original appellation. Mr. Ker, at the end of the hiſtory of t. 1293, in Curt. Mag. declares his conviction that *A. gracile*, our n. 55, is the ſame plant. We cannot aſſert the contrary, but we do not feel convinced, and there has been ſuch a diverſity of opinion on the ſubject, that till we can compare living ſpecimens, we muſt leave the queſtion in doubt. It is remarkable that Willdenow ſays *A. inodorum* "is like *anguloſum* of Linnæus, but twice as large, and differing in the ſpecific character," which chiefly amounts to the *ſtalk* of the latter being two-edged, and the *leaves* channelled. He had both plants living. But *anguloſum* is moſt excellently repreſented in Curt. Mag. t. 1149, and ſurely few of the genus can bear leſs reſemblance to t. 1129! It is ſcarcely more like Redouté's figures, named *fragrans*. We proceed to notice the ſpecies moſt akin to *inodorum*; for ſo at leaſt it muſt be preſumed to be.

35, 36. A. *gracile*. Jamaica Garlick. (See our n. 55.) Dryandr. in Ait. Hort. Kew. v. 1. 429. ed. 2. n. 38. Willd. n. 52. Andr. Repoſ. t. 107. Ker in Curt. Mag. at the end of p. 1293, var. 1. (A. ſtriatum; Redout. Liliac. t. 50. Curt. Mag. t. 1035? and t. 1524?)—"Stalk naked, round, very long. Leaves linear, channelled. Stamens awl-ſhaped, connected at the baſe."—Native of Jamaica, from whence it was ſent to Kew, by Hinton Eaſt, eſq., and flowered in the ſtove, in February. *Aiton*. *Leaves* a foot long, reſembling thoſe of a Narciſſus. *Stalk* three feet high, ſlender. *Petals* erect, white, with claws, which are united with the *ſtamens* below, into a green tube. Perhaps this plant may form a diſtinct genus. *Dryander* as above. The writer of the preſent article happened to be with Mr. Dryander, when the original ſpecimens of this *Allium* were brought from Kew, and on being aſked for a name ſuggeſted the above. He then obtained a ſpecimen, which is now, along with others gathered at Kew in 1788, in his herbarium, as well as one more, undoubtedly the ſame ſpecies, procured from Mr. Vere's collection, in 1814, as a rare plant, by the name of *A. ſtriatum*. He can therefore ſpeak to the whole *herb* being deſtitute of the Garlick odour, and to the want of ſcent in the *flowers*, by day at leaſt, though they may very probably be, as reported, fragrant at night. He can alſo vouch for the fidelity of Mr. Andrews's figure; nor does he heſitate concerning t. 50 of Redouté; whatever ſcruples a deference to Mr. Ker may ſuggeſt, as to the two figures named *ſtriatum* in Curt. Mag. The ſuſpicion of a generic difference between this plant and *Allium*, aroſe in Mr. Dryander's mind, from the combination of the *ſtamens*, and was ſtrengthened by the want of the garlick flavour. The *leaves* are certainly not remarkably ſtriated at the back, as in the real *ſtriatum*, of which we ſhall next ſpeak.

A. *ſtriatum*. Streaked-leaved Garlick. (See our n. 37.) Jacq. Coll. v. 5. 51. Ic. Rar. t. 366. Willd. n. 35. Ait. n. 27.—Stalk naked, ſlightly triangular. Leaves linear, ſomewhat channelled; convex, with many furrows, but no keel, beneath. Umbel level-topped. Petals oblong-lanceolate. Stamens ſimple.—Native of the Cape of Good Hope, flowering in the garden in September and October. Whole plant ſmooth, without much ſcent. *Bulb* the ſize of a hazel-nut, white, coated. *Leaves* about four, all radical, ſix inches or more in length, linear, bluntiſh, oblique, but little channelled; rather convex and ſtriated at the back, but not triangular. A tranſverſe ſection, under a magnifier, ſhews a ſingle row of perpendicular tubes, each running behind one of the furrows; but the *leaf* is not itſelf hollow, or tubular. *Stalk* radical, obſcurely triangular, ſlender, erect, as tall as the leaves, or taller. *Umbel* of ſeven *flowers*, more or leſs, the partial ſtalks an inch and a half long. *Sheath* of two erect, ovate, pointed, membranous valves. *Petals* long-lanceolate, rather acute, ſpreading, white with a green longitudinal line in the middle. *Filaments* awl-ſhaped, equal, ſhorter than the petals. *Anthers* oblong, incumbent, yellow. *Jacquin.*

This figure and deſcription ſurely do not ſuit our *gracile*. But whether the *ſtriatum* does really come from the Cape, or from Virginia and Carolina, we are quite in the dark. Purſh's *ſtriatum* is our *ornithogaloides*, n. 57. Curt. Mag. t. 1524 anſwers better to his deſcription than t. 1035, but we cannot prove them the ſame. We have endeavoured to unravel the original materials which concern theſe three ſpecies, but having had no means of comparing freſh ſpecimens, nor having indeed ſeen any at all of Jacquin's plant, we are unable to attempt good ſpecific characters, and therefore leave the whole for future examination, ſatisfied of one thing, at leaſt, that theſe ſpecies are not at preſent well underſtood. To illuſtrate them, great attention to the outline of the *petals*, ſhape and inſertion of the *ſtamens*, and form of the *germen*, circumſtances not yet well obſerved in *Allium*, will be found of primary importance.

39. A. *pedemontanum*. Red Piedmonteſe Garlick. Willd. n. 37. (A. nigrum; Allion. Pedem. v. 2. 158. t. 25. f. 1. A. roſeum; Linn. Sp. Pl. ed. 2. 432, but not Sp. Pl. v. 1. 296.)—Stalk obſcurely quadrangular. Bulb cylindrical. Leaves linear, obtuſe, keeled at the back. Umbel rather denſe, of few flowers. Petals elliptical.—Native of mountainous ſituations in Piedmont. Specimens from Allioni and Bellardi prove this ſpecies, as diſtinct from *nigrum* as from *roſeum*, to have been confounded by Linnæus with the latter, which has a globoſe, very prolific *bulb*, a ſomewhat leafy *ſtem*, and far more numerous, brighter-coloured, *flowers*.

39, 40. A. *ſtellatum*. Miſſouri Garlick. Ker in Curt. Mag. t. 1576. Ait. Epit. 363. (A. anguloſum; Purſh n. 4, excluding the ſynonyms.)—Stalks ſomewhat two-edged, recurved before flowering. Bulb ovate-oblong. Leaves linear, triangular, ſharply keeled. Umbel many-flowered, lax, level-topped. Stamens combined at the baſe. Germen depreſſed, bluntly triangular.—Found on the banks of the Miſſouri, by governor Lewis and Mr. Nuttall, flowering in July, and imported by Mr. Fraſer, in whoſe nurſery it bloomed in June 1813. Purſh by miſtake ſays the *flowers* are white. In the Botanical Magazine they are repreſented of a deep pink, and the herbage ſomewhat glaucous. The *ſtalks* are two or more. The *ſheath* is of only one valve; but Mr. Ker doubts the permanency of that character.

A. *cernuum*. Bowed-umbelled Garlick. "Roth. Nov. Pl. Spec. in Roem. Archiv. n. 3. 40. Catal. Bot. faſc. 2. 33. t. 2." Sims and Kon. Ann. of Bot. v. 2. 27. Ker in Curt. Mag. t. 1324. Ait. Epit. 363.—Stalk angular; recurved at the ſummit. Leaves linear, ſlightly channelled, pointed. Umbel drooping, many-flowered. Stamens ſimple, twice as long as the corolla; tumid at the baſe. Germen turbinate.—Native of mount Caucaſus, according to Mr. Aiton, who ſays it was introduced into England in 1801. The *bulbs* are oblong, tapering, aggregate. *Stalk* eighteen inches high; roundiſh, compreſſed, and recurved, at the top. *Leaves* bright-green, narrow. *Flowers* white, with a delicate roſe-coloured tinge. *Petals* ovate. *Stamens* unequal at firſt, but finally all about twice the length of the corolla. *Germen* three-horned. *Ker.*

A. *rubellum*. Reddiſh Iberian Garlick. Marſch. Taur.-Caucaſ. v. 1. 264.—"Stalk nearly naked, round. Leaves ſemi-cylindrical, channelled. Sheath ſhort. Umbel convex, many-flowered. Stamens ſimple, half as long as the corolla."—Gathered by Mr. Steven in Georgia. *Bulb* the ſize of a filberd. *Stalk* with one or two leaves ſheathing the baſe, on which account the author cited doubts whether this ſpecies and the following might not be referred to the third ſection; but there are many of the fourth whoſe foliage, when the bulb is deep, becomes in ſome degree cauline. *Leaves* a line broad, rather fleſhy. *Flower-ſtalks* ſlender, much longer than the *flowers*, which are hardly ſo big as thoſe of *A. Ampelopraſum*, of a pale purple, with acute *petals*.

A. *ſaxatile*. Stone Garlick. Marſch. Taur.-Caucaſ. v. 1. 264. Sims and Kon. Ann. of Bot. v. 2. 436, excluding the ſynonym of Gmelin.—"Stalk almoſt naked, round. Leaves ſemi-cylindrical. Sheath pointed, longer than the umbel. Stamens ſimple, longer than the corolla."—Frequent on the lime-ſtone rocks of Taurida, flowering in July and Auguſt. *Bulbs* aggregate, oblong, with dark brown coats. *Stalk* with a few ſheathing leaves at the baſe, like the foregoing. *Petals* ſpreading. There is a variety with purpliſh *flowers*, on the eaſtern mountains of Caucaſus. This ſpecies is very cloſely related to *A. ſtellerianum*, Willd. n. 49, ſee our n. 51; but differs in having a long awl-ſhaped *ſheath*. *Marſchall.*

A. *biſulcum*. Jonquil-leaved Garlick. Redout. Liliac. t. 286. Curt. Mag. t. 1381. Ait. Epit. 363.—Bulb cylindrical. Stalk round. Leaves two-ranked, ſemi-cylindrical, channelled, acute. Umbel denſe, convex. Petals oval. Filaments awl-ſhaped, the length of the corolla; three of them broader at the baſe.—Native country not known. The plant is ſaid to be quite hardy, and of eaſy culture, flowering in June and July. Mr. Ker remarks its great reſemblance to *ſeneſcens*, (ſee n. 32,) Curt. Mag. t. 1150, next to which perhaps it ought to be placed, though akin alſo to our laſt, from which the ſhortneſs of the *ſheath* diſtinguiſhes the preſent plant. The narrow and thick *leaves* are very different from *ſeneſcens*; and Redouté has obſerved that the inner ones are channelled on both ſides; which may, as Mr. Ker thinks, be occaſioned by preſſure in an early ſtate.

40, 41. A. *triflorum*. Three-flowered Garlick, or Mountain Leeks. Purſh n. 5.—"Stalk naked, round, ſhorter than the leaves, which are lanceolate and ribbed. Umbel of few flowers."—In ſhady woods, on the high mountains of Pennſylvania, flowering in May and June. Perennial. *Purſh.*

44, 45. A. *lacteum*. Milk-white Garlick. Sm. Prodr.

Fl. Græc. Sibth. n. 781. Fl. Græc. t. 325, unpubl. (A. album; Bivona Sic. cent. 1. 16. "Santi Viagg. al Montam. 352. t. 7. Bertol. Gen. 51. Savi Etruſc. v. 2. 210.)—Stalk naked, triangular. Leaves lanceolate, ſeſſile. Petals obtuſe.—Native of fields in Italy and Sicily, flowering in March. This is one of thoſe plants, which, on account of their novelty, or rarity, Dr. Sibthorp admitted into his *Flora Græca*, having gathered them in the courſe of his travels, though perhaps not in Greece itſelf. *A. lacteum* agrees with *triquetrum*, n. 44, next to which it ſhould be placed, in having an acutely triangular *ſtalk;* but differs in the lanceolate *leaves*, and ſhorter, broader, more obtuſe, *petals*. The *ſtigma* moreover is ſimple, not three-lobed.

A. *ambiguum*. Bulbous Roſe Garlick. Sm. Prodr. Fl. Græc. Sibth. n. 783. Fl. Græc. t. 327, unpubl. (A. roſeum β; Ker in Curt. Mag. t. 978. Bivona Sic. cent. 1. 18. Savi Etruſc. v. 2. 210. "A. carneum; Targioni Tozzetti Iſt. Bot. ed. 2. v. 2. 242. t. 6. Moly anguſtifolium campanulatum, flore roſeo, nodoſum; Cupani Pamph. v. 2. t. 219." Moly ſerpentinum vocatum; Lob. Ic. 160.)—Stalk naked. Leaves ſemi-cylindrical. Stamens ſimple, ſhorter than the corolla. Umbel bulbiferous.—Native of Italy and Sicily, flowering in May. Frequent about Piſa. *Savi.* On the hills of St. Martino near Palermo. *Bivona.* This *Allium*, which, with reſpect to the *Flora Græca*, ſtands in the ſame predicament as the laſt, is made by all authors a variety of *roſeum;* for the difference between the ſpecies with bulbiferous, and thoſe with ſeed-bearing, *umbels*, is acknowledged to be, in many inſtances, not infallible. In the plant before us, however, there is a great diſagreement, as to the character of *roſeum*, which is deſcribed with flat *leaves* and a leafy *ſtem*. But the dried ſpecimens are very much alike, not diſcovering in either the ſemi-cylindrical and hollow ſtructure of the *leaves*, ſhewn by Dr. Sibthorp's figure. As to the *ſtem* being leafy or not, many ſpecies are in this reſpect ambiguous, and *roſeum* is perhaps improperly conſidered as of the former denomination. Their *roots* are preciſely alike. The *flowers* of *roſeum* are far more numerous, and of a finer pink hue.

We cannot conclude our ſurvey of *Allium* without a remark that the whole genus requires to be reformed, with regard to the arrangement of the ſpecies, and the ſpecific characters of many of them. We are alſo aware of ſeveral that might be added to the above liſt, but of which we want ſufficient ſpecimens or information clearly to diſpoſe of them, ſo as to elucidate rather than confound the ſubject.

ALLOCHROITE. See MINERALOGY, *Addenda.*

ALLOY, in *Chemiſtry*, a combination of two or more metals. In addition to what has been ſaid on this ſubject in the Cyclopædia, we may add the following tabular views from Dr. Thomſon, of the general properties of the different alloys, as far as they have been examined. The chemiſtry of alloys is at preſent but little underſtood, and, as Dr. Thomſon juſtly remarks, theſe compounds in general appear to be much better known to artiſts and manufacturers than to chemiſts.

The firſt of the following tables comprehends the alloys of the malleable metals with each other; the ſecond, the alloys of the brittle metals; and the third, the alloys of the malleable and brittle metals. In theſe tables, the letter M ſignifies *malleable;* B, *brittle;* S, *ſubmalleable*, uſed when the alloy is malleable in certain proportions, but brittle in others. O is uſed when the metals do not unite. The ſign + is uſed when the alloy occupies a greater bulk than the ſeparate metals; the ſign — when the alloy occupies a ſmaller bulk. The firſt indicates an expanſion; the ſecond, a condenſation.

TABLE I.—Malleable Metals.

Zinc													
M	Lead												
M	M +	Tin											
O	O	B	Nickel										
S	B +	M	M	Iron									
S —	B +	B —	B	S	Copper								
					M	Iridium							
B	B	B		S			Potaſſium						
B	B	B						Sodium					
	B	B +		B	S —		B		Palladium				
B	B	B	O	B	B		B	B	B	Mercury			
B —	B —	B —	O	M	M +	M			M —	B —	Silver		
B	S —	S —		M —	M —	M			M +	B	M +	Platinum	
B —	B +	S —	M +	M +	M +	M			M	B	M +	M +	Gold

TABLE II.—Brittle Metals.

	Titanium	Tungſten	Chromium	Uranium	Molybdenum	Manganeſe	Cobalt	Arſenic	Tellurium	Antimony
Tungſten										
Chromium										
Uranium										
Molybdenum										
Manganeſe		B			B					
Cobalt					B					
Arſenic					B		B			
Tellurium										
Antimony			B		B	O		B		
Biſmuth			B		S	O	O	B		B

TABLE III.—Malleable and Brittle Metals.

	Biſmuth.	Antimony.	Arſenic.	Cobalt.	Manganeſe.	Molybdenum.
Gold - - - - - -	B —	B —	B	B —	M	B
Platinum - - - - -	B	B	B			B —
Silver - - - - - -	B —	B —	B	B		B
Mercury - - - - -	B	B	B	O	O	O
Palladium - - - - -	B —		B			
Rhodium - - - - -						
Potaſſium - - - - -	B	B	B			
Sodium - - - - -	B	B	B			
Copper - - - - -	B —	B —	M		M	S
Iron - - - - -	B +	B +	B	B	S	B
Nickel - - - - -	B		B +	B		S
Tin - - - - - -	M	M ? +	B		B	
Lead - - - - -	M —	M —	B	B		S
Zinc - - - - -	O	B +	B	O	O	O

ALMANAC, col. 2, l. 15, add, ſee STAMP.

ALMUDE, in *Commerce*, a liquid meaſure in Portugal, &c. (See *Table* XXXII. *of* MEASURES.) At Liſbon, wine and oil are ſold by the pipe of 26 almudes; but the pipe of Liſbon wine ſent to England contains about 31 almudes, and the ſtandard gauge at the London Cuſtom-houſe is 140 gallons; the Liſbon almude is therefore reckoned at 4½ Engliſh gallons. At Oporto, the pipe is divided into 21 almudes, which almude and its ſubdiviſions are 49⅓ *per cent.* greater than thoſe of Liſbon; ſo that the ſtandard gauge of a pipe of port at the Cuſtom-houſe of London is 138 gallons, ſo that the almude of Oporto is accordingly equal to ſix Engliſh gallons and five pints nearly.

ALNUS, in *Botany*, the Alder, an ancient Latin name, which De Theis derives from the Celtic, *al*, near, and *lan*, the brink of a river, the letters having become tranſpoſed for eaſy pronunciation. This is ſuitable enough to the tree in queſtion, which always grows near water, even on the loftieſt mountains, nor have we met with a better etymology.—Willd. Sp. Pl. v. 4. 334. Sm. Compend. 133. Prodr. Fl. Græc. Sibth. v. 2. 232. Ait. Hort. Kew. v. 5. 258. Purſh 622. Raii Syn. 442. Tourn. t. 359. Gærtn. t. 90. (Betula, as to the character; Linn. Gen. 485. Sm. Fl. Brit. 1011. Engl. Bot. 1508. Lamarck Illuſtr. t. 760. f. 3. See BETULA.)—Claſs and order, *Monoecia Tetrandria*. Nat. Ord. *Amentaceæ*, Linn. Juſſ.

Gen. Ch. Male, *Cal.* Catkin cylindrical, imbricated every way, lax, compoſed of wedge-ſhaped, three-flowered, abrupt, three-cleft ſcales. *Cor.* compound, of three equal, tubular, four-cleft florets, ſeſſile on the diſk of each ſcale; their ſegments deep, equal, ovate, obtuſe, ſpreading. *Stam.* Filaments four, minute, inſerted into the baſe of each ſegment, and not quite ſo long as the ſegment; anthers of two round lobes.

Female, on the ſame plant, *Cal.* Catkin elliptical, imbricated, cloſe, conſiſting of two-flowered, rounded, pointed, obſcurely three-cleft, concave ſcales. *Cor.* none. *Piſt.* Germens two to each ſcale, ovate, minute, depreſſed; ſtyles two to each germen, tapering, rather longer than the ſcale; ſtigmas ſimple. *Seed.* Nut naked, compreſſed, of two cells, with ſolitary kernels.

Eſſ. Ch. Male, Calyx the ſcale of a catkin, of one leaf, three-cleft, three-flowered. Corolla deeply four-cleft.

Female, Calyx the ſcale of a catkin, of one leaf, obſcurely three-cleft, two-flowered. Styles two. Nut compreſſed.

The preſence of a *corolla* in the male flowers, with a determinate number of *ſtamens* equal to that of its ſegments, are ſufficient marks of generic diſtinction between this genus and *Betula*, which has no *corolla* in either flower, and whoſe *ſtamens* are numerous, and indefinite. The fertile *catkin* moreover is elliptical in *Alnus*, cylindrical in *Betula*. Gærtner finds differences in the *ſeed*, which, if the *germen* be attended to, appear to us leſs deciſive. By an accidental overſight, *Alnus* was neglected to be ſeparated from *Betula*, in our PLANTS OF BRITAIN; ſee that article.

1. A. *glutinoſa*. Common Alder. Gærtn. v. 2. 54. Willd. n. 1. Ait. n. 1. Sm. Compend. n. 1. Purſh n. 1. (Alnus; Matth. Valgr. v. 1. 127. Camer. Epit. 68. Lob. Ic. v. 2. 191. Ger. Em. 1477. Loeſ. Pruſſ. 10. t. 1. A. n. 1630; Hall. Hiſt. v. 2. 300.)

β, inciſa; leaves roundiſh, notched. *Willd.*

γ, laciniata; leaves oblong, pinnatifid, with acute ſegments. *Willd.* Ait. β.

δ, quercifolia; leaves oblong, ſinuated, with obtuſe ſegments. *Willd.*

Leaves roundiſh-wedgeſhaped, obtuſe, wavy, glutinous; downy at the branching of the veins beneath.—Native of ſwamps and the neighbourhood of rivers and pools, in low lands, as well as on mountains, throughout Europe, the north of Aſia, and of Africa, as alſo in Canada and on the north-weſt coaſt of America, (*Purſh*,) flowering in March or April. In landſcape this tree often ſupplies the want of the rich dark foliage of the Oak, where the latter will not thrive. The *leaves* are not fully expanded till the end of May, but they remain late in autumn. For the uſes and further hiſtory of this tree, ſee BETULA, n. 6. Our γ is the only variety cultivated for ornament, or rather curioſity, in England.

2. A. *oblongata*. Turkey Alder. Willd. n. 2. Ait. n. 2. (A. folio oblongo viridi; Bauh. Pin. 428. Hort. Angl. 5. Betula oblongata; Ait. ed. 1. v. 3. 338.)—Leaves elliptical, bluntiſh, glutinous; the branching of the veins naked beneath.—Native of the ſouth of Europe. Cultivated in England ever ſince the year 1730, at leaſt, but not much in requeſt. The *leaves* are ſmaller than the foregoing, obovate, or elliptic-oblong, ſharply ſerrated. *Catkins* of *ſeeds* nearly globular.

3. A. *incana*. Hoary Alder. Willd. n. 3. Ait. n. 3. (Alnus; Linn. Fl. Lapp. ed. 1. 260. A. folio incano; Bauh. Pin. 428. A. hirſuta; Bauh. Matth. 133. A. altera; Cluſ. Hiſt. v. 1. 12. A. n. 1631; Hall. Hiſt. v. 2. 301. Betula incana; Linn. Suppl. 417. Ait. ed. 1. v. 3. 339. Ehrh. Arb. 116. Beitr. v. 3. 22. Willd. Arb. 45. B. Alnus β; Linn. Sp. Pl. 1394.)

β, angulata; leaves green beneath, with green footſtalks. *Ait.*

γ, pinnata; leaves pinnate, hairy beneath; young branches hairy. *Willd.*

(Betula pinnata; "Lundmark in Stockh. Tranſ. for 1790, 122. t. 5.")—Leaves elliptic-oblong, acute; downy beneath; the branching of the veins naked. Stipulas lanceolate.—Native of marſhes and the banks of rivers throughout Lapland. *Linnæus*. It occurs alſo in alpine ſituations, in Germany, Switzerland, &c. The variety γ, of which we have ſpecimens from Dr. Swartz, has been met with in one part of Sweden only, Waermland, and is increaſed by root only. The *leaves* are ſmall, pinnate, and jagged. The uſual appearance of *A. incana*, except its hoarineſs, and the glaucous hue of the back of its *leaves*, is not very unlike *A. glutinoſa*. The *leaves* however are more acute, and their *footſtalks* are reddiſh. This laſt character, as well as the glaucous hue juſt mentioned, is wanting in variety β. The general pubeſcence of the under ſide of the *leaves* renders it difficult to ſay how far the veins differ at their origin from thoſe of the Common Alder, but though downy, they certainly want the glandular roughneſs ſo remarkable in that ſpecies. See BETULA, n. 7, for a further account of this tree.

4. A. *undulata*. Curl-leaved Alder. Willd. n. 4. Ait. n. 4. (A. criſpa; Purſh n. 2. Betula criſpa; Ait. ed. 1. v. 3. 339. Michaux Boreal.-Amer. v. 2. 181.)—"Leaves oblong, acute; rounded at the baſe; veins hairy beneath, like the footſtalks, but naked at their origin. Stipulas ovate-oblong."—In Canada, and on the high mountains of Pennſylvania, in ſwamps overrun with Bog-moſs, flowering in April. A *ſhrub*, not above three or four feet high. *Leaves* doubly ſerrated. *Purſh*. See BETULA n. 13. Willdenow ſeems to have unwarrantably changed the name of this ſpecies.

5. A. *ſerrulata*. Haſel Alder. Willd. n. 5. Ait. n. 5. Purſh n. 3. (Betula ſerrulata; Ait. ed. 1. v. 3. 338. Michaux Boreal.-Amer. v. 1. 181. Willd. Arb. 45. Smith Inſ. of Georgia v. 2. 183. t. 92. B. rugoſa; Ehrh. Beitr. v. 3. 21. "Wangenh. Amer. 86. t. 29. f. 60.")—Leaves

obovate, finely ſerrated; veins and their origin hairy beneath. Stipulas elliptical, obtuſe.—Native of North America. Common every where in ſwamps, and by river ſides, flowering in March. A *ſhrub*, from ſix to ten feet high, growing in cloſe thickets. *Purſh.* See Betula n. 12. The *leaves* do not appear to be glutinous, or at leaſt not ſo much ſo as the Common Alder, from which alſo they differ in being regularly and finely ſerrated, not notched, or jagged.

ALOEXYLUM, *αλοηξυλον*, *Aloes-wood*, a name given to the tree which produces this precious wood, by Loureiro; Fl. Cochinch. 267. See Agallochum.—He refers it to the Claſs and Order, *Decandria Monogynia*, and its Natural Order ſeems to be *Lomentaceæ*, Linn. *Leguminoſa*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of four acute, hairy, deciduous leaves; the lowermoſt falcate, incurved, nearly twice as long as the reſt. *Cor.* Petals five, unequal, longer than the calyx. *Stam.* Filaments ten; anthers . . . . *Piſt.* Germen ſuperior, elongated, curved, compreſſed; ſtyle thread-ſhaped; ſtigma . . . . . . *Peric.* Legume woody, ſmooth, falcate. *Seed* ſolitary, oblong, curved, tunicated.

Eſſ. Ch. Calyx of four acute deciduous leaves; the lower one longeſt. Petals five, unequal. Legume curved. Seed ſolitary, tunicated.

1. A. *Agallochum.* Fragrant Aloes-wood.—Native of the loftieſt mountains of Cochinchina, near the great river which runs between that kingdom and Laoſios. A large lofty *tree*, with erect *branches*. *Bark* fibrous, brown, ſmooth, not thick. *Leaves* alternate, ſtalked, lanceolate, flat, entire, ſmooth, rather coriaceous, eight inches long. *Flower-ſtalks* terminal, many-flowered. *Loureiro.* This genus is manifeſtly different from Aquilaria. (See that article.) Loureiro deſcribes the wood as white and inodorous, becoming reſinous and fragrant in conſequence of ſome injury, till the tree dies. No part of this tree is milky, nor poiſonous. He adds, that all the ſorts of genuine aloes-wood are produced by this tree, even the moſt precious, termed *Calambac*, which is found no where but on the mountains of Champávæ, belonging to Cochinchina, ſituated about the 13th degree of north latitude. The inferior ſpecies, or rather varieties, are obtained in various places, ſometimes in pieces weighing thirty pounds or more. "There are," ſays Loureiro, "other fragrant woods, called by ignorant perſons *Agallochum*, and *Lignum Aloe*, differing greatly from each other, and the produce of different plants." The common writing paper of Cochinchina is made of the bark of this tree. Yet the plant itſelf ſeems rare, Loureiro having long enquired in vain for the flowers, and having obtained them but once, in a bruiſed and mutilated condition.

Whether the *Agallochum*, or *Calambac*, Rumph. Amboin. v. 2. 29, of which that author gives no figure, be the plant of Loureiro, we cannot poſitively determine, though it ſeems likely. The *Agallochum ſecundarium*, or *Garo*, of the ſame volume, 34. t. 10, is certainly the *Aquilaria*. We have received from Dr. Roxburgh ſpecimens of the wood itſelf; as well as of the fruit, agreeing exactly with Rumphius's figure, and evidently the *Gyrinops Walla* of Gærtner, v. 2. 276. t. 140. In Tr. of Linn. Soc. v. 11. 230, the writer of this has hinted at the probable affinity of *Aquilaria* to the *Euphorbiæ*.

ALONSOA, a genus eſtabliſhed by Ruiz and Pavon, Fl. Peruv. Syſt. 150, and adopted in Ait. Hort. Kew. v. 4. 27, is founded on two ſpecies of Hemimeris, (ſee that article,) nor can we diſcover the leaſt poſſible character to diſtinguiſh them from the latter; which having been much confuſed in its hiſtory by Linnæus, was perhaps not underſtood by the authors of the *Flora Peruviana.* Theſe ſpecies are our *H. urticifolia*, (Alonſoa incifiſolia; Fl. Peruv.) and *H. linearis*, (A. linearis of the ſame work.) Profeſſor Willdenow, though he had never ſeen more than one *Hemimeris*, the montana, and that in a dried ſtate, could not overlook the identity of theſe genera, nor can we account for its having eſcaped the learned editors of the Hortus Kewenſis. But it is evident from their generic character of *Alonſoa* that they did not contraſt the two genera; for theſe are proved the ſame by the character itſelf, which runs thus, and is equally ſuitable to both.

Calyx in five deep ſegments. Corolla nearly wheel-ſhaped, reverſed, five-cleft; the uppermoſt ſegment largeſt. Stamens declining; with ſmooth filaments; and converging uniform anthers. Capſule of two cells.

Hemimeris, being a long-eſtabliſhed Linnæan name, of appropriate and unexceptionable meaning, muſt, of courſe, be retained.

ALPINIA, the article already given requires reformation, in conſequence of ſubſequent diſcoveries, chiefly owing to Mr. Roſcoe's inveſtigations. (See Scitamineæ and Roscoea.) Recurring to the original genus, founded by Plumier, and adopted by Linnæus, as the baſis of the whole, we do not, in quoting various authors, who have followed theſe, conſider as *Alpiniæ* all that they have included herein. We ſhall limit the characters after Mr. Roſcoe's principles, ſo as to exclude what does not belong to this very natural genus, and, on the other hand, to introduce what has, under other names, been improperly ſeparated from it.—Linn. Gen. 3. Schreb. 4. Willd. Sp. Pl. v. 1. 11. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 3. Roſcoe Tr. of Linn. Soc. v. 8. 343. t. 20. f. 7. Sm. Ex. Bot. v. 2. 93. Roxb. Aſiat. Reſ. v. 11. diſſ. 7. Juſſ. 63. Gærtn. t. 12. (Alpina; Plum. Gen. 26. t. 11. Renealmia; Linn. Suppl. 7. Schreb. 2. Willd. Sp. Pl. v. 1. 6. Mart. Mill. Dict. v. 4. Catimbium; Juſſ. 62. Zerumbet; Wendl. Sert. Hannov. t. 19. Jacq. Fragm. Bot. 50. t. 68.)—Claſs and order, *Monandria Monogynia.* Nat. Ord. *Scitamineæ*, Linn. *Cannæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, irregularly ſplitting into two or three teeth. *Cor.* of one petal, irregular, tubular at the baſe: limb double, unequal; the outermoſt two-lipped, in three deep ſegments, of which the upper one is uſually broadeſt, and concave, the two lower equal and narrower; innermoſt of a ſingle lip, ſtraight, as long or longer than the outer limb, dilated, lobed, or jagged, at the extremity, furniſhed at the baſe with a pair of awl-ſhaped teeth. *Stam.* Filament one, oppoſite to the lip, ſhort and ſtout, quite ſimple; anther terminal, erect, thick, ſimple, without any appendage, convex at the back, emarginate, divided in front into two parallel, cloſe, oblong lobes, burſting longitudinally. *Piſt.* Germen inferior, elliptic-oblong, with three furrows; ſtyle thread-ſhaped, erect, ſmooth, the length of the ſtamen, embraced by the lobes of the anther; ſtigma peltate, umbilicated, hairy. *Peric.* Capſule fleſhy, oval, abrupt, umbilicated, with three furrows, three valves, and three cells. *Seeds* numerous, tunicated, ovate, angular, abrupt, inſerted into a pulpy receptacle.

Eſſ. Ch. Anther two-lobed, terminal, embracing the ſtyle, without any appendage. Inner limb of the corolla a ſimple lip. Capſule fleſhy.

Dr. Roxburgh, who had opportunities of ſtudying the various ſpecies of this, and many other Scitamineous genera, in their native ſituations, ſpeaks of *Alpinia* as a good natural genus, having, beſides the proper characters in the fructification, certain peculiarly ſtriking ones in the habit. The *roots* are perennial, tuberous, ſtrong, thick, crooked, running nearly horizontally, a little below the ſurface of the ground, and ſtrongly marked with annular ſcars where former leaves have been; theſe ſend down copious, long, thick, fibrous radicles. *Stems* either biennial or perennial, numerous, tufted, ſtraight, erect, or more or leſs recurved at the ſummit, denſely leafy, each terminating in a copious *cluſter*, or *panicle*, of large gaudy *flowers*, "except *Cardamomum*," ſays Dr. Roxburgh; but that plant, which has a radical panicle, is now excluded from *Alpinia*, and called by Dr. Maton *Elettaria* in Tr. of Linn. Soc. v. 10. 249, having ſufficient marks of generic diſtinction in the *ſtamen*. We ſhall endeavour to collect under one view the numerous ſpecies of this fine genus, of which we can find any account, or have ſeen any figures or ſpecimens.

1. A. *racemoſa*. Simple-cluſtered Alpinia. Linn. Sp. Pl. 2. Willd. n. 1. Ait. n. 1. Roſc. Tr. of Linn. Soc. v. 8. 345. Swartz Obſ. 5. (Alpina racemoſa alba, cannacori foliis; Plum. Ic. 11. t. 20. Zingiber ſylveſtre minus, fructu e caulium ſummitate exeunte; Sloane Jam. v. 1. 165. t. 105. f. 1.)—Cluſter ſimple, erect. Outer bracteas lanceolate, longer than the flowers. Calyx bell-ſhaped, with three blunt equal ſegments. Germen ſmooth.—Native of rather mountainous ſhady woods in the Weſt Indies. Notwithſtanding Dr. Swartz's doubts, we have no ſcruple reſpecting Plumier's ſynonym. *Root* branching, fleſhy, with the flavour of Ginger; uſed in Jamaica as a poultice for cancers and other ſores, according to Sloane, with good ſucceſs. *Stem* herbaceous, two or three feet high, round, ſmooth, ſlender, ſimple, leafy. *Leaves* alternate, elliptic-lanceolate, entire, ſmooth, pointed, a foot long, with narrow ſheathing *footſtalks* exceeding them in length. *Cluſter* terminal, ſolitary, ſtalked, unbranched, ſmooth, many-flowered. *Outer bracteas* lanceolate, blood-red; the loweſt an inch and a half long, the reſt about an inch; *inner* bell-ſhaped, containing one or two flowers, ſhorter than the calyx, permanent. *Calyx* red, with broad and ſhallow teeth. *Corolla* white; tube ſlender, longer than the calyx; outer limb with three nearly equal, ovate, erect ſegments; inner ſomewhat heart-ſhaped, three-lobed, the middle lobe notched. *Germen* bluntly triangular, quite ſmooth, as well as the *capſule*. *Seeds* ſhining.

2. A. *Galanga*. Galangale Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 345. Roxb. n. 1. Willd. n. 2. (Maranta Galanga; Linn. Sp. Pl. 3. Swartz Obſ. 8. Amomum Galanga; Loureir. Cochinch. 5? Galanga major; Rumph. Amboin. v. 5. 143. t. 63. Dale Pharmac. 276. Ger. Em. 33.)—Cluſter compound, erect. Bracteas all lanceolate, ſhorter than the flowers. Calyx bell-ſhaped, with three rather pointed equal ſegments. Germen ſlightly downy.—Native of various parts of the Malay Archipelago, communicated by the late Dr. Roxburgh, from the Calcutta garden, where this plant flowered during the hot ſeaſon, and ripened ſeed, though very rarely, in November. The *root* proved to be the real *Galanga major* of the ſhops. The *ſtem* is ſaid to be ſeven or eight feet high. *Leaves* eighteen or twenty-four inches long, ſoft to the touch, though ſcarcely conſpicuouſly downy. *Cluſter* large, with very numerous, crowded, ſhort, racemoſe branches, all downy. *Bracteas* uniform, lanceolate, downy; thoſe at the baſe of each principal branch very ſmall. *Flowers* white. *Calyx* beſprinkled with minute reſinous dots. *Corolla* elongated; lip externally downy, cloven at the extremity. "*Capſule* ſmall, obovate, ſmooth, deep orange-red, not opening ſpontaneouſly. *Seeds* only two in each cell, even in the germen, bitter and nauſeous, each three-fourths covered with a white tunic." *Roxburgh*. See GALANGAL.

3. A. *occidentalis*. Scaly-cluſtered Alpinia. Swartz Ind. Occ. 9. Roſc. Tr. of Linn. Soc. v. 8. 345. Willd. n. 4. Ait. n. 2. (Amomum minus, ſcapo veſtito, floribus ſpicatis; Browne Jam. 113, excluding Sloane's ſynonym. Paco-ſeroca minor multicaulis; Plum. MSS. cum icone.)—Cluſter compound, erect, on a ſcaly leafleſs ſtem. Partial bracteas imbricated, ſheathing, dilated, abrupt, hairy. Calyx turbinate, with three broad obtuſe ſegments. Germen ſlightly downy.—Native of moiſt parts of the mountainous woods of Jamaica, flowering all the year, but eſpecially in ſpring. *Root* knotty and fleſhy. *Barren ſtems* ſix feet high, erect, herbaceous, ſimple, leafy. *Leaves* elliptic-lanceolate, acute, very ſmooth, attached by a ſhort contraction to their ſheathing *footſtalks*, as in the other ſpecies. *Flowering ſtems* as tall as the others, round, ſmooth, erect, not leafy, but clothed from top to bottom with ſheathing, oblong, obtuſe ſcales, and terminating in a denſe, erect, cylindrical, compound, many-flowered *cluſter*, with hairy ſtalks. *Flowers* all turned upwards, crowded, their partial ſtalks concealed by concave, ſheathing, abrupt, partial *bracteas*, while each common ſtalk, or branch of the cluſter, has at its baſe a very different, lanceolate, acute *bractea*, half its own length. *Calyx* coloured, hairy at the baſe; its ſegments ſmooth, rounded and obtuſe. *Corolla* pale yellow; tube the length of the calyx; lip veiny, cloven at the end. "*Capſule* rather ſmall, coriaceous and fleſhy, of three valves, red when ripe, pulpy within. *Seeds* yellow, two or three in each cell." *Swartz*. We are indebted to Mr. Lambert for a drawing of this plant, copied from Plumier's ſketches at Oxford.

The habit of this ſpecies may, at firſt ſight, ſeem to invalidate the character of a leafy *ſtem*, with terminal *infloreſcence*, attributed to this genus in our introductory remarks. We think however that the difference between this and the others is more apparent than real. The ſcales may be conſidered as abortive *leaves*, not perfected on the flowering *ſtems*, while thoſe *ſtems* which luxuriate in foliage, do not alſo bear *fructification*. Perhaps the *roots* are more prolific than in other ſpecies.

4. A. *Allughas*. Ceylon Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 346. Roxb. n. 2. Ait. n. 3. (Hellenia Allughas; Willd. Sp. Pl. v. 1. 4. Andr. Repoſ. t. 501. Heritiera Allughas; Retz. Obſ. faſc. 6. 1. t. 1.)—Cluſter panicled, erect. Calyx bell-ſhaped, two-lobed. Germen hairy. Lip two-lobed.—Native of the Eaſt Indies. Very common in Bengal, flowering throughout the rainy ſeaſon, and ripening fruit in October and November. We received in 1786 a flower from Kœnig's ſpecimen of this plant, ſent to profeſſor David Van Royen by the name of *Grana Paradiſi Zeylanica*. It appears without doubt to be the *Alughas* of Hermann, mentioned, but not aſcertained ſyſtematically, in Linn. Zeyl. 207. n. 449, and it is ſaid to be the *Mala-inſchi-kua*, Rheede Hort. Mal. v. 11. t. 14. The illuſtrious ſir William Jones has deſcribed it, by the Sanſcrit name of *Táraca*, in the Aſiatic Reſearches, v. 4. 240. The *ſtem* is two feet high, ſimple, leafy. *Leaves* lanceolate, pointed, ſmooth, with long ſheaths. *Cluſter*, or rather *panicle*, variouſly ſubdivided, lax, many-flowered, with denſely downy ſtalks. *Bracteas* ſmooth, for the moſt part very ſmall, but thoſe under the principal ſubdiviſions of the infloreſcence are ſometimes elongated and lanceolate, and one or two of the lowermoſt occaſionally become very large and leafy. *Calyx* downy, eſpecially at the baſe, remarkable for having only two marginal acute ſegments. Segments of the outer limb of the *corolla* oblong, equal, coloured green by Mr. Andrews, crimſon, like the *lip*, in Retzius's plate, but the latter is probably accidental, the author having had no living ſpecimen. The *lip* is longer than thoſe ſegments, and, like them, externally hairy; its two lobes appear to be ſometimes cloven. *Stamen* long, with a large *anther*, reddiſh as well as the *ſtyle*. *Fruit* globoſe,

purpliſh-black, with numerous tunicated *ſeeds*. This ſpecies was raiſed from ſeed by A. B. Lambert, eſq. at Boyton, in Wiltſhire, where it flowered very finely; but it is ſaid to have been previouſly ſent by Mr. Peter Good to Kew, in 1796.

5. A. *alba*. White Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 346. (Hellenia alba; Willd. Sp. Pl. v. 1. 5. Heritiera alba; Retz. Obſ. faſc. 6. 18. Languas vulgare; Kœn. in Retz. Obſ. faſc. 3. 64.)—Cluſter panicled. Calyx bell-ſhaped, three-lobed. Lip two-lobed. Leaves callous and fringed at the margin.—Native of China; cultivated in the Eaſt Indies. Kœnig terms this plant *Galanga alba*, and ſpeaks of it as in much uſe among the Malays. The *roots* are white, thicker than the thumb. *Stems* taller than a man, tuberous at the bottom, a little drooping at the top. *Leaves* about eighteen inches long, and hardly three broad, two-ranked, ſmooth on both ſides; their edges callous, whitiſh, and rather rough with hairs. Five or ſix of the lower *ſheaths* are unaccompanied by leaves. *Cluſter* oblong, with ſmooth ſtalks, except the partial ones, which are rather hairy. *Bracteas* lanceolate, acute, ruſty-coloured, deciduous. *Calyx* with ſnow-white ſegments. Outer limb of the *corolla* greeniſh-white; lip inverſely heart-ſhaped, deeply two-lobed, jagged and criſped at the margin, white, with fine roſe-coloured veins. *Capſule* ſcarlet, membranous, rather rigid, ſtriated. Kœnig's full and correct deſcription of the flower, leaves no doubt as to the genus of this plant, though we have ſeen no ſpecimens.

6. A. *chinenſis*. Chineſe Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 346. (Hellenia chinenſis; Willd. Sp. Pl. v. 1. 5. Heritiera chinenſis; Retz. Obſ. faſc. 6. 18. Languas chinenſis; Kœn. in Retz. Obſ. faſc. 3. 65.)—Cluſter panicled. Calyx bell-ſhaped, three-toothed, obtuſe. Lip emarginate, finely-toothed. Leaves recurved at the point; membranous, and fringed with ſcattered hairs, at the margin.—Native of China? where at leaſt it is cultivated, for medical uſe, in gardens. *Root* aromatic, with an acrid burning flavour, white, as thick as the middle finger. *Stems* two or three feet high, a little drooping at the ſummit. *Leaves* a ſpan long, and two inches or two inches and a half broad, with a white rib and margin. *Cluſter* narrow, three or four inches long, its ſtalks more or leſs clothed with cloſe-preſſed hairs. *Calyx* green. *Corolla* yellowiſh; the *lip* marked with a broad orange-coloured longitudinal ſtripe, and tranſverſe waves of the ſame colour, accompanied by four blood-red veins. Fruit a *capſule*. *Kœnig*.

7. A. *aquatica*. Water Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 346. (Hellenia aquatica; Willd. Sp. Pl. v. 1. 5. Heritiera aquatica; Retz. Obſ. faſc. 6. 18. Languas aquaticum, l. ſylveſtre; Kœn. in Retz. Obſ. faſc. 3. 67.)—Panicle ſomewhat drooping at the top, with forked branches. Calyx bell-ſhaped, three-toothed. Lip four-toothed, erect; its lateral teeth with an oblong gland at the baſe, on each ſide.—Found in marſhy places, among buſhes, by the ſides of rivulets in the Eaſt Indies, but not very common. *Roots* numerous, thread-ſhaped, white, ſending forth runners. *Stem* about four feet in height, leafy, as thick as the finger. *Leaves* oblong, acute, coriaceous, of a beautiful green; rather roughly ſtriated on the upper ſide; ſmooth at the back; the margin beſet with minute callous teeth. *Panicle* ſlender, with two deciduous *bracteas* at the baſe; *flower-ſtalks* forked, two-flowered, divaricated, round, ſmooth, white, ſhorter than the flowers. *Bracteas* two or three, attached to the lower flower-ſtalks, linear-lanceolate, concave, membranous, whitiſh, deciduous. *Calyx* ſmooth, pure white, ſometimes ſplit at the inner ſide. *Corolla* white. *Lip* ſmall, brown on the inner ſide, roſe-coloured near its union with the filament. *Anther* reddiſh, crowned with a ſmall, coloured, erect, ſemi-orbicular membrane. *Berry* oval, ſmooth, black. *Seeds* five or more, triangular. *Kœnig*. The membrane crowning the *anther* forms a ſmall exception to the generic character, but can hardly invalidate it, or require the eſtabliſhment of a ſeparate genus; unleſs the fructification, when examined according to our preſent advanced knowledge, ſhould afford other diſtinctive marks.

8. A. *malaccenſis*. Malacca Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 345. Roxb. n. 3. (Maranta? malaccenſis; Willd. Sp. Pl. v. 1. 14. Burm. Ind. 2. Galanga malaccenſis; Rumph. Amboin. v. 5. 176. t. 71. f. 1.)—Cluſter ſimple, erect. Leaves villous beneath. Lip broader than long, toothed, concave, obſcurely three-lobed; lateral lobes incurved.—Native of Chittagong, from whence it was brought to the botanic garden at Calcutta, and flowers there in April and May. "This," ſays Dr. Roxburgh, "is the moſt ſtately and moſt beautiful of our Scitamineous plants. The *flowers* are particularly large; the *bracteas*, and exterior limb of the *corolla*, pure, ſmooth, lucid white; the large lip variegated with crimſon and yellow." *Stem* from twelve to fifteen feet high, villous. *Leaves* eighteen or twenty inches long, the breadth of five or ſix fingers, ſilky or downy beneath. *Flowers* about twelve, alternate. *Rumphius*, *Burmann*. This has not yet found its way to England, where it would doubtleſs be a great acquiſition, as, by the above deſcription, it ſeems to excel the magnificence and beauty of the following.

9. A. *nutans*. Drooping Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 346. Sm. Exot. Bot. v. 2. 93. t. 106. Roxb. n. 4. Ait. n. 4. (Globba nutans; Linn. Mant. 2. 170. Willd. Sp. Pl. v. 1. 153. Redout. Liliac. t. 60. G. ſylveſtris; Rumph. Amboin. v. 6. 140. t. 62, 63. Renealmia nutans; Andr. Repoſ. t. 360. Edwards t. 1. Thornt. Illuſtr. t. 13. Zerumbet ſpecioſum; Wendl. Sert. Hannov. t. 19. Jacq. Fragm. Bot. t. 68.)—Cluſter ſomewhat compound, drooping. Leaves ſmooth on both ſides. Lip inflated, criſped. Calyx irregularly toothed, tumid, burſting at one ſide.—Native of the interior parts of Bengal. *Roxburgh*. Alſo of Amboyna, and other places. It was introduced into the Engliſh ſtoves, in 1792, by ſir Joſeph Banks, and flowering a few years after, excited the admiration of all beholders. The number of figures of this plant which have been publiſhed, prove it a general favourite. The tuberous odorous *root* is ſometimes, as Dr. Roxburgh aſſerts, brought to England for *Galanga major*; ſee n. 2. *Stem* from five to eight feet high in India, but with us twelve to eighteen, perennial, erect, as thick as the finger, leafy. *Leaves* a foot long or more, with long ſheaths, each ſheath crowned with a *ſtipula* which is externally ſilky. The *flower-buds* before they expand are of a ſhining white, tinged with roſe-colour, and are enveloped in large, concave, toothed *bracteas* of the ſame porcelain-like ſplendid whiteneſs, all together compoſing a denſe pendulous *cluſter*, like a bunch of oblong grapes. When the *flowers* open, they diſplay the magnificent concave *lip* yellow at the margin, internally variegated and ſtreaked with every ſhade of crimſon. The *ſtamen* and its *anther* are ſhort and thick. *Germen* hairy. *Capſule* ſpherical, opening at the ſides. *Seeds* aromatic, as is likewiſe the young germen. Linnæus has greatly confounded the hiſtory of this plant, with which he had no acquaintance but from the work of Rumphius. Yet he ſubſequently cited the ſame ſynonym and figures under his *Renealmia exaltata*, which is indeed an *Alpinia*, as we ſhall preſently ſhew, but a widely different ſpecies.

The real genus GLOBBA is totally diſtinct from both ; ſee that article.

10. A. *mutica*. Pointleſs Narrow-leaved Alpinia. Roxb. n. 5.—Cluſter erect, compound. Leaves ſhortly ſtalked, linear-lanceolate, poliſhed. Lip three-lobed ; without a ſpur at the baſe. Capſule pulpy. Seeds numerous, angular, with an evaneſcent tunic.—Found by Mr. W. Roxburg, the ſon of our ever-lamented Eaſt Indian botaniſt, in the foreſts of Prince of Wales's iſland, from whence being brought to the Calcutta garden, it flowered, more or leſs, during the whole year, but chiefly in the hot ſeaſon, March, April, and May. This is alſo an elegant ſpecies, and holds a middle rank between *nutans* and *calcarata*. *Roxburgh.*

11. A. *calcarata*. Spurred Narrow-leaved Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 347. Roxb. n. 6. Ait. n. 5. (Renealmia calcarata ; Andr. Repoſ. t. 421. Globba erecta ; Redout. Liliac. t. 174.)—Cluſter erect, ſomewhat compound. Leaves linear-lanceolate, poliſhed. Lip ovate-oblong, cloven at the point. Segments of the outer limb linear-oblong.—Native of China, from whence it was introduced into the Calcutta garden in 1799, according to Dr. Roxburgh, who communicated the plant to Mr. Lambert. The numerous ſtems are from three to five feet high. *Leaves* narrow, acute, ſmooth. *Cluſter* three or four inches long, downy, rather denſe, the ſtalks, though partly compound, ſome of them bearing two or three flowers, being ſo ſhort that the whole cluſter reſembles a ſpike. *Leaves* twelve or fifteen inches long and one broad, pointed. *Bracteas* elliptical, concave, hardly equal to the *calyx*, which is tubular, white, ſplit half way down at one ſide, and on the other very ſlightly and bluntly notched. Outer limb of the *corolla* pure white, the length of the tube, in three deep, equal, obtuſe, flat, rather narrow ſegments. *Lip* nearly twice as long, concave, but not ſo tumid or inflated as in *A. nutans* ; its upper ſide crimſon, beautifully ſtreaked ; the extremity flattiſh, ſlightly cloven, more or leſs notched or curled. The baſe of the *lip* being furniſhed, as in *A. nutans* and ſome other ſpecies, with two ſmall ſpurs, or awl-ſhaped appendages on the upper ſide, which are wanting in the laſt, ſeems to have occaſioned the ſpecific name, which is rather calculated to miſlead. Dr. Roxburgh had once an intention of changing it to *ſpicata*, which would not have been more correct, and the above being printed by Andrews, it was ſuffered to remain. *A. anguſtifolia* would have been preferable to either.

12. A. *maculata*. Spotted-leaved Alpinia. Roſc. Tr. of Linn. Soc. v. 8. 347.—" Leaves ovate, ſpotted."—Cultivated in the botanic garden at Liverpool. It is thus mentioned by Mr. Roſcoe, but with a mark of doubt, nor have we met with any further information reſpecting this ſpecies.

13. A. *ſpicata*. Small Spiked Alpinia. Roxb. n. 8.—" Spike oblong, compactly imbricated, with narrow-lanceolate acute bracteas."—Native of Sumatra. Brought by Mr. William Roxburgh, from Bencoolen to the Calcutta garden, in 1803. At the cloſe of the rains of 1808, it bloſſomed for the firſt time, and was then only about two feet high, being the ſmalleſt of the genus ever ſeen by Dr. Roxburgh. This is all the account he has left us of the preſent ſpecies.

14. A. *Renealmia*. Surinam Alpinia. (Renealmia exaltata ; Linn. Suppl. 79, excluding the ſynonym of Rumphius, and the account of the ſtem and leaves taken from that author. Willd. Sp. Pl. v. 1. 6. " Neue Bot. Ann. v. 3. 136." Myriſma n. 64 ; Linn. Pl. Surinam. in Amoen. Acad. v. 8. 251. n. 3, excluding the ſynonym of Merian, t. 54.)—Cluſter lateral, compound. Calyx tubular, irregularly toothed.—Native of Surinam. The hiſtory of this plant is ſo confuſed, that we think it neceſſary to lay before the reader all the original materials. The generic deſcription, Linn. Suppl. 7, and the ſpecific one, p. 79 of the ſame work, beginning at the word *Racemus*, appear to have been made, with ſufficient accuracy and fidelity, from ſpecimens of a cluſter of the *flowers*, and a quantity of the *fruit*, with a *leaf*, ſent in bottles of ſpirits to Linnæus. The former was taken out and dried by Linnæus himſelf, for his herbarium, where it now lies, marked by him *Heliconia*, he having taken this ſpecimen for Merian's t. 54, *Heliconia Bihai*, which it ſomewhat reſembles in general aſpect. The *flowers*, however, when examined, prove theſe plants totally different ; but this miſtake of Linnæus accounts for his erroneous reference to Merian. The ſpirits in the bottle of the *fruit* being gone, the latter is alſo dried ; but enough remains to ſhew it has been a fleſhy, very fibrous, oval, *capſule*, above an inch long, of three valves, ſtrongly umbilicated, and containing numerous, roundiſh-obovate *ſeeds*, now of a ſhining brown. Their flavour is loſt. A Dutch manuſcript, ſent from Surinam with the collection to which the above belonged, contains the following information. " No. 64 is a ſort of reed, and has upon each ſtalk four ſuch leaves as are here to be ſeen ; two uppermoſt next to each other, and then the other two a ſpan under the uppermoſt, and a ſpan between theſe two, downwards to the fruit. The fruit is at firſt red ; black when ripe. The ſeed in the fruit taſtes exactly like Cardamom. The ſtalk to which the fruit grows is two feet and a half long, beſet with twenty-five to twenty-ſeven fruits." Such is as literal a tranſlation as we could obtain. It ſeems indubitably to aſcertain the ſituation of the *infloreſcence* to be lateral, and in this point agrees with the following account given by Willdenow, we know not on whoſe authority. " A *tree* twenty feet high. *Leaves* five or ſix feet long, lanceolate, waved at the margin. The *cluſter* originates from the *trunk*, above the root." *Neue Bot. Ann.* as above. If this laſt deſcription really belongs to the Linnæan *Renealmia*, our ideas of the plant are very incomplete. The lateral *infloreſcence* would form a ſtrong preſumptive argument againſt its being an *Alpinia* ; but we can aſſert, from a careful examination of one of the *flowers*, immerſed in hot water, and compared with a living flower of *A. nutans*, that their ſtructure agrees exactly, without the leaſt mark of a generic difference, eſpecially the eſſential part of the *anther*. This indeed appears from Linnæus's remarks in the *Supplementum*, without which our hiſtory would be incomplete. We ſhall leave the reader to compare it with the deſcriptions of other ſpecies, only obſerving beforehand that Linnæus conſiders the flower as reverſed, placing the *nectary* uppermoſt.

Suppl. p. 7. RENEALMIA. Eſſ. Ch. *Corolla* three-cleft. *Nectary* oblong. *Calyx* of one leaf. *Anther* ſeſſile, oppoſite to the nectary. *Berry* fleſhy.

Nat. Ch. *Cal.* Perianth ſuperior, tubular, of one leaf, burſting at the top into two or three irregular teeth. *Cor.* of one petal. Tube ſtraight, cylindrical. Limb three-cleft : two upper (properly *under*) ſegments oblong, rounded, equal : lower ſegment ſcarcely longer, channelled, oblong. Nectary united with the tube, aſcending under the upper ſegments, ſtraight, the length of the corolla, oblong, with a tooth at the baſe on each ſide, and a hollow behind ; dilated, and bluntly three-lobed, at the extremity. *Stam.* Filament none. Anther ſolitary, inſerted into the mouth of the tube, in the boſom of the lower (*upper*) ſegment of the corolla, oppoſite to the nectary, unconnected, ſtraight, linear, emarginate, marked with a furrow on the inner ſide, its length and breadth equal to the ſegment of the corolla. *Piſt.* Germen inferior, oblong, obſcurely triangular, ſmooth. Style thread-ſhaped, very ſmooth, erect; the length of the corolla. Stigma peltate, a little flat head, abrupt on the ſide towards the nectary, an orifice running into the ſtyle. *Peric.* Berry oblong, round, with three furrows, ſmooth, fleſhy, with an umbilicated termination; three-celled in the centre; the cells ſoft and membranous. *Seeds* numerous, oblong, abrupt, quadrangular, very ſmooth.

P. 79. R. *exaltata.* *Cluſter* with alternate, lanceolate, channelled, ſmooth, ribbed, deciduous *bracteas.* *Flower-ſtalks* in the boſoms of the bracteas, ſolitary, incurved, depreſſed, downy, ſhort, each terminating in a *ſheath* of one leaf, which burſts at the top, like the calyx, into two or three ſegments, to allow the flowers to protrude. Within this ſheath is a *flower,* as well as *another two-flowered ſheath,* ſo that each ſtalk bears three flowers. The *calyx* is exactly ſimilar to theſe ſheaths, inſomuch that it would be a ſheath, if not ſeated on the top of the germen. Scarcely any other of the *Scitamineæ* has an anther ſo unconnected, and with ſo much of the common appearance of that organ. The *fruit* forms a compound pendulous cluſter, reſembling the fruit of *Momordica Elaterium* in ſize and figure; its cortical part thick and fleſhy, hot, reddiſh; the triangular central cell has ſoft, juicy, membranous partitions. *Seeds* ſmall, very ſmooth, black, very like thoſe of *Amomum Cardamomum.* The preſerved fruit is eſteemed by the inhabitants of Surinam.

The following three ſpecies are lately added to *Alpinia* by Mr. Roſcoe, from the inſpection of ſome Chineſe drawings, in the poſſeſſion of the right honourable lord Stanley, V.P.L.S.

15. A. *pennicellata.* Pencilled Alpinia. Roſc. Tr. of Linn. Soc. v. 11. 280.—Cluſter terminal, pendulous. Segments of the outer limb ſhort, pointed. Lip emarginate. Leaves lanceolate, ſimple at the margin.—Native of China. The *lip* or *nectary* is broad, ſimple, emarginate, bright yellow regularly ſtreaked with crimſon. *Leaves* regularly nerved. The unfolded *bloſſoms* have, like ſome other ſpecies, the appearance of fine China ware.

16. A. *diffiſſa.* Cloven Alpinia. Roſc. ibid.—Cluſter inclining. Segments of the outer limb ovate. Lip flat, panduriform. Leaves lanceolate, glaucous beneath. Stamen deeply cloven to the baſe.—Native of China. The margin of the *leaves* is ſtrongly nerved. *Lip* broad, bright yellow, with a central rib, from which diverge crimſon ſtreaks. The *filament* is deeply cloven, each portion bearing its proper *anther,* (or rather we ſhould ſay, one lobe of the *anther,*) between which riſes the *ſtyle,* perfectly free, and not incloſed in a double anther, as in the reſt of the proper *Scitamineæ.* This circumſtance is ſo peculiar, that Mr. Roſcoe thinks it may poſſibly entitle the plant to rank as a new genus; but being in other reſpects truly an *Alpinia,* he prefers retaining it here.

17. A. *bracteata.* Bracteated Alpinia. Roſc. ibid. 281. —Panicle looſe. Leaves downy. Lip in three, nearly equal, lobes; ſpurred at the baſe.—From the ſame country. The *ſtem* is jointed, rather ſpiral. *Footſtalks* of the upper *leaves* uniting with the *bracteas.* *Calyx* concave, ovate. *Nectary* broad, flat, nearly circular, deeply indented at each ſide, yellow, with purple rays diverging from its baſe. *Anther* ovate. " Habit rather of a *Coſtus* than an *Alpinia,* but the infloreſcence is a looſe *panicle,* not a bracteated *ſpike,* and the whole conſtruction of the *corolla* ſeems deciſive of the genus." *Roſcoe.*

A. *Cardamomum,* Roxb. n. 7, the valuable Cardamom of the ſhops; *Amomum repens* of Sonnerat and other authors, Willd. Sp. Pl. v. 1. 9; is now properly, we believe, removed from *Alpinia,* and propoſed by Dr. Maton, Tr. of Linn. Soc. v. 10. 249, as a new genus, diſtinguiſhed by two tranſverſe proceſſes at the top of the filament, and called by him ELETTARIA, under which name we propoſe hereafter to treat of this plant.

ALQUIER. Add—The fanega, which is the 15th part of the moyo, is = 4 alquiers = 8 moyos = 16 quarters = 32 outavas = 64 mequias. The alquier meaſures 675 French, or 817 Engliſh cubic inches; ſo that 21 alquiers are nearly = 1 Engliſh quarter; or, more correctly, 50 alquiers = 19 Engliſh buſhels.

ALSOPHILA, in *Botany,* ſo named, we preſume, from αλσος, *a grove,* or *foreſt,* and φιλεω, *to love;* alluding to the favourite ſtation of the beautiful tribe of Tree Ferns, to which this belongs.—Brown Prodr. Nov. Holl. v. 1. 158.—This genus is founded on our *Cyathea aſpera, C. extenſa* of Swartz, *Polypodium lunulatum* of Forſter, and ſome other allied ſpecies; but we ſcarcely think the deeper ſegments of the burſting *involucrum,* or the ſituation of the *ſori* at the diviſion, inſtead of the ſide, of a vein, can authorize a ſeparation of theſe from CYATHEA. See that article.

ALSTEAD, in *Geography,* a town of America, in New Hampſhire, and county of Cheſhire, having 1694 inhabitants.

ALSTONIA, in *Botany,* received that name from Mr. Brown, in memory of Dr. CHARLES ALSTON, formerly Profeſſor of Botany at Edinburgh. (See that article.) The genus originally dedicated to this gentleman, in the Supplement of Linnæus, is now ſunk in SYMPLOCOS. (See that article, and ALSTONIA.)—Brown Tr. of the Werner. Soc. v. 1. 75.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Contortæ,* Linn. *Apocineæ,* Juſſ. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, ſmall, in five deep, rather blunt, ſegments, permanent. *Cor.* of one petal, ſalver-ſhaped; tube cylindrical, many times longer than the calyx, ſomewhat tumid near the top, pervious, deſtitute of ſcales in the throat or mouth; limb horizontal, in five deep ſegments, folding over each other at the baſe, moſtly ſhorter than the tube. Nectary none. *Stam.* Filaments five, ſhort, inſerted into the tube, and not reaching to its ſummit; anthers lanceolate, unconnected with the ſtigma, burſting longitudinally, encloſed within the tube. *Piſt.* Germens two, ſimple; ſtyle ſolitary, central, thread-ſhaped, ſwelling at the top; ſtigma nearly conical. *Peric.* Follicles two, cylindrical, long, each of one cell and one valve. *Seeds* oblong, peltate, fringed, bearded with long hairs at each end.

Eſſ. Ch. Corolla ſalver-ſhaped, pervious; limb in five deep oblique ſegments. Nectaries none. Anthers lanceolate, within the tube, burſting lengthwiſe, unconnected with the ſtigma. Follicles two, cylindrical. Seeds fringed, bearded at each end.

This genus conſiſts of *trees,* often of great height, with milky juice. *Leaves* either whorled or oppoſite, ribbed, ſmooth. *Cymes* terminal, panicled. *Flowers* for the moſt part white. *Follicles* generally very long. They grow in the Eaſt Indies, the Malay Archipelago, and the Society iſlands. *Alſtonia* has little affinity to ECHITES, (ſee that article,) with which Linnæus would probably not have confounded it, had he examined the fruit, or attended to the figure in the Hort. Malab., of which work indeed he had not a copy. *Brown.*

1. A. *ſcholaris.* Tablet Alſtonia. Br. n. 1. (Echites ſcholaris; Linn. Mant. 53. Willd. Sp. Pl. v. 1. 1241. Lignum ſcholare; Rumph. Amboin. v. 2. 246. t. 82.

Pala; Rheede Hort. Malab. 81. t. 45, not 46.)—Leaves ſeveral in each whorl, obovate-oblong, obtuſe, ribbed, ſurrounded with a marginal vein. Cymes ſtalked. Limb of the corolla but partially bearded. Follicles very long and ſlender.—Native of Malabar and the Molucca iſlands, in ſandy ground, flowering in January. A very tall and ſpreading tree, whoſe wood, Rumphius tells us, is uſed by ſchool-boys in India, as ſlates are with us. The *leaves* are from five to ſeven in each whorl, ſtalked, with numerous, parallel, tranſverſe veins, or ribs. *Cymes* many-flowered, compound, ſpreading, downy. *Flowers* ſmall, about half an inch long, whitiſh, ſweet-ſcented, but oppreſſive to the head. *Corolla* downy on the inſide and out, but not denſely bearded, or ſhaggy, except around the mouth. *Follicles* eighteen inches long, not ſo thick as a wheaten ſtraw. *Seeds* furniſhed at each end with a tuft of very long ſilky hairs.

2. A. *ſpectabilis*. Handſome Alſtonia. Br. n. 2.—" Leaves four in a whorl, elliptic-oblong, ribbed, ſomewhat pointed, without any marginal vein. Cymes ſtalked, ſhorter than the leaves. Limb of the corolla bearded. Follicles very long."—Obſerved by Mr. Brown, in April 1803, in the iſland of Timor, near Coepang, bearing flowers and fruit. Very nearly akin to the foregoing, but diſtinct; not ill-repreſented by Rumphius's plate, t. 82, but his deſcription agrees beſt with *A. ſcholaris*. *Brown*. We would obſerve, that the number of the leaves in this figure agrees beſt with *ſcholaris*, and that the omiſſion of the marginal nerve, ſo little conſpicuous in nature, is rather to be attributed to inaccuracy of the engraver, if not of the draughtſman.

3. A. *venenata*. Poiſonous Alſtonia. Br. n. 3.—Leaves four in a whorl, lanceolate, pointed; tapering at the baſe. Cymes forked. Tube of the corolla ſwelling upwards. Limb beardleſs, ſhorter than the tube. Follicles tapering at each end, ſcarcely ſo long as the leaves.—Native of the Eaſt Indies. *Dr. Roxburgh*. We received a ſpecimen from the Rev. Dr. Rottler, gathered at Nundydroog, March 17, 1806. The *leaves* are crowded towards the ends of the branches, ſtalked, very ſmooth, three inches or more in length. *Flowers* like thoſe of a *Tabernæmontana*, their limb an inch broad, with oblong, oblique, rather blunt than acute ſegments; tube an inch and a half long, inflated in the upper part, very ſmooth, as well as the limb. The *calyx* is a little downy, or fringed. *Flower-ſtalks* quite ſmooth. We have not ſeen the *follicles*.

4. A. *coſtata*. Ribbed Alſtonia. Br. n. 4. (Echites coſtata; Forſt. Prodr. 20, excluding the ſynonym. Willd. Sp. Pl. v. 1. 1240.)—" Leaves oppoſite, elliptic-oblong, pointed, ribbed. Cymes looſe. Segments of the limb lanceolate, beardleſs, longer than the tube. Follicles very long."—Native of the Society iſles. *Forſter*. Gathered by ſir Joſeph Banks in Otaheité and Ulaietea, between the ſummits of hills (called by the natives *Attahé*). *Brown*. We preſume the plant, not the hills. A moderate-ſized *tree*. The *ſeeds* are fringed, but, according to Mr. Brown, the ſilky hairs at each end are not ſo remarkably elongated as in other ſpecies. *Kametti-Valli*, Hort. Malab. v. 9. t. 14, is a climber, having ſhort *follicles*, with winged naked *ſeeds*, and therefore cannot, as Forſter thought, be ſynonymous with this.

ALTAY MOUNTAINS. See ALTAI.

ALTERNANTHERA, in *Botany*, ſo called by Forſkall, from the ſtamens being, as he thought, alternately furniſhed with anthers, and without them.—Forſk. Ægypt.-Arab. 28. Brown Prodr. Nov. Holl. v. 1. 416.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, coloured, pointed, ſpreading, permanent, and finally hardened, ſegments. *Cor.* none. *Stam.* Filaments five, capillary, ſhorter than the calyx, inſerted into a membranous ring, ſurrounding the baſe of the germen, with more or leſs remarkable intermediate teeth; anthers ſimple, oval, of one cell, generally wanting on two or three of the filaments alternately. *Piſt.* Germen ovate, acute; ſtyle very ſhort; ſtigma capitate. *Peric.* Capſule membranous, inverſely kidney-ſhaped, compreſſed, of one valve and one cell, inflated, not burſting, encloſed in the cartilaginous calyx. *Seed* ſolitary, roundiſh, pointed.

Eſſ. Ch. Calyx in five deep ſegments, cartilaginous. Corolla none. Stamens partly imperfect, inſerted into a membranous ring, with intermediate teeth. Anthers ſingle-celled. Stigma capitate. Capſule kidney-ſhaped, of one cell, without valves. Seed ſolitary.

Obſ. Mr. Brown properly retains the name of ILLECEBRUM, (ſee that article,) for *I. verticillatum* and its allies, from which we can ſcarcely ſeparate *I. Paronychia*, &c. He would divide the preſent genus, which agrees very nearly in habit with *Illecebrum*, into two ſections. Theſe we ſhall here adopt, according to his ſuggeſtion, for the diſtribution of the ſpecies.

Sect. 1. *Two of the filaments deprived of anthers. Intermediate teeth very ſhort, or obſolete.*

1. A. *ſeſſilis*. Seſſile-flowered Alternanthera. Forſk. Ægypt.-Arab. 28. (Illecebrum ſeſſile; Linn. Sp. Pl. 300. Mant. 345. Willd. Sp. Pl. v. 1. 1209. Ait. Hort. Kew. v. 2. 61. Vahl Symb. v. 1. 22. Amaranthoides humile maderaſpatanum, capitulis candicantibus, folio molli; Pluk. Phyt. t. 133. f. 1. Amaranthus humilis, foliis oppoſitis, floſculis in alis conglomeratis; Burm. Zeyl. 17. t. 4. f. 2.)—Calyx ſmooth; ſegments ovate, pointed, almoſt twice the length of the capſule. Leaves elliptic-lanceolate, nearly entire, bearded at their inſertion. Stem procumbent, hairy on two oppoſite ſides.—Native of Arabia and the Eaſt Indies. A biennial, or perhaps annual herb, whoſe branching *ſtems* ſpread on the ground, in every direction, to the length of a foot or more, and are leafy, bluntly quadrangular; the oppoſite furrows denſely hairy. *Leaves* oppoſite, ſtalked, ſpreading or reflexed, from one to two inches long, bluntiſh, nearly or quite entire, ſingle-ribbed, ſmooth, bright green, rather fleſhy. *Footſtalks* very ſhort, bearded, and connected by intermediate ſtipulaceous briſtles. *Heads* of *flowers* ſeſſile, axillary, ſolitary, obtuſe, half an inch, more or leſs, in length, white and ſhining, like everlaſting flowers. *Calyx* ſingle-ribbed, ſtrongly keeled, pellucid. *Capſule* broadly heart-ſhaped, finely reticulated. The *leaves* occaſionally vary to an obovate, or ſpatulate figure.

2. A. *denticulata*. Toothed Alternanthera. Br. n. 1.—Calyx ſmooth; ſegments ovate, pointed, almoſt twice the length of the capſule. Leaves narrow-lanceolate, finely toothed, ſmooth; bearded at their inſertion. Stem procumbent, ſmooth.—Gathered by Mr. Brown in the tropical part of New Holland, as well as in New South Wales, and Van Diemen's iſland. We have ſeen no ſpecimen.

3. A. *nodiflora*. Knotty-flowered Alternanthera. Br. n. 2.—Calyx ſmooth; ſegments narrow-lanceolate, pointed, thrice the length of the capſule. Leaves linear-lanceolate, finely toothed, ſmooth; bearded at their inſertion. Stem diffuſe, ſquare, ſmooth; its ultimate branches only downy on two oppoſite ſides.—Diſcovered by Mr. Brown, in the tropical diſtrict of New Holland. Theſe three ſpecies appear to be all nearly allied.

4. A. *anguſtifolia.* Narrow-leaved Alternanthera. Br. n. 3.—Calyx externally woolly; ſegments ovate, acute, the length of the capſule. Heads nearly globoſe. Leaves linear, very ſmooth. Stem erect, angular.—Found by Mr. Brown, in the tropical part of New Holland.

5. A. *nana.* Dwarf Alternanthera. Br. n. 4.—Calyx ſmooth; ſegments ovate, ſlightly pointed, twice the length of the capſule. Leaves obovate-oblong, hairy; tapering at the baſe. Stem diffuſe, hairy.—Found in the ſame country as the two laſt, by Mr. Brown.

Sect. 2. *Five of the filaments with perfect anthers; five intermediate ones conſpicuous, without any.*

6. A. *Achyrantha.* Creeping Alternanthera. (Illecebrum Achyrantha; Linn. Sp. Pl. 299. Willd. Sp. Pl. v. 1. 1208. Ait. Hort. Kew. v. 2. 61. Achyrantha repens, foliis bliti pallidi; Dill. Elth. 8. t. 7. f. 7.)—Stem creeping. Leaves ovate; denſely downy when young. Calyx with ſomewhat ſpinous points.—Native of Buenos Ayres, from whence it was ſent to Sherard, before the year 1732. We have ſpecimens from the Paris garden. There is reaſon to doubt whether Linnæus ever ſaw this ſpecies. The *root* is perennial. *Stems* proſtrate, from one to two feet long, repeatedly forked, leafy, moſt hairy at oppoſite ſides, creeping by means of fibrous radicles from their lower joints. *Leaves* ſtalked, from one to two inches long, entire; nearly ſmooth, and of a bright green, when full-grown; the young ones covered on both ſides with denſe, ſtarry, hoary hairs, ſuch as compoſe the pubeſcence of the *ſtem*, and eſpecially of the younger *branches*. *Heads* ſmall, from the forks of the ſtem, partly ſtalked, round, of but few *flowers*. *Calyx* browniſh-white; ſegments three-ribbed, unequal, ſtrongly keeled, partly hairy, accompanied as it ſeems occaſionally with ſmaller ſmoother ſcales.

7. A. *polygonoides.* Perſicaria-leaved Alternanthera. (Illecebrum polygonoides; Linn. Sp. Pl. 300. Willd. Sp. Pl. v. 1. 1208. Ait. Hort. Kew. v. 1. 61. Herniaria hirſuta repens, ad nodos alternos florida; Browne Jam. 184. Amaranthoides humile curaſſavicum, foliis polygoni; Herm. Par. 17, with a figure. Sloane Jam. v. 1. 141. t. 86. f. 2. A. marina hirſuta, halimi folio; Plum. Ic. 12. t. 21. f. 2.)—Stem creeping, hairy. Leaves elliptic-lanceolate, tapering at the baſe, ſtalked, all ſmooth. Calyx ovate, ſingle-ribbed, unarmed; hairy at the bottom.—Native of South America. A ſmaller plant than the preceding, except the *flowers;* with longer, much narrower, *leaves* ſmooth at every period of their growth, on long ſtalks. *Calyx* of a brilliant white; its ſegments ovate, pointed, but not ſpinous, the mid-rib leſs prominent than in the foregoing; the baſe only beſet with conſpicuous hairs. Plumier's plant ſcarcely requires to be called a variety. The *ſtem* indeed is repreſented more hairy than it appears in our gardens, but it is always more or leſs ſo, and the hairs are always ſimple, not ſtellated like thoſe of *A. Achyrantha.*

8. A. *ficoidea.* Ribbed Alternanthera. (Illecebrum ficoideum; Linn. Sp. Pl. 300. Willd. Sp. Pl. v. 1. 1208. Gomphrena ficoidea; Linn. Sp. Pl. ed. 1. 225. Jacq. Amer. 88. t. 60. f. 4?)—Stem creeping, ſmooth. Leaves ovato-lanceolate, tapering at the baſe, ſtalked. Calyx lanceolate, unarmed, three-ribbed, hairy at the back.—Native of South America. Cultivated by Linnæus at Upſal. Jacquin's figure more reſembles the laſt, cloſely according with Browne's ſpecimen, which indeed Dr. Solander, who ſent it to Linnæus, marked *Gomphrena ficoidea;* but the latter found it to be his own *Illecebrum polygonoides.* The plant before us, from the Upſal garden, is a truly diſtinct ſpecies, with broader *leaves*, an inch and a half or two inches long, roughiſh with callous points; a ſmooth *ſtem;* and very different *flowers.* The ſegments of the *calyx* are much narrower, brown at the baſe, with three ſtrong ribs, and clothed at the back, more than half way up, with prominent hairs; their points are tapering, but not ſpinous.

Mr. Brown ſpeaks of ſome American nondeſcript ſpecies, referable to this ſection. Whether the following be among them we know not, but they appear to be nondeſcript.

9. A. *villoſa.* Woolly-branched Alternanthera.—Stem decumbent, hairy; ſhaggy at the joints. Leaves obovate, ſtalked, nearly ſmooth. Calyx ovate, ſingle-ribbed, ſmooth.—Sent to Linnæus by Thouin, from the Paris garden, without any mention of its native country. *Stems* above a foot long, with aſcending very hairy *branches*, bent at each joint. *Leaves* an inch or more in length, bluntiſh, dotted, rarely beſprinkled with a few long hairs. *Footſtalks* accompanied, above their inſertion, with very denſe ſtipulary tufts, of long ſhaggy hairs, jointed, like all thoſe on the ſtem and foliage. Of the *flowers* we have ſeen only one ſmall axillary *head*, apparently not come to perfection, but its *glumes* are evidently unlike all the preceding, broadly ovate, even and ſmooth, acute but not ſpinous, with a ſimple mid-rib.

10. A. *echinata.* Prickly-headed Alternanthera.—Stem proſtrate, hairy. Leaves roundiſh-oval, ſmooth. Calyx ſpinous-pointed; outer ſegments lanceolate, elongated, partly three-ribbed, ſmooth: two inner ſhorter, gibbous, hairy at the back.—Gathered by Commerſon at Monte Video, and ſent by Thouin to the younger Linnæus. This remarkable ſpecies is among the largeſt we have ſeen. The *leaves* indeed are not above an inch long, but they are nearly as much in breadth, tapering at the baſe, their ſurface dotted with little points, not hairy. *Heads* ſeſſile, axillary, ſomewhat aggregate, globoſe or oblong, pale brown, ſhining, diſtinguiſhed by the length and ſharp thorns of their three outer *calyx-ſegments*, one of which is ſtrongly three-ribbed, and by the tufted hairs of the two inner ones, projecting very conſpicuouſly between them.

ALTMICKLIC, in *Commerce*, a Turkiſh ſilver coin = 60 paras.

ALTON, in America. Add—The town contains 1279 inhabitants.

ALTUN-KUPRI, or the *Golden Bridge*, a town of Perſia, in the pachalic of Bagdad, about the ſize of Kupri, (which ſee,) ſituated on a fine plain, on the northern bank of the Little Zab, 32 furſungs from Moſul.

ALUMINA, in *Chemiſtry*, an earthy ſubſtance, deſcribed as elementary, but which ſir Humphrey Davy has rendered probable to be a compound of a metallic baſis with oxygen. See ALUMINUM *infra.*

We have little to add to the deſcription of alumina, except the curious fact obſerved by Sauſſure, that this ſubſtance does not give out the peculiar *earthy ſmell* which has been conſidered as characteriſtic of it, except it be mixed with oxyd of iron.

ALUMINA, *Salts of*, the compounds formed by the different acids with alumina. By ſome accident, the deſcription of moſt of the ſalts of alumina has been omitted. We ſhall therefore take the opportunity of introducing them here.

Nitrate of Alumina. See NITRATE *of Alumina.*

Carbonate of Alumina. The exiſtence of this ſalt has been uſually admitted by chemiſts. Bergman, however, could not form it artificially, though he allows its exiſtence, becauſe when alum is mixed with an alkaline carbonate, part of the alumina remains in ſolution till the carbonic acid be driven off. Sauſſure has more recently ſhewn, that water ſaturated with carbonic acid is capable of diſſolving alumina, but that this combination is deſtroyed by ſimple expoſure to the air. Carbonate of alumina, therefore, cannot exiſt in a dry ſtate. What had formerly been conſidered as dry carbonate of alumina is a triple compound of alumina, carbonic acid, and the alkali employed in precipitating the alumina.

Phoſphate of Alumina. This ſalt may be formed by ſaturating phoſphoric acid with alumina. According to Fourcroy, who is the only chemiſt that has examined it, the phoſphate of alumina is a taſteleſs powder, inſoluble in water. When diſſolved in exceſs of phoſphoric acid, it yields a gritty powder and a gummy ſolution, which by heat is converted into a tranſparent glaſs.

Sulphate of Alumina. See ALUM and SULPHATE *of Alumina.* In addition to what has been ſaid under theſe articles, we may add the following analyſis of alum by Vauquelin, Thenard and Roard, and Berzelius.

	Vauquelin.	Thenard and Roard.	Berzelius.
Sulphuric acid	30.52	26.04	34.23
Alumina -	10.50	12.53	10.86
Potaſh -	10.40	10.02	9.81
Water -	48.58	51.41	45.00
	100.00	100.00	99.90

The analyſis of Berzelius is probably moſt accurate, and is equivalent to

Sulphate of alumina - - -	36.85
Sulphate of potaſh - - -	18.15
Water - - - - -	45.00
	100.00

Which nearly coincides, according to Dr. Thomſon, with three atoms of ſulphate of alumina, one atom of ſulphate of potaſh, and twenty-three atoms of water.

According to the experiments of Thenard and Roard, alum uſually contains a little ſulphate of iron, and the goodneſs of its qualities as a mordant in dyeing, according to theſe chemiſts, depends entirely upon the proportion of that ſalt preſent. The more free it is from it the better. The pureſt alum examined contained about $\frac{1}{2000}$th part of its weight of ſulphate of iron; the impureſt about $\frac{1}{1000}$. When freed from ſulphate of iron, every ſpecies of alum tried acts exactly in the ſame manner as a mordant.

Sulphite of Alumina. See SULPHITE *of Alumina.*

Borate of Alumina. This ſalt may be formed by mixing together the ſolutions of borate of ſoda and ſulphate of alumina. It is ſaid to be ſcarcely ſoluble in water.

Arſeniate of Alumina. See ARSENIATE *of Alumina.*

Tungſtate of Alumina. A white powder inſoluble in water.

Acetate of Alumina. See ACETATE *of Alumina.*

Benzoate of Alumina. This ſalt cryſtallizes, is ſoluble in water, and deliqueſces on expoſure to the air.

Succinate of Alumina. Wenzel ſtates, that this ſalt cryſtallizes in priſms, and is eaſily decompoſed by heat.

Camphorate of Alumina. This ſalt may be formed by heating together newly precipitated alumina and camphoric acid. It is a white powder, of an acid bitteriſh taſte, and ſlightly aſtringent. Water diſſolves about $\frac{1}{200}$th part of its weight of this ſalt: it is not ſoluble in boiling water, but ſeparates as the water cools. Cold alcohol diſſolves very little of it; but by the aſſiſtance of heat that fluid takes up a conſiderable quantity, which ſeparates on the cooling of the alcohol. This ſalt undergoes but little change from the action of the air. Expoſed to heat the acid volatilizes; and when the ſalt is thrown on burning coals it takes fire, and burns with a blue flame.

Suberate of Alumina. This ſalt does not cryſtallize. It has a yellowiſh colour, and always contains an exceſs of acid. On expoſure to the air it attracts moiſture. When heated the acid is volatilized, and the alumina left in a ſtate of purity.

Oxalate of Alumina. Oxalic acid readily diſſolves alumina, and forms an uncryſtallizable deliqueſcent ſalt, with exceſs of acid, of a yellowiſh colour, and ſparingly ſoluble in alcohol. It is ſaid to be compoſed of

Oxalic acid and water - -	56
Alumina - - - - -	44
	100

Mellate of Alumina. This ſalt exiſts in the form of a white flaky powder.

Tartrate of Alumina. See TARTRATES.

Tartrate of Potaſh and Alumina. This triple ſalt may be formed by ſaturating tartar with alumina. It nearly reſembles the laſt ſalt. Neither the alkalies nor alkaline carbonates, according to Thenard, produce precipitates in this ſalt.

Saclactate of Alumina. A white powder, inſoluble in water.

Urate of Alumina. A white powder, cloſely reſembling in its appearance the uric acid.

Malate of Alumina. This ſalt is almoſt inſoluble in water; hence Mr. Chenevix has propoſed the malic acid as a means of ſeparating alumina from magneſia.

Sorbate of Alumina. From the experiments of Mr. Donovan, the diſcoverer of ſorbic acid, it appears that this ſalt has no exiſtence.

Zumate of Alumina. A gummy maſs, not altered by expoſure to the air.

Gallate of Alumina. According to ſir Humphrey Davy, a ſolution of galls, in which alumina has been diffuſed, depoſits after ſome time tranſparent priſmatic cryſtals, which are the ſuper-gallate of alumina. The quantity of alumina they contain is ſo ſmall as not to diſguiſe the properties of the acid.

Dr. Thomſon is diſpoſed to conſider the ſalts of alumina in general as compoſed of one atom of alumina and one atom of the reſpective acids, and if this be admitted their compoſition may be readily aſcertained.

With reſpect to the uſes of the ſalts of alumina, ſee ALUM, DYEING, MORDANT, TAWING, &c.

ALUMINITE. See MINERALOGY, *Addenda.*

ALUMINUM, in *Chemiſtry*, the metallic baſis of alumina. Sir Humphrey Davy ſhewed, that when potaſſium is paſſed through alumina heated to whiteneſs, a conſiderable proportion of it is converted into potaſh, and grey metallic particles are perceived in the maſs, which effervеſce in water and air, and are converted into alumina. When a globule of iron is fuſed by galvaniſm in contact with moiſt alumina, it forms an alloy with aluminum, which effervеſces ſlowly in water, and becomes covered with a white powder. Theſe metallic particles Davy conſidered as the baſis of alumina, and in conformity to this view denominated it *aluminum.* The above, however, is all we know at preſent reſpecting this metal.

ALYXIA, in *Botany*, (ſee GYNOPOGON,) which latter will probably give way, as in ſuch a caſe it ought, being founded in error, to the former. Brown Prodr. Nov. Holl. v. 1. 469.

AMADAN. Add—The preſent town contains in 10,000 meanly-built houſes more than 40,000 inhabitants. It is famous for its manufacture of leather; and it is alſo a mart of commerce between Iſpahan and Bagdad, and between Bagdad and Tekroun. N. lat. 35° 51′. E. long. 48°.

AMADIA. Add—This town does not contain above 600 houſes; but the plain, at the foot of the hill, is covered with dependent villages. It is nominally dependent upon the pacha of Bagdad, but pays him no tribute.

AMANDA, a townſhip of Ohio, in the county of Fairfield, having 836 inhabitants.

AMANITA, in *Botany*, αμανιται, an old Greek name for *Fungi* in general, is uſed by Haller, after Dillenius, for the whole Linnæan genus of AGARICUS, (ſee that article,) or nearly ſo. Perſoon adopts it for ſuch ſpecies only as are furniſhed with a *volva*, which, on that account, he conſiders generically diſtinct.—Perſ. Syn. Fung. 246.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Stalk with a wrapper at the baſe. Head fleſhy. Gills crowded, nearly undivided.

Obſ. The *head* is generally warty, and the *ſtalk* elongated, either naked, or furniſhed with a ring. Perſoon deſcribes ſeventeen ſpecies, partly wrong numbered, all which, being more or leſs remarkable, and ſome of them very much ſo, we ſhall in order enumerate, with the addition of one.

Sect. 1. *Stalk ſurrounded at the baſe with a diſtinct wrapper, but deſtitute of a ring at the top.*

1. A. *livida*. Livid Egg-Agaric. Perſ. Diſp. Meth. 66. (Agaricus plumbeus; Schæff. Fung. v. 4. 37. t. 85, 86. With. Bot. Arr. v. 4. 244. Fl. Dan. t. 1014. A. vaginatus; Bulliard t. 512. f. M, according to Perſoon.)—Head boſſed, flattiſh, ſtriated, livid lead-coloured. Gills white, as well as the long ſtalk.—Not uncommon in autumn, after rain, about the ſkirts of woods, and borders of fields. The *wrapper* burſts irregularly. The *ſtalk* is hollow, and rather long in proportion, about twice the diameter of the *head*, which is protuberant and browniſh in the middle, greyiſh-lead-coloured and ſtriated at the margin. Some individuals are much thicker than others. Schæffer gives a good repreſentation of the various ſtates and forms of this ſpecies. The *head* is ſometimes ſtudded with angular warts, at leaſt when young, as repreſented by Battarra, *Leucomyces gemmatus*, Batt. Fung. Arim. 28. t. 6. f. B. commended highly in Withering; and by Micheli, t. 78. f. 2. Theſe figures exhibit a ſtate and habit of the plant, the reverſe of what appears in the *Fl. Dan.* and eſpecially in Bulliard. This is generally allowed to be a poiſonous fungus. Some varieties are indicated by Perſoon, one with yellowiſh gills, Schæff. t. 244; and another with a browner *head*, and tapering *ſtalk*, found in fir woods, which ſeems to connect the preſent with the following ſpecies.

2. A. *ſpadicea*. Tawny-brown Egg-Agaric. Perſ. Diſp. Meth. 66. (Agaricus badius; Schæff. Fung. v. 4. 63. t. 245. With. v. 4. 227. A. fulvus; ib. t. 95. A. vaginatus; Bulliard t. 512, f. N?)—Head ſomewhat bell-ſhaped, boſſed, ſtriated, brittle, orange-brown. Gills white. Stalk pale brown, ſcaly.—Found in dry woods, about Auguſt, in various parts of England and Germany. Akin to the foregoing, but much more delicate in texture. We ſhould ſcarcely think it more than a variety.

3. A. *incarnata*. Fleſh-coloured Egg-Agaric. Perſ. n. 3. ("Agaricus incarnatus; Batſch. Elench. Fung. 51." Fungus magnus eſculentus; e volvâ erumpens, pileolo villoſo albo, lamellis carneis, pediculo cylindrico glabro, pariter albo; Mich. Gen. 182. t. 76. f. 1; not f. 2 as Perſoon has it.)—Head hemiſpherical, white, hairy. Gills fleſh-coloured. Stalk white, cylindrical.—Found by Micheli, on old half-decayed trees, in the woods of Viareggio near Florence, in June. No other botaniſt ſeems to have met with this fungus, at leaſt not in the ſtate deſcribed by Micheli. He repreſents it of very large dimenſions, the *head* full ſix inches broad, while in its convex ſtate, and covered with fine hairs. *Wrapper* much divided and jagged, tumid. *Stalk* ſix inches high, ſmooth, thick, and very ſtraight.

Albertini and Schweiniz, in their very learned *Conſpectus Fungorum*, 142, ſpeak of what they deem a variety of this, whoſe head is ſmooth, ſcarcely bearing any minute fibres or ſcales, by no means hairy or ſhaggy. Every other part agrees with Micheli's account. The undiſplayed *gills* are white, ſoon aſſuming a roſy fleſh-colour from the ſeminal powder. *Head* never becoming quite flat; the border neither furrowed nor ſtriated.

4. A. *virgata*. Striped Egg-Agaric. Perſ. Diſp. Meth. 18 and 66. (Agaricus volvaceus; Bulliard t. 262. Sowerb. Fung. t. 1. With. v. 4. 286. Relh. Cant. 507. A. latus; With. v. 4. 231?)—Aggregate. Head conical-bellſhaped, ſomewhat hairy, grey ſtreaked with black. Gills reddiſh-cinnamon-coloured.—This occurs chiefly on the rotten tan of hot-beds, in ſummer. The *ſtalk* is often a foot high, ſlender in proportion, of a dirty white, burſting from a large pale-olive wrapper. *Head* about three inches broad, ſplitting into ſeveral unequal portions. Perſoon eſteems Schæffer's *Agaricus bombycinus*, t. 98, as perhaps a mere variety of the above, with a yellowiſh *wrapper*, and a ſhaggy-coated *head*. Dr. Withering diſtinguiſhes between the plants of Bulliard and Sowerby. The latter is certainly Relhau's.

5. A. *puſilla*. Small Egg-Agaric. Perſ. Obſ. Mycol. v. 2. 36. t. 4. f. 4, 5. (Agaricus volvaceus minor; Bull. t. 330, not 530.)—Head hemiſpherical, boſſed, pellucid, of a pearly white, ſomewhat cottony. Gills fleſh-coloured. Stalk white, rather longer than the breadth of the head.—Native of gardens and woods in autumn, in a ſouthern expoſure. *Bulliard*. We have not heard of this ſpecies in Britain. Its appearance is elegant and delicate. *Head* an inch, or inch and a half, in diameter. *Wrapper* turbinate, much divided, permanent.

Sect. 2. *Stalk proceeding from a lax wrapper, and furniſhed at the upper part with a ring.*

6. A. *verna*. Vernal Egg-Agaric. Lamarck Dict. v. 1. 113. Perſ. n. 6. (Agaricus bulboſus vernus; Bulliard t. 108. Fungus totus candidus, pileolo ampliore, glutine limacino infecto, pediculo tenuiori cylindrico, annulo ſtrictiori cincto; Mich. Gen. 171? at the ſuggeſtion of Lamarck.)—Pure white in every part. Head at length concave, ſomewhat funnel-ſhaped. Ring pendulous. Stalk elongated, ſolid, cylindrical.—Common in woods in France during the ſpring. Bulliard ſays many perſons have died from eating this fungus by miſtake for the white-gilled variety of the Common Muſhroom. It may be kept in the mouth for eight or ten minutes, before its acrimony, reſembling pepper, becomes perceptible. If the *wrapper* at the baſe be attended to, the plant can never be confounded with any eatable Agaric.

7. A. *porphyria*. Purple Egg-Agaric. Albert. and Schwein. Conſp. 142. n. 401. t. 11. f. 1.—Head convex, naked, ſmooth, of a livid purpliſh-brown. Ring nearly of the ſame colour. Gills and ſtalk white.—Not rare in moiſt, turfy, moſſy ſpots, in fir woods more eſpecially, over which it is ſcattered in September and October. Habit of *A. viridis*, n. 9, but only half the ſize. *Stalk* three or four inches high, too dark-coloured in the figure. *Head* almoſt as much in breadth, never found with warts; very rarely and ſlightly ſtriated at the margin.

8. A. *bulboſa*. White Bulbous Egg-Agaric. Perſ. n. 7.

Albert. and Schw. Conſp. 143. (Agaricus bulboſus; Schæff. Fung. v. 4. 61. t. 241. With. v. 4. 217. A. ovoides albus; Bulliard t. 364. Leucomyces ſpecioſior; Battar. Arim. 28. t. 6. f. A.)—White in every part. Head convex. Stalk elongated, tapering; bulbous at the baſe.—Frequent from ſpring to the end of autumn, in rich ſoil, in woods, gardens, about hot-beds, &c. Its ſize is conſiderable. Bulliard ſpeaks of his plant as having a very agreeable flavour, and therefore we preſume it to be one of the eatable *fungi*. In the ſouth of France it is known by the name of *Agaric oronge blanche*, to diſtinguiſh it from the *A. oronge vrai*; ſee n. 11. The bulbous baſe of the nearly ſolid *ſtalk* is a characteriſtic mark. The *ring* is broad, looſely pendulous, permanent. *Head* almoſt hemiſpherical, rarely with a ſlightly indicated boſs. Schæffer's plate is too much coloured. The *gills*, if not abſolutely white, are ſemi-pellucid, or watery, in their appearance.

9. A. *citrina*. Lemon-coloured Egg-Agaric. Perſ. n. 8, not 7. Diſp. Meth. 66. Albert. and Schwein. Conſp. 143. (Agaricus citrinus; Schæff. Fung. v. 4. 11. t. 20.)—Head ſmooth, convex, lemon-coloured. Stalk and gills white.—This is deſcribed as not unfrequent on the continent, in beech or oak woods, where the ground is ſandy. Whether it be found in England, we are doubtful. Mr. Sowerby has exhibited in his t. 286, a pale yellow variety of *Agaricus muſcarius*, ſee n. 13, for Schæffer's *citrinus*; but this is not quite concluſive to us. Perſoon cites *Agaricus Mappa*, Willd. Berol. 381. Batſch. Elench. 57, as a variety of the preſent *Amanita*, diſtinguiſhed by a darker colour of the *head*, and yellow *gills*: he ſpeaks alſo of browniſh warts on the head. Willdenow ſays the *gills* of his plant are whitiſh. Albertini and Schweiniz, accurate practical obſervers, ſay, "we find the warts upon the *head* not very rare. The *ring*, and frequently the *ſtalk*, is diſtinguiſhed by a paliſh lemon-colour. The whole *fungus* is ſometimes half a foot high, in which caſe the *head* is four inches broad, or more." Perſoon notices apparently a ſtill different variety, on rotten trunks of trees, diſtinguiſhed by its elegant ſulphur-colour, flattiſh head, and acrid flavour.

10. A. *viridis*. Green Egg-Agaric. Perſ. n. 9, not 8. Diſp. Meth. 67. Albert. and Schwein. Conſp. 143. (Agaricus bulboſus; Bulliard t. 2, and t. 577. Fungus phalloides annulatus, ſordidè vireſcens et patulus; Vaill. Pariſ. 74. t. 15. f. 5.)—Head convex, dull green, moſtly naked. Stalk and gills white.—Found in ſandy moiſt ſhady woods, from Auguſt to October, in France and Germany. The *wrapper* is inflated, whitiſh. *Head* four or five inches broad, convex, not boſſed, of a more or leſs bright green, variegated occaſionally with brown, and turning olive-brown in decay, when, according to Bulliard, it exhales an intolerable cadaverous ſmell, being a very dangerous ſpecies, though when young deſtitute of any bad ſcent or flavour. The *head* ſometimes retains fragments of the *wrapper*, in the form of warts or broad patches, but this ſeems far from being univerſal or frequent.

11. A. *cæſarea*. Imperial Egg-Agaric. Perſ. n. 10, not 9. (A. aurantiaca; Perſ. n. 11, not 10. Agaricus cæſarius; Scop. Carn. v. 2. 419. Schæff. Fung. v. 4. 64. t. 247. A. aurantiacus; Bulliard t. 120. Fungus planus orbicularis aureus; Bauh. Pin. 371. Mich. Gen. 186. t. 77. f. 1. F. ovinus; Sterbeeck Fung. 64. t. 4. f. D, E, F. Fungorum eſculentorum genus 17; Cluſ. Hiſt. v. 2. 272.)—Head convex, naked, deep orange-coloured; ſtriated at the margin. Gills yellow, convex. Wrapper dilated upwards.—Native of Italy, France, Carniola, Bohemia, &c., but never obſerved in England. The *wrapper* is white, with a dilated entire border. *Stalk* hollow, nearly cylindrical, yellowiſh-white, or pale yellow, from four to ſix inches high. *Head* from four to ſix inches wide, almoſt hemiſpherical when young, of a rich deep orange, ſmooth and naked, ſcarcely ever warty, ſtriated near the edge, turning browniſh or purpliſh in fading, as in Schæffer's figure, where it is drawn ſomewhat boſſed, which we have never ſeen. The *gills* are uſually of a delicate lemon-colour, as well as the ring. Perſoon rightly ſuſpected his *A. cæſarea* and *aurantiaca* not to be diſtinct ſpecies; they do not appear to us to be even varieties, Schæffer's plant being only in a more forward ſtate than Bulliard's. We retain the oldeſt ſpecific name, which is that of Scopoli. It ſerves to commemorate an hiſtorical fact, that the emperor Claudius was murdered by poiſon given with this fungus, to which the Romans applied the name of *Boletus*, and which Nero called "the food of the gods," becauſe Claudius had eaten it, who was ſubſequently, like his ſacred compeers, become a god! The Agaric before us is eſteemed the moſt delicious and delicate of all *fungi*. The writer of this has examined and eaten it in Italy, where it is far from rare in ſummer, though ſo much in requeſt, as to find a place chiefly at the tables of the great. Cluſius tells of his ſuppoſing ſome ſoup, at a diſtinguiſhed man's table in Hungary, made of this fungus, to have been coloured with ſaffron. Dr. Withering has confounded Schæffer's plate with *Agaricus xerampelinus* of the ſame author, v. 4. 49. t. 214. Sowerb. Fung. t. 31. With. v. 4. 214. Hence he was led into the further miſtake of ſuppoſing, as his *A. xerampelinus*, though eatable, is ſtrong and diſagreeable, that *Agaricus delicioſus* was what Claudius feaſted upon. The latter is indeed a very ſavoury food, but deſtined to the vulgar in France and Italy, being by far more abundant than our *Amanita cæſarea*. The overſight committed by Dr. Withering, reſpecting this famous fungus, and his own, as well as Schæffer's, *Agaricus xerampelinus*, is the more remarkable, as the latter has neither a *wrapper* nor a *ring*. Such errors are rare in this excellent writer. Mr. Sowerby has avoided the ſame miſtake, though he has not explained it. We decline citing *Elvela Ciceronis*, Battar. Fung. Arimin. 27. t. 4, C, becauſe no *ring* is there expreſſed; but we do not doubt the identity of the plant.

Sect. 3. *Stalk with an obliterated wrapper at the baſe, and a ring at the upper part. Warts on the head ſmall, and generally equal.* To this ſection Perſoon gives the name of *Myoperda*, becauſe ſome of the ſpecies are uſed for killing flies. All of them perhaps are dangerous.

12. A. *muſcaria*. Fly Egg-Agaric. Perſ. n. 12, not 11. Albert. and Schwein. Conſp. 143. (Agaricus muſcarius; Linn. Sp. Pl. 1640. Hudſ. 612. With. v. 4. 184. Schæff. Fung. v. 4. 13. t. 27, 28. Sowerb. Fung. t. 286. A. pſeudo-aurantiacus; Bulliard t. 122. Fungus bulboſus, e volvâ erumpens, pileolo ſupernâ parte aureo, ad oras ſtriato, infernâ, et annulato pediculo, albis, radice bulboſâ; Mich. Gen. 188. t. 78. f. 2. Fungi lethales; Ger. Em. 1581, fig. on the left, at the bottom.)—Head ſcarlet, ſhining, convex, at length flattiſh, variouſly ſtudded with white warts. Gills, ring, and ſtalk pure white. Wrapper with ſcarcely any remaining border.—Common in woods in autumn, eſpecially under fir-trees. A large ſpecies, conſpicuous for the ſplendid orange-red hue of its ſattin-like head, contraſted with the *ſtalk* and *gills*, and with the prominent angular white or cream-coloured warts, ſcattered, more or leſs abundantly, over its ſurface. Theſe warts are formed from the *wrapper*, torn off cloſe to the baſe of the *ſtalk*, which Bulliard well obſerved, as a ſpecific mark between this and our laſt. It is highly important to diſcriminate them, *A. muſcaria* being venomous in a great degree. When dried, it renders milk poiſonous to flies and bugs, killing them very expeditiouſly;

for which purpoſe it is preſerved in ſome countries all the year round. Bulliard records, that he ate two ounces of this fungus raw, without any harm whatever, though he found it fatal when given to cats or dogs. Perſoon mentions a variety by the name of *A. formoſa*, whoſe warts were looſe and yellowiſh, the *ſtalk* likewiſe being yellowiſh, very long, and looſely ſcaly. Alſo another, called *A. puella*, which is ſmaller, moſtly naked, or only bordered with the warty ſubſtance; this is Schæffer's t. 28. Dr. Withering reduces the two following, perhaps, to the ſame ſpecies; but ſo many authors have kept them ſeparate, eſpecially Albertini and Schweiniz, that we ſhall follow Perſoon in the ſame meaſure.

13. A. *umbrina*. Brown Warty Egg-Agaric. Perſ. n. 13, not 12. Albert. and Schw. Conſp. 143. (Agaricus verrucoſus; Hudſ. 613. Curt. Lond. faſc. 5. t. 72. A. maculatus; Schæff. Fung. v. 4. 39. t. 90. Fungus muſcas interficiens fuſcus, maculis albis; Buxb. Hallenſ. 121.)—Head of a ſooty or tawny brown, flattiſh, variouſly ſtudded with white warts. Gills, ring, and ſtalk white.—More common than the preceding, but often accompanying it, in dry ſandy woods, fields and paſtures, eſpecially under beech-trees, through the autumn. Withering, Curtis, and Lightfoot conſider this as a mere variety of *A. muſcaria*, differing in the brown colour of its *head*, often tinged with yellow, or faintly with red. The ſize of the whole plant is uſually ſomewhat ſmaller. We have made no particular obſervations on this ſubject. Colour in this tribe often affords good ſpecific characters, and we ſhould, moreover, be careful, in all the departments of natural hiſtory, not to be led away by any one very peculiar mark, like the warts in the preſent inſtance, to conſider every thing, that has ſuch a mark, as one ſpecies. Even Linnæus often fell into this error. We know not how the queſtion is to be decided reſpecting theſe *fungi*, their artificial propagation by ſeed being attended with ſo much difficulty. It is ſufficient that we here regiſter their names and diſtinctions, under the correction of any perſon who may find good reaſons for uniting them. The poiſonous quality of *A. umbrina*, with reſpect to flies, is acknowledged in the above ſynonym of Buxbaum. Curtis however found the baſe of the ſtalk to be the favourite food of a nondeſcript ſpecies of *Tipula*, ſmaller than the *plumoſa*, whoſe *larvæ* ſoon devour that and every other part of the plant.

14. A. *rubeſcens*. Bluſh-coloured Egg-Agaric. Perſ. n. 14, not 13. Albert. and Schwein. Conſp. 144. (Agaricus puſtulatus; Schæff. Fung. v. 4. 39. t. 91.)—Head convex, opaque, reddiſh. Warts crowded, white like the gills. Fleſh turning red when broken.—Native of beech woods in Germany, in autumn. We know nothing of its occurrence in Britain, for Dr. Withering's fifth variety of the *muſcaria* may probably be different from what is before us. Albertini and Schweiniz aſſert that the *head* and *ſtalk* invariably turn red, ſooner or later, after being broken, and that this is a ſure ſpecific teſt. The *head* ſeems more convex than that of *A. umbrina*. Its hue, according to the authors juſt quoted, is occaſionally reddiſh, livid, ſmoky, or inclining to a liver-colour. *Stalk* two inches high. *Taſte* ſcarcely any. We conceive this to be diſtinct from both the foregoing, whatever may be the caſe between them with regard to each other; and its uſual appearance is very elegant, owing to the delicate tawny fleſh-colour of the *head*, ſtudded with copious white, or pale fleſh-coloured, *warts*. Perſoon has a variety under the name of *circinnata*, for which he cites with doubt *Agaricus myodes*, Schæff. Fung. v. 4. 69. t. 261. The character given by Perſoon is, "Head hemiſpherical, ſomewhat umbilicated, reddiſh. Warts oblong, whitiſh, circularly diſpoſed. Gills flattiſh, whitiſh. Stalk bulbous, ſcaly, the colour of the head." He adds that the *ſtalk* is two inches long, ſolid, always perforated by worms (or inſects) at the baſe. *Gills* obovate, ſometimes decurrent in a tooth-like form. Subſtance reddiſh under the cuticle. Taſte not unpleaſant. It occurs, but rarely, in woods during autumn. Schæffer's figure exhibits a moſt elegant bluſh-coloured *fungus*, internally red, when cut, which we can have no heſitation in conſidering one ſpecies with Perſoon's *circinnata* and *rubeſcens*.

15. A. *vireſcens*. Greeniſh Egg-Agaric. Perſ. n. 15, not 14.—"Head fleſhy, flat, paliſh-green. Warts thick, whitiſh, with many angles. Stalk ſtoutiſh, white, with ſhaggy ſcales."—In woods, but extremely rare. *Stalk* three or four inches long, clothed with ſoft ſhaggy ſcales. *Wrapper* nearly obliterated. Subſtance of the *head* ſpongy, from four to ſix lines in thickneſs, not unpleaſant to the taſte.

16. A. *ampla*. Broad Egg-Agaric. Perſ. n. 16, not 15.—"Head fleſhy, very broad, mouſe-coloured; ſmooth at the margin. Warts thickiſh, paler. Stalk white, ſolid, very ſtout. Gills narrow, rather thick."—Found in fir woods in Germany, but rarely. Perhaps the largeſt of its genus. *Stalk* four or five inches long, tranſverſely ſcaly at the ſummit. *Gills* thick, about three lines only in breadth. *Head* minutely, in ſome degree, fibrous, and after the *warts* fall off, cellular. Taſte like the Common Muſhroom, *Agaricus campeſtris*. *Perſoon.*

17. *A. aſpera*. Rough-headed Egg-Agaric. Perſ. n. 17, not 16. Obſ. Mycol. v. 2. 38. ("Agaricus aſper; Abbild. der Schwämme, faſc. 3, with a plate." A. verrucoſus; Bulliard t. 316. A. myodes; Bolt. Fung. v. 4. t. 139, excluding both ſynonyms.)—Head hemiſpherical, fleſhy, compact, duſky red, rough with crowded pointed warts. Gills white, crowded. Stalk rather bulbous.—Not rare in woods, about July, Auguſt, or September, growing diſperſed. It has been obſerved in Germany, France, and England. Perſoon ſays the ſcent is powerful; Bulliard, on the contrary, deſcribes this ſpecies as inodorous, with a ſalt taſte, partaking but little of a muſhroom flavour, and he preſumes it to be poiſonous. This author juſtly adverts to the affinity of his plant to our *Amanita muſcaria*, obſerving that it is white or reddiſh under the ſkin, never, like the *muſcaria*, yellow. Perſoon in his excellent *Obſ. Mycol.* gives the following account. "*Head* at firſt ovate, inclining to cylindrical; when expanded ſix inches broad, half an inch thick, compact in ſubſtance, ſtrong in ſcent, often ſtreaked with white at the margin, from cracks in the cuticle. *Warts* ſmall, erect, pointed. *Gills*, as uſual with this genus, thin, unconnected. *Stalk* from four to ſix inches high, ſolid, marked towards the baſe, with little ſcaly warts, like rudiments of the *wrapper*. *Ring* ſometimes almoſt obliterated, and hanging in fragments to the edge of the head."

The *wrapper* in all the ſpecies of this third ſection is, indeed, ſo cloſely united to the baſe of the *ſtalk*, as to conſtitute a kind of bulb, but there is a marginal dilatation, leſs viſible in *A. aſpera* than any other, which evinces the true nature of the part in queſtion. This ſpecies, though generally ſo very convex, even hemiſpherical, appears by Bulliard's plate, to aſſume a concave cup-ſhaped form in advancing towards decay.

AMARANTHI, the 30th natural order in Juſſieu's ſyſtem, being the firſt of his ſeventh claſs. See NYCTAGINES for the characters of this claſs. The following are the characters of the *Amaranthi*.

Calyx divided, more or leſs deeply, often ſurrounded by ſcales at the baſe. *Stamens* definite, ſometimes diſtinct, ſometimes monadelphous; in ſome genera there are ſcales alternate with the filaments; in others the combined filaments form a tube or ſheath. *Germen* ſimple; ſtyle or ſtigma ſimple, or double, or triple. *Capſule* of one cell, with an unconnected receptacle, and either burſting at the ſummit, or ſplitting all round, containing one or many *ſeeds*. The *corculum* is curved round a farinaceous maſs. *Flowers* capitate or ſpiked. *Leaves* generally undivided and pointed; in ſome alternate; in others oppoſite; in a few inſtances accompanied by *ſtipulas*. *Stem* for the moſt part herbaceous. *Stamens* and *piſtils* ſometimes in ſeparate flowers.

Sect. 1. *Leaves alternate, without ſtipulas.*

Under this ſection Juſſieu enumerates *Amaranthus* and *Celoſia* of Linnæus; with *Aerua* of Forſkall, a genus formed of alternate-leaved ſpecies of *Illecebrum;* and *Digera* of the ſame author, to which *Achyranthes muricata* of Linnæus is ſuppoſed to belong.

Sect. 2. *Leaves oppoſite, without ſtipulas.*

Conſiſts of *Ireſine*, *Achyranthes*, *Gomphrena*, and *Illecebrum*.

Sect. 3. *Leaves oppoſite, with ſtipulas.*

Under this ſection are ranged *Paronychia* of Tournefort, ſeparated from the Linnæan *Illecebrum;* and *Herniaria* of all authors.

This order, as Juſſieu candidly obſerves, is very nearly related to that of the *Caryophylleæ*, which, on account of its having petals, he is obliged to place in a far diſtant part of his ſyſtem. He remarks, on this ſubject, that the abſence or preſence of a *corolla* does not always afford an eſſential, or eminently natural, diſtinction; which is very true, but there is no character of natural orders without ſome exception, and hence Linnæus was led to deny the poſſibility of defining really natural orders by words, or any eſſential characters.

Juſſieu, in the Annales du Muſeum, v. 2. 131, has publiſhed ſome additions to the preſent order, which, according to a recent alteration, and perhaps an improvement, in the nomenclature of natural orders, he there terms *Amaranthaceæ*. A tranſlation of his paper may be ſeen in Sims and Konig's Ann. of Bot. v. 2. 274. The author here makes but two ſections of the order in queſtion, one having naked, the other ſtipulated, leaves. To the firſt he adds a new genus by the barbarous name of *Pupalia*, founded on the Linnæan *Achyranthes lappacea*, called in Rheede's Hortus Malabaricus, v. 7. t. 43, *Pupal-Valli*. Of this we are ſurpriſed to find Juſſieu had never ſeen the fruit, and we cannot but obſerve that its generic characters are rather weak, being chiefly taken from the infloreſcence and bracteas.

To the ſection with ſtipulated leaves, this eminent botaniſt adds three new genera. 1. *Anychia* of Michaux, to which belongs *Queria canadenſis* of Linnæus. 2. LITHOPHILA of Swartz. 3. POLYCHROA of Loureiro. The two laſt are already deſcribed in their proper places. See alſo QUERIA.

Juſſieu proceeds to remark, that *Cyathula* of Loureiro, a plant of this order, is really an *Achyranthes* with a many-cleft ſtigma; but that POLIA of the ſame author, (ſee that article and HAGÆA,) ſuppoſed to belong to the *Amaranthi*, is really one of the *Caryophylleæ*.

VOL. II.

AMBOISE, AMBASIA, or *Ambacia*, in *Geography*, a town of France, in the department of the Indre and Loire, and chief place of a canton in the diſtrict of Tours, ſituate at the conflux of the Loire and Amaſſe. The place contains 5100, and the canton 14,415 inhabitants; the territory comprehends 322½ kiliometres, and 16 communes.

AMDOA, in *Geography*. See THIBET.

AMEDNAGUR, l. 1, Soubah, now called Dowlatabad. Add—This city has generally been placed 50 miles to the S.E. of its true poſition.

AMELIA, l. 5, for including *r.* excluſive of; l. 6, *r.* 10,594 and 7186. Add—Nottaway contains 9278 inhabitants, of whom 6368 are ſlaves.

AMENTACEÆ, in *Botany*, of which term mention has already been made in its place, as deſignating a Linnæan natural order, is alſo the appellation of the 99th order in Juſſieu's ſyſtem, the fourth of his fifteenth claſs; correſponding for the moſt part, though not entirely, with that of Linnæus, and ſo called from *Amentum*, a Catkin, in alluſion to the nature of its fructification. See EUPHORBIÆ for the characters of this fifteenth claſs of Juſſieu, and remarks thereon. He thus defines his *Amentaceæ*.

Flowers monoecious or dioecious, (rarely with ſtamens and piſtils in the ſame,) all deſtitute of petals. The male, or barren, flowers diſpoſed in a catkin, conſiſting either of ſcales, into which the ſtamens are inſerted, or each of thoſe ſcales has a *calyx* attached to it, which bears the *ſtamens*. The latter are either definite, or indefinite, with diſtinct filaments. (We would here obſerve that two or three ſpecies of *Salix* are remarkable for their combined, or monadelphous, filaments.)—The female, or fertile, flowers are either amentaceous, or faſciculated, or ſolitary; ſometimes furniſhed with a ſingle-leaved *calyx*, ſometimes with only a ſcale. The *germen* is ſuperior, either ſimple, or in ſome rare inſtances more than one, of a certain determinate number. *Style* one or more. *Stigmas* generally ſeveral. *Seeds* either naked, or encloſed in ſuperior *capſules*, which are either of a coriaceous or bony texture, as many in number as the germens, and for the moſt part of a ſingle cell. *Corculum* deſtitute of *albumen*, with a ſtraight radicle. *Stem* arboreous, or ſhrubby, rarely of humble growth. *Leaves* alternate, accompanied by *ſtipulas*, moſtly ſimple.

Sect. 1. *Flowers with ſtamens and piſtils.*

Here Juſſieu ranges *Fothergilla*, *Ulmus*, and *Celtis;* of which the two latter are placed by Linnæus among his *Scabridæ*. *Hamamelis*, which the laſt-named author has, in manuſcript, referred to his *Amentaceæ*, and which is ſurely next akin to *Fothergilla*, is reckoned by Juſſieu among his *Berberides*, or at leaſt among ſeveral genera ſuppoſed related to that rather miſcellaneous order.

Sect. 2. *Flowers dioecious.*

This contains *Salix*, *Populus*, and *Myrica*.

Sect. 3. *Flowers monoecious.*

A larger aſſemblage of genera, if not of ſpecies, conſiſting of *Betula*, *Carpinus*, *Fagus*, *Quercus*, *Corylus*, *Liquidambar*, (under which laſt the genus now called COMPTONIA, ſee that article, is hinted at,) and *Platanus*. There is no appendix of doubtful genera, as in moſt other orders of Juſſieu, but a ſuſpicion is expreſſed reſpecting *Liquidambar* and *Platanus*.

The *Amentaceæ* of Linnæus are, *Salix*, *Populus*, *Platanus*, *Sloanea*, with a juſt indication of doubt, *Fagus*, *Juglans*, *Quercus*, *Corylus*, *Carpinus*, *Betula*, *Myrica*, *Piſtacia*, and *Cynomorium*. *Brabejum* is, in the Linnæan manuſcript, inſerted immediately before *Fagus;* *Hamamelis* before *Betula*, after which *Brabejum* is again written; an evident indication of great uncertainty in the mind of the writer, who knew this genus but imperfectly, and who had conceived no idea at all of the order *Proteaceæ*, to which it clearly belongs, and which makes ſo ſtriking a figure in the works of Juſſieu; and eſpecially of our countryman Mr. Brown. See Prodr. Nov. Holl. v. 1. 363, and Tr. of Linn. Soc. v. 10.

AMERCOTE, in *Geography*, a fortified place, which formerly belonged to the country of Scind, but is now in the poſſeſſion of the rajah of Joudpore. Situated S.E. of Hydrabad, and about 25 miles from the eaſtern branch of the Indus.

AMERICA, North. See United States.

AMES, a townſhip of Ohio, in the county of Athens, having 608 inhabitants.

AMESBURY, a town of the Maſſachuſetts, in Eſſex county, having 1890 inhabitants.

AMHERST, l. 3, *r.* 10,548 ; l. 4, *r.* 5207.

Amherst, l. 6 from the bottom, *r.* 1554. Add—Alſo, a town of Maſſachuſetts, in the county of Hampſhire, having 1469 inhabitants.

AMIA, in *Ichthyology*, a genus of the abdominal fiſhes, the characters of which are, that the head is bony, naked, rough, with conſpicuous ſutures ; teeth, both in the jaws and palate, cloſe-ſet and ſharp ; the two cirri near the noſtrils ; the gill-membrane twelve-rayed ; and body ſcaly. There is one ſpecies, *viz.*

Calva ; the Carolinian Amia, with a black ſpot at the baſe of the tail. This is a ſmall freſh-water fiſh, inhabiting ſome parts of Carolina. Deſcribed by Linnæus, from a ſpecimen ſent from Carolina by Dr. Garden.

AMITY, in *Geography*, a townſhip of Pennſylvania, in the county of Berks, containing 1090 inhabitants.

AMMODYTES, in *Ichthyology*. Add—The ammodytes tobianus is the launce with the lower jaw longer than the upper. It conceals itſelf about a foot in the ſand, with its body rolled into a ſpiral form ; it is dug or drawn up, and uſed by the fiſhermen as a bait ; it is alſo conſidered as a delicate article of food. The general length is from eight to ten inches. The launce lives on worms, water-inſects, and ſmall fiſhes, and even occaſionally on thoſe of its own ſpecies. It is itſelf preyed upon by the larger fiſhes, and particularly by the mackarel. It ſpawns in the month of May, depoſiting its eggs in the mud near the edges of the coaſt. The ſwimming bladder is wanting, ſo that the animal is fitted only for a littoral reſidence ; and its ſcales are ſo ſmall that they have been wholly overlooked, and their exiſtence diſputed by ſome ichthyologiſts. Shaw.

AMMONIA, in *Chemiſtry*. The following additions to our knowledge, reſpecting the volatile alkali, have been made ſince that ſubject was treated in the Cyclopædia. Water, as has been already ſtated, by abſorbing ammoniacal gas increaſes in bulk, and becomes ſpecifically lighter. The following table by Mr. Dalton exhibits the quantity of ammonia contained in ammoniacal ſolutions of different ſpecific gravities.

Specific Gravity of Liquid.	Grs. of Ammonia in 100 Water-grain Meaſures of Liquid.	Grs. of Ammonia in 100 grs. of Liquid.	Boiling Point of the Liquid.	Volumes of Gas condenſed in a given Volume of Liquid.
.85	30	35.3	26°	494
.86	28	32.6	38	450
.87	26	29.9	50	419
.88	24	27.3	62	382
.89	22	24.7	74	346
.90	20	22.2	86	311
.91	18	19.8	98	277
.92	16	17.4	110	244
.93	14	15.1	122	211
.94	12	12.8	134	180
.95	10	10.5	146	147
.96	8	8.3	158	116
.97	6	6.2	173	87
.98	4	4.1	187	57
.99	2	2.0	196	28

When potaſſium or ſodium is heated in ammoniacal gas, the metal becomes changed to an olive-green colour, and loſes its metallic luſtre ; at the ſame time a portion of the gas is abſorbed, and a quantity of hydrogen emitted, exactly equal to the quantity that would be evolved if the potaſſium or ſodium were put into water. If the olive-green matter be heated, it gives out three-fifths of the ammonia abſorbed, two-fifths in the ſtate of ammoniacal gas, and one-fifth in the ſtate of hydrogen gas and azote. Sir Humphrey Davy, having heated the olive-coloured matter ſtrongly in a platinium tube, obtained nearly the whole of the ammonia abſorbed, though about three-fifths of it were in the ſtate of azotic and hydrogen gas. If the olive-coloured matter be placed in contact with a very little water, it is converted into potaſh, or ſoda and ammoniacal gas, and the gas is juſt equal to what the metal had abſorbed. If it be placed in contact with a metal and heated, an alloy of the metal with potaſſium or ſodium is obtained.

For theſe curious facts we are indebted to Gay Luſſac and Thenard, and Davy. Dr. Thomſon thinks they ſhew that potaſſium and ſodium have the property of decompoſing ammonia, and combining with its azote, while the hydrogen of the ammonia is ſet at liberty ; and the *azoturet* formed, he thinks, combines with a portion of the remaining undecompoſed ammonia. He acknowledges, however, that there are ſome objections to this opinion ; and the facts accord better with the opinion, that an unknown compound of azote and hydrogen unite with the alkaline metal, while the compound thus formed combines with a portion of undecompoſed ammonia.

A curious experiment made by Berzelius and Pontin induced Berzelius to draw the concluſion that ammonia is compoſed of an unknown metallic baſis, which he has called *ammonium*, united to oxygen. This experiment has been ſince confirmed by ſir H. Davy, Gay Luſſac, and others, and is as follows :

When mercury is brought in contact with ammonia at the negative end of a galvanic battery, it gradually increaſes in volume, and is converted into a ſoft ſolid, having all the appearances of an amalgam. The experiment ſucceeds better if ſal ammoniac ſlightly moiſtened be ſubſtituted for liquid ammonia. This amalgam, at the temperature of 70° or 80°, is a ſoft ſolid, of the conſiſtence of butter ; at 32° it is a firm cryſtallized maſs, having a ſpecific gravity below 3. When expoſed to the air, it ſoon becomes covered with a cruſt of carbonate of ammonia. When thrown into water, hydrogen is evolved equal to half its bulk, the mercury is revived, and the water becomes a weak ſolution of ammonia. When confined in a given portion of air, the air increaſes in bulk, and pure mercury appears. Ammoniacal gas, amounting to $1\frac{1}{2}$ or $1\frac{3}{5}$ the volume of the amalgam, is evolved ; and a quantity of oxygen equal to $\frac{1}{7}$th or $\frac{1}{8}$th of the ammonia diſappears. When thrown into muriatic acid gas, it becomes coated with muriate of ammonia, and a little hydrogen is diſengaged. In ſulphuric acid it becomes coated with ſulphate of ammonia and ſulphur. All attempts to preſerve this amalgam failed, from the impoſſibility of obtaining it free from water. When put into a glaſs tube, or when confined under naphtha or oils, the mercury ſeparated, ammonia was formed, and a quantity of hydrogen evolved.

Gay Luſſac and Thenard conſidered this amalgam as a ſimple compound of mercury and ammonia ; but no analogous compound is known to chemiſts, as mercury when it unites to other ſubſtances, except metals, always loſes its metallic luſtre. Theſe reaſons induced Berzelius to form the above opinion. Moſt chemiſts at preſent agree with Gay Luſſac and Thenard ; but if their opinion be well founded, we muſt alter the notions entertained reſpecting amalgams.

The opinion at preſent entertained reſpecting the compoſition of ammonia is, that it is compoſed of three volumes of hydrogen and one volume of azote condenſed into two volumes. Hence its ſpecific gravity compared with that of common air is .590; 100 cubic inches at a mean temperature and preſſure weigh 18 grains, and the weight of its atom is 21.25; that of oxygen being conſidered as 10.

AMMONIA, *Salts of.* Theſe have been omitted in the uſual place, namely, under AMMONIA; but moſt of them will be found in a ſubſequent part of the work, under SALTS. Thoſe deſcribed elſewhere will be referred to here, and thoſe remaining to be deſcribed will be now noticed.

Sulphite of Ammonia. See SULPHITE *of Ammonia.*

Chromate of Ammonia. This ſalt may be formed by ſaturating chromic acid by ammonia. It uſually exiſts in the form of dendritical cryſtals of a fine yellow colour. When ſlightly heated, it is decompoſed, even when in ſolution, brown flocks of chromic oxyd precipitating.

Arſeniate of Ammonia. See ARSENIATE *of Ammonia.*

Molybdate of Ammonia. This ſalt diſſolves readily in water. The ſolution does not cryſtallize. When heated, the ammonia is partly driven off, partly decompoſed, and the acid is reduced to the ſtate of an oxyd.

Tungſtate of Ammonia. This ſalt may be formed by diſſolving tungſtic acid in carbonate of ammonia. It is ſoluble in water, and cryſtallizes. Its taſte is metallic, and it is entirely decompoſed by heat.

Benzoate of Ammonia. This ſalt cryſtallizes with difficulty. It deliqueſces, and is very ſoluble in water. It has been recommended by Berzelius as an excellent re-agent for precipitating iron from its ſolution. It throws down this metal of an orange colour, and occaſions no inſoluble precipitates with any of the other baſes, except tellurium and mercury, and perhaps copper, all of which are thrown down white.

Succinate of Ammonia. See SUCCINIC *Acid.* This ſalt has alſo been much recommended for precipitating iron when in the ſtate of peroxyd.

Camphorate of Ammonia. This ſalt may be prepared by diſſolving carbonate of ammonia in hot water, and adding camphoric acid ſlowly till the alkali is ſaturated. It cryſtallizes with difficulty; is ſparingly ſoluble in cold water, but much more ſoluble in hot. It is completely ſoluble in alcohol. Moſt of the calcareous ſalts form triple compounds with this ſalt.

Citrate of Ammonia. See CITRATE *of Ammonia.* The remaining ſalts of ammonia are ſo totally devoid of intereſt, or ſo little known, that we do not think it neceſſary to enumerate them.

AMMYRSINE, in *Botany*, a new genus of Mr. Purſh's, more happily circumſtanced in its characters, perhaps, than in its name. The latter is formed from αμμος, *ſand*, and μυρσινη, *a dwarf myrtle*; but *Myrſine*, being an eſtabliſhed generic name, cannot, with propriety, make a part of another. Linnæan law, (ſee *Phil. Bot. ſect.* 225,) and good ſenſe, are both againſt it; and if ſome ſimilar innovations have, from peculiar cauſes, crept in, they are not to be imitated, though for the preſent they may be tolerated. The genus in queſtion is founded on *Ledum buxifolium*, (ſee LEDUM, n. 3,) and ſtands in the Claſs and Order *Pentandria Monogynia*, in Mr. Purſh's *Flora* 280 and 301, agreeing, of courſe, in Natural Order with *Ledum*. The following are its characters.

Calyx in five deep ſegments. Petals five. Stamens prominent. Capſule of five cells, burſting at the ſummit. *Ledum* is characterized.

Calyx minute, five-toothed. Corolla flat, in five deep ſegments. Capſule of five cells, burſting at the baſe.

AMNIOS, *Liquor of the, Chemical Properties of.* The peculiar acid principle termed by Vauquelin and Buniva *amniotic acid*, does not appear to exiſt during all the periods of geſtation in the liquor amnii of the cow. Dr. Prout examined this fluid taken from an animal which had been ſlaughtered in an early period of her geſtation, but was not able to detect any of the acid in queſtion. See Annals of Philoſophy, vol. v. p. 416.

AMOMUM, in *Botany*, αμωμον of the Greeks, moſt probably derived from its Arabic denomination *hhamâmâ*, as De Theis writes it, is the ancient name of a ſort of aromatic grain, or fruit, included, according to all appearance, among the ſpecies of the preſent AMOMUM of botaniſts. (See our former article, where this genus comprehends a much more extenſive range of ſpecies than are now underſtood to belong to it.) Linnæus, and his immediate followers, included under *Amomum* almoſt every plant of the *Scitamineæ* that they knew not how otherwiſe to diſpoſe of; and Gærtner, though he altered the name for the worſe, to ZINGIBER, (ſee that article,) threw no new light upon the characters or hiſtory of the genus, but rather, like every body elſe, added to their confuſion. Mr. Roſcoe firſt defined this genus, like the reſt of the SCITAMINEÆ, as the reader will find under that head, by a clear diſtinctive character; and while he greatly reduced the number of ſpecies, rendered the whole perfectly clear and intelligible. We ſhall, as we have done with ALPINIA, give a full view of this genus, as at preſent underſtood, and while we make conſiderable retrenchments, ſhall have ſomething new to add in their place.—Roſcoe Tr. of Linn. Soc. v. 8. 351. t. 20. f. 11. Dryandr. in Ait. Hort. Kew. v. 1. 8. Linn. Gen. 2. Schreb. 3. Willd. Sp. Pl. v. 1. 6. Mart. Mill. Dict. v. 1. Carey Hort. Bengal. 1. Roxb. Monandr. 23. Juſſ. 63. Lamarck Illuſtr. t. 2. f. 1. (Zingiber; Gærtn. t. 12. f. 1, 2, 3. 6.)—Claſs and order, *Monandria Monogynia.* Nat. Ord. *Scitamineæ*, Linn. *Cannæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, ſheathing, membranous, coloured, ſplitting at one ſide about half way down. *Cor.* of one petal; tube ſhorter than the calyx, cylindrical, erect; outer limb in three nearly equal, oblong-lanceolate, concave, erect ſegments much longer than the calyx; inner of one large, undulated lip, with a ſhort concave claw. *Stam.* Filament one, rather longer than the claw, ſtout, oblong, depreſſed, ſomewhat incurved, with a lanceolate, acute, aſcending lobe, about half its own length on each ſide, at the baſe, and a pair of ſimilar, erect or tranſverſe, lobes, forming a creſt at the ſummit, with either an intermediate prominence, or a notch; anther of two diſtinct, elliptic-oblong, lobes, attached by the back, below the ſummit. *Piſt.* Germen inferior, ſmall, roundiſh, ſomewhat furrowed; ſtyle thread-ſhaped, lying cloſe to the filament, between the lobes of the anther; ſtigma funnel-ſhaped, fringed, erect, projecting a little beyond the filament. *Peric.* Capſule either ovate-oblong, or nearly globular, of three cells, and three coriaceous, ſomewhat ſtriated, valves; the partitions membranous. *Seeds* numerous, oblong, roundiſh, or ſlightly angular, each enveloped in a ſoft pulpy tunic, which becomes membranous, or evaneſcent, when dry.

Eſſ. Ch. Anther of two diſtinct lobes. Filament with a lobed creſt, above the anther. Outer limb of the corolla in three oblong lobes; inner a ſingle lip. Capſule of three cells and three valves. *Seeds* tunicated.

One of the moſt natural genera that can exiſt, in any natural order, and the beſt defined in habit, as well as character. The *root* is perennial, tuberous, jointed, and ſomewhat creeping, with ſtrong and deep fibres. *Stems* at leaſt biennial, erect, ſimple, inveſted with the ſheaths of the two-ranked, ſimple, elliptic-oblong, ſtriated, vertical *leaves*. *Spikes* invariably radical, ſimple, rather lax, ſtalked, their ſtalks ſcaly. *Bracteas* large, concave, coriaceous, more or leſs cloſely imbricated, ſingle-flowered. *Flowers* large and handſome, white or reddiſh, remarkable for the broad, rounded, undulated, generally crenate *lip*, often yellowiſh at the baſe. *Capſules* large, with very numerous, in general powerfully aromatic, or very pungent, *ſeeds*. Every part of the plant is commonly aromatic. We have improved our knowledge of the *fruit*, and the nature of the *tunic* of the *ſeeds*, from Dr. Roxburgh's obſervations in India. Gærtner ſpeaks of the *capſule* as not burſting, becauſe he had chiefly examined ſpecimens gathered before they were ripe, like all the Cardamoms of the druggiſts' ſhops, ſome of which belong to the genus before us. The ſame able author has alſo miſtaken the top for the bottom, in his figure called *A. ſylveſtre*.

We know not how it has happened that only one ſpecies of *Amomum* appears in *Hort. Kew.* *A. Afzelii;* with another, *A. grandiflorum*, (publiſhed long before) in the *Addenda* to that work. *A. Granum-Paradiſi*, raiſed from ſeeds brought from Sierra Leone by Dr. Afzelius, has long been cultivated in England, though we have never heard of its flowering; and there are ſeveral more in the ſame predicament. They are ſtove plants, requiring a conſiderable degree of heat. No collection perhaps is ſo rich in this genus, or in the whole natural order, as that of the Botanic Garden at Liverpool, where the plants have every advantage of ſkill of cultivation, and where nothing that may occur, relative to their growth or hiſtory, can eſcape the eye of that illuſtrious writer and botaniſt, who firſt reduced them to order.

All the known ſpecies appear to be natives either of equinoctial Africa, Madagaſcar, or the Eaſt Indies; nor have we any from America, or the Weſt Indies.

1. A. *Cardamomum*. Cluſter Cardamom, or True Amomum. Linn. Sp. Pl. 2. Willd. n. 7. Loureir. Cochinch. 3. Retz. Obſ. faſc. 3. 59. Roſc. n. 1. Roxb. n. 1. (A. n. 2; Linn. Mat. Med. 1. A. verum; Ger. Em. 1548. f. 6. Amomum; Dale Pharmac. 277. Barrel. Ic. t. 571. f. 1. Amomo legitimo degli antichi; Pona Baldo, 50. Cardamomum minus; Rumph. Amboin. v. 5. 152. t. 65. f. 1. Bont. Hiſt. Nat. 126, with a figure (the oblong capſule excepted, which belongs to Cardamomum medium of the ſhops). Zingiber minus; Gærtn. t. 12. f. 6.) — Leaves lanceolate. Spikes lax, many-flowered. Bracteas lanceolate, acute. Lip three-lobed. Creſt of three, nearly equal, erect lobes. Capſule globular. — Native of the Malay iſlands, where the inhabitants uſe the ſeeds as a ſubſtitute for the Malabar, or Leſſer, Cardamom. Dr. Charles Campbell ſent plants from Sumatra to the Calcutta garden, where they bloſſom in May, juſt before the rains begin. *Roxburgh.* Rumphius ſpeaks of this ſpecies as cultivated plentifully, but not wild, in Amboyna and the neighbouring iſlands. It is certainly the true original *Amomum* of the ſhops, ſtill to be met with at Venice and in other parts of the ſouth of Europe, though generally ſupplanted by the more valuable Leſſer Cardamom, *Amomum repens* of Sonnerat, which Linnæus confounded herewith, and of which we propoſe to treat by the name of ELETTARIA hereafter. Nothing is more rare, with collectors of the Materia Medica, than the capſules of this *A. verum* in their native cluſters or ſpikes. We were fortunate enough, after ranſacking the druggiſts' ſhops at Marſeilles and Venice, to meet with two or three ſuch ſpecimens, accompanied by *bracteas*, very important as determining the identity of this plant with the Linnæan ſpecimens of *A. Cardamomum.* By macerating the *flowers* of theſe laſt, we have alſo aſcertained their ſtructure, which agrees with Dr. Roxburgh's account, the ſummit, or creſt, of the *filament* being three-lobed. The lateral lobes are ſhort and erect, not much elevated above the central one; neither are they tranſverſe, awl-ſhaped, and elongated, as in *A. Afzelii*, *grandiflorum*, and ſome others. The two lobes of the *anther* ſtand near the edges of the *filament*, remote from each other, but meet round the *ſtyle*. Dr. Roxburgh ſpeaks of the *flower-ſpikes* as even with the earth. But however this may be, they are elevated above the *root*, each on a ſimple wavy *ſtalk*, two inches long, clothed with ſheathing, elliptical, ribbed, abrupt, barren ſcales. The *ſpike* is an inch or an inch and a half long, ſometimes two inches when in ſeed, with many pale, ſmooth, imbricated, elliptic-lanceolate *bracteas*, near an inch in length, one to each *flower*. The *germen*, *calyx*, and *common receptacle*, are hairy, or rather briſtly. *Capſules* ſeſſile, the ſize of a black currant, globular, ſomewhat depreſſed, obſcurely three-lobed, ſtriated, crowned with a blunt protuberant ſcar. *Seeds* roundiſh, angular, dotted, brown, aromatic and pungent, reſembling in flavour the *Elettaria*, but leſs powerful, and rather leſs agreeable. The *leaves* of this ſpecies are rather narrower than in others of the genus, except perhaps the following; but our leading diſtinctions throughout muſt be taken from the *bracteas*, *flowers*, and *fruit*.

2. A. *anguſtifolium*. Greateſt Cardamom, or Madagaſcar Amomum. Sonnerat Ind. Or. v. 2. 242. t. 137. Willd. n. 6. Roſc. n. 2. Roxb. n. 2. (A. madagaſcarienſe; Lamarck Dict. v. 1. 133. Cardamomum majus; Matth. Valgr. 25, (but not Dale Pharmac. 276.) Camer. Epit. 11. f. 1. Barrel. Ic. obſ. 1394. t. 971, the largeſt fruit. Grana Paradiſi; Ger. Em. 1542, the figure, as being copied from Matthiolus, but not the deſcription. (See alſo Bauh. Hiſt. v. 2. 204, and Lob. Ic. v. 2. 204, where the ſame error is committed, as well as in Chabr. Stirp. 128.)— Leaves lanceolate. Spikes capitate. Bracteas ovate. Lip obovate, undivided. Lateral lobes of the creſt tapering, horizontal. Capſule ovate, pointed, ſtriated. Seeds globular, abrupt at the baſe.—Native of marſhy ground in Madagaſcar, where it was firſt aſcertained and figured by Sonnerat. It is cultivated at the Mauritius, and from thence was carried by captain Tennent to the Calcutta garden, where it bloſſomed during the cool ſeaſon. Dr. Roxburgh ſays, "the *flowers* poſſeſs a conſiderable ſhare of ſpicy fragrance, and are ſhowy, the upper *bracteas*, and exterior border of the *corolla*, being red, and the large lip yellow." This writer terms the *leaves* broad-lanceolate; which does not anſwer to Sonnerat's figure, name, or deſcription, but perhaps this circumſtance is variable. The *flower-ſtalks* riſe above the ground, and are ſeven or eight inches high, clothed with tubular ſcales. *Flowers* in a ſhort crowded *ſpike*, with a concave *bractea* to each, near an inch and a half long. The *capſule* and *ſeeds* we have already deſcribed, (ſee MELLEGETTA,) where ſome other ſpecies are mentioned, which we ſhall here attempt to arrange ſyſtematically, but need not repeat the minute remarks there given.

3. A. *macroſpermum*. Large-ſeeded Guinea Amomum. (Zingiber Melegueta; Gærtn. t. 12.)—Spikes capitate. Bracteas ovate, as long as the fruit. Capſule ovate, pointed, ſomewhat ſtriated. Seeds obovate, with a prominent, bordered, crenate ſcar.—Native of Sierra Leone, in the burying-ground of the ſettlement, from whence ſeeds were brought us by profeſſor Afzelius; but having

unluckily not obſerved the plant or its *flowers*, nor gathered more than one *capſule*, he was unable to give us any further information than what theſe *ſeeds* afford. Their flavour is very ſlightly aromatic. Their lead-coloured hue is well noticed by Gærtner, though his figure repreſents them ſcarcely half large enough. The *bracteas* appear twice the ſize of the laſt, to which unqueſtionably this ſpecies is next akin. This is *Amomum*, n. 1. of profeſſor Afzelius's MSS. The natives call it *Mabooboo*.

4. A. *Cluſii*. Long-ſeeded Amomum. (Fructus 14; Cluſ. Exot. 37, 38, with a figure. Granis Paradyſi, ſive Mellegetæ affinis fructus; Bauh. Pin. 413.) — Spikes capitate. Bracteas ovate, much ſhorter than the fruit. Capſule ovate, pointed, ſtriated. Seeds cylindrical, highly poliſhed, with a bordered, crenate ſcar.—The native country of this ſpecies is unknown, Cluſius's ſpecimen having been collected by an apothecary, who died in the courſe of his voyage, and left no memorandum reſpecting this point. (See Mellegetta for a deſcription of a ſpecimen, which we accidentally met with in a druggiſt's ſhop, in a cheſt of Great Cardamoms, *A. anguſtifolium*, if we miſtake not, and which therefore probably came from Madagaſcar.) The cylindrical, dark-brown, highly poliſhed *ſeeds*, appearing as if varniſhed, clearly diſtinguiſh it from both the two laſt. The ſhort *bracteas* in Cluſius's figure, unleſs the upper ones had been ſtripped off, afford a no leſs ſtriking diſtinction. The *ſeeds* had only a ſlight pungency from the firſt. Thoſe of our Great, as well as Cluſter, Cardamoms, are as high flavoured as ever, though at leaſt twenty-five years old.

5. A. *Grana-Paradiſi*. Grains of Paradiſe Amomum, or Mellegetta Pepper.—Spikes capitate. Bracteas ovate, rather ſhorter than the fruit; lower ones crowded. Capſule oblong, bluntly triangular, minutely hiſpid. Seeds ovate. Stipula entire, fringed. (See Mellegetta for the hiſtory and ſynonyms of this ſpecies.) The brown *ſeeds*, diſtinguiſhed by a peculiar and very hot flavour, are very different from the following, and the *bracteas* have a ſhort, thick, dorſal ſpine.

6. A. *grandiflorum*. Large-flowered Cardamom. Sm. Exot. Bot. v. 2. 103. t. 111. Ait. Epit. 363.—Spikes capitate. Bracteas elliptical, ſhorter than the fruit; lower ones diſtant. Capſule oblong, bluntly triangular, minutely hiſpid. Seeds ovate. Intermediate lobe of the filament entire. Stipula cloven, ſmooth.—Native of Sierra Leone. Seeds, brought by profeſſor Afzelius, have produced flowering plants in England. The *root* is perennial, woody, creeping. *Leafy ſtems* about three feet high, erect, round, ſmooth, very ſlender. *Leaves* ſeveral, elliptic-lanceolate, long-pointed, recurved, often tinged with red, very ſmooth: the long, narrow, poliſhed *ſheaths* each crowned with a ſomewhat cloven, rounded *ſtipula*, whoſe edges are quite ſmooth, not fringed with briſtly hairs, as in *A. Grana-Paradiſi*. *Flowers-ſtalks* erect, two inches high, ſtriated, downy. *Lower bracteas* elliptical, concave, ſpreading, and ſo far diſtant that the ſtalk is uſually viſible between them; *upper* much larger, though of a ſmaller proportion than thoſe of our ſecond or third ſpecies, and not above half ſo long as the *flower* or *fruit*, membranous, finely ribbed, ſcarcely ſpinous, ſomewhat coloured, permanent. *Flowers* in a ſhort, denſe, capitate cluſter, large and handſome, whether fragrant or not we have no information, but when dried, and moiſtened again, they are highly aromatic. *Calyx* roſe-coloured, above an inch long, with a blunt ſpreading point. *Outer limb* of the *corolla* of the ſame hue, twice as long; *lip* of a broad rounded kidney-ſhape, waved, plaited, crenate, ſlightly notched, but not divided, nor deeply lobed, near two inches broad, white, with a yellow ſpot at the baſe. *Stamen* white, not half ſo long as the lip, furniſhed at the bottom with two awl-ſhaped divaricated lobes, and at the top with two nearly horizontal ones, of the ſame ſize and figure, having between them a central, ſhort, rounded, quite entire lobe. The *capſule* is very like that of *Grana-Paradiſi*, in ſize, ſhape, and pubeſcence. The *ſeeds* are alſo ſimilar in ſize and ſhape to that ſpecies, but differ in being grey or lead-coloured, much leſs poliſhed, and in having a totally different flavour reſembling camphor, which they equal in warmth and pungency. As a ſtimulant, or cordial, theſe *ſeeds* appear equal to any Cardamom whatever. When the *flowers* of *Grana-Paradiſi* become known, which is now one of our greateſt botanical deſiderata, there probably will be more diſtinctive characters diſcovered between that ſpecies and the preſent.

7. A. *Afzelii*. Sweet-ſcented Amomum. Roſc. n. 8. Ait. n. 1. (A. exſcapum; Sims in Ann. of Bot. v. 1. 548. t. 13.)—Spikes capitate, of few flowers. Bracteas ſhorter than the fruit. Capſule oblong, triangular. Stipula ſmooth? Intermediate lobe of the filament cloven.—For this alſo we are indebted to Dr. Afzelius, who brought the ſeeds from Sierra Leone. From them Mr. Loddiges at Hackney raiſed plants, which flowered in his ſtove in June 1804, and were deſcribed by Dr. Sims. The original name, *exſcapum*, not being exactly correct, has been changed for one to which no lover of ſcience or of perſonal worth can object. The *leaves* are as broad as the laſt, nor does the herbage of theſe plants in general afford many diſtinctive marks. We preſume, from the figure, that the *ſtipulas* are ſmooth. The *flower-ſtalk*, though not wanting, is much ſhorter than any of the former, and there ſeem to be no more than two external *bracteas*, beſides ſome membranous ones cloſe to the flowers, apparently leſs firm and durable than uſual. The outer limb of the *corolla* is pale fleſh-coloured. *Lip* rather more oblong, and plaited lower down, than in the laſt, crenate at the edges, white, with a yellow central ſpot. *Stamen* eſſentially different from *A. grandiflorum*, in having its middle lobe in two deep acute ſegments. What we have for the *capſule* of this ſpecies is ovate, pointed, triangular, nearly or quite ſmooth, rather larger than either of the two laſt. *Seeds* obovate, dark brown, highly poliſhed, with a prominent-bordered ſcar, as in *A. macroſpermum* and *Cluſii*, totally unlike the two foregoing. Theſe *ſeeds* have ſcarcely any flavour, and are not at all aromatic. The *flowers* are fragrant only when dried, as in *grandiflorum*.

8. A. *ſtrobilaceum*. Cone-bearing Amomum.—Spikes capitate. Outer bracteas numerous, elliptical, gradually larger upwards; floral ones ſcarcely longer, membranous, ſtriated, rough at the extremity. Stipula abrupt, nearly ſmooth.—Native of Sierra Leone, from whence we were favoured with a ſpecimen by Dr. Afzelius. This has very ſlender *leafy ſtems*. The *leaves* are elliptic-ovate, pointed, very ſmooth. *Stipula* rounded, ſcarcely cloven, very ſlightly, if at all, fringed. *Flower-ſtalks* ſeveral inches high, ſmooth, covered with numerous, imbricated, elliptical, very broad, concave, ſheathing *bracteas*, gradually larger upwards, with broad dorſal points; the lowermoſt not quite an inch long, the upper two inches; all finely ſtriated, very ſmooth to the touch, of a bright cheſnut colour when dry. Within the two uppermoſt are the proper *bracteas*, accompanying the head of *flowers*, much narrower, hardly at all longer, flatter, more membranous, hairy in the upper part, abrupt with a ſmall point. Of the *flowers* we know nothing, nor are we certain of the *fruit*. The only unappropriated *capſules* of any *Amomum*, communicated from Sierra Leone

by Francis Borone, (ſee the article RUTACEÆ,) are thoſe of A. n. 2. of Afzelius, called by the natives *Maſſa-aba*, which are very likely to belong to the preſent plant, though we have no proof of it. Theſe agree with the outer *bracteas* in colour and ſmoothneſs, and are ovate-oblong, only half the ſize of the laſt, with which their *ſeeds* very preciſely accord, both in appearance and in want of flavour. Indeed they are ſo alike, and ſuch a coincidence between the *ſeeds* of different ſpecies of *Amomum* is ſo unuſual, that we could almoſt preſume the *capſule* above deſcribed for *A. Afzelii*, might be a very large one of this n. 2. We do not however form any ſuch concluſion, the ſeeds of *A. Cluſii*, undoubtedly a diſtinct ſpecies from both theſe, having *ſeeds* preciſely like them, only rather larger.

10. A. *villoſum*. Rough-fruited Amomum. Loureir. Cochinch. 4. Willd. n. 8. Roſc. n. 5. (Globba criſpa rubra; Rumph. Amboin. v. 6. 137. t. 61. f. 2.)—Spike ovate, ſtalked. Bracteas linear-lanceolate, elongated. Capſule globular, obſcurely triangular, rough with ſcattered briſtles. — Native of Java, Amboyna, and the Molucca iſlands, as well as of Cochinchina, in hilly ſituations. The *ſeeds* are exported in great quantities to China, for medical uſe, being, according to Loureiro, ſtomachic, warm and ſtrengthening. The *root* is woody and creeping; its fibres aromatic. *Leafy ſtems* ſix feet (Rumphius ſays fourteen to ſixteen feet) high, weak, erect, perennial. *Leaves* ſmooth. *Flower-ſtalk* four inches long, ſlender, reclining. *Spike* nearly ovate, with linear, imbricated *bracteas*. *Flowers* pale. *Capſule* nearly globular, half an inch in diameter, rather pulpy and ſweet, reddiſh, clothed with numerous thick protuberances. *Seeds* angular, brown. The whole plant has an aromatic, but not powerful, odour. This deſcription of Loureiro's is not unſuitable to the above ſynonym of Rumphius, to which he refers, except that the latter deſcribes the roughneſs of the *fruit* as conſiſting of ſhort ſcattered ſpines, or briſtles.

11. A. *uliginoſum*. Marſh Amomum. Retz. Obſ. faſc. 3. 56. Roſc. n. 6.—Cluſter ſtalked. Bracteas ovate-oblong. Capſule globular, obſcurely triangular, ſhaggy. Intermediate lobe of the filament in two rounded ſegments.—Found by Kœnig at Raput-Nok, in Tranquebar, in ſhady wet ſituations, flowering about the middle of May. *Leafy ſtems*, a yard or more in height. *Leaves* ſmooth on both ſides, with hairy *ſtipulas*. *Flower-ſtalks* ſomewhat curved, clothed with ovate-oblong, ſmooth, red ſcales. *Flowers* white, variegated with red and yellow. *Stamen* crowned with four lobes, the two lateral ones narroweſt and ſmalleſt, the two middle ones broad and rounded. *Capſule* clothed, before it is dried, with blood-coloured *cirrhi*, or threads. *Kœnig*.

12. A. *echinatum*. Hedge-hog Amomum. Willd. n. 9. Roſc. n. 7. (Globba criſpa viridis; Rumph. Amboin. v. 6. 137. t. 61. f. 1.)—Spike capitate, nearly ſeſſile. Bracteas membranous. Capſule globoſe, all over ſpinous.—Native of Amboyna, the Molucca iſlands, &c. *Rumphius*. *Leafy ſtems*, according to *Rumphius*, ten or twelve feet high. *Leaves* twenty inches long, of the breadth of four or five fingers. *Fruit* larger than that of *A. villoſum*, always of a deep green, and armed with ſpines like a Thorn-apple, growing in denſe ſeſſile cluſters or tufts at the root. We know nothing of this ſpecies but from Rumphius, for after much perplexity and conſideration, we are decidedly of opinion that *Amomum* n. 2. of Kœnig, Retz. Obſ. faſc. 3. 50, cannot belong to it. See *A. maximum* hereafter.

13. A. *aculeatum*. Prickly Oval Amomum. Roxb. n. 3.—Spikes obovate, on ſhort ſtalks. Bracteas lanceolate. Creſt of the filament abruptly three-lobed. Capſules oval, prickly. Leaves nearly ſeſſile, lanceolate; heart-ſhaped at the baſe.—Native of the Malay Archipelago, from whence it was brought to the Calcutta garden, and flowers freely there in April and May, ripening ſeed in October. The *capſule* is perfectly deſtitute of grooves, and its coat of a ſoft fleſhy texture. *Roxburgh*.

14. A. *maximum*. Great Winged Amomum. Roxb. n. 4. (A. n. 2; Kœnig in Retz. Obſ. faſc. 3. 50?)—Spikes oval, on ſhort ſtalks. Bracteas lanceolate. Creſt of one ſemi-lunar lobe. Capſules globoſe, with nine wings. Leaves ſtalked, lanceolate, villous beneath.—Native of the Malay Archipelago. Long cultivated in the Calcutta garden, where it bloſſoms in April and May, ripening ſeed in September and October. The *flowers* are nearly white, with a ſmall tinge of yellow on the middle of the *lip*. The *ſeeds* have a warm pungent aromatic taſte, not unlike the real Malabar Cardamom, (ſee ELETTARIA,) but by no means ſo grateful. *Roxburgh*. The author appears to have confuſed himſelf between *Globba criſpa rubra* of Rumphius, and t. 60, of that writer, but we readily agree with him, though not exactly for the reaſons he gives, that neither of theſe ſynonyms belong to his *A. maximum*.

15. A. *Rumphii*. Angular-winged Amomum. (Globba longa; Rumph. Amboin. v. 6. 134. t. 60.) — Spikes ovate, on ſtalks thrice their own length. Bracteas ovate. Capſule globoſe, with many angular-notched wings. Leaves ſtalked, ſmooth.—Native of valleys, and at the foot of mountains, in a cold, wet, clay, or ſtony ſoil, throughout the Malay Archipelago, and all the eaſtern parts of India. The barren *ſtems* are a yard high before they expand into *leaves*, after which they attain the height of twelve or fifteen feet. *Leaves* thin and ſmooth, two feet or two feet and a half in length, two palms broad. *Flower-ſtalks* a foot high, ſcaly, each bearing a denſe, ovate, many-flowered ſpike, three or four inches long. *Bracteas* ovate, acute, reddiſh, ſpotted. *Calyx* with a very long three-cleft tube. *Corolla* reddiſh externally, with a white *lip*, ſoon fading. *Capſule* nearly globular, with many unequal, yellowiſh, irregularly and ſharply toothed wings. *Seeds* black, enveloped in a ſilvery pulp, of a gratefully acid flavour, very fragrant, but not acrid or aromatic to the taſte. *Rumphius*.

We cannot reduce this plant to any of the ſpecies of Roſcoe, Roxburgh, or Kœnig. We feel indeed great ſcruples in referring the *Amomum* n. 2. of the latter to *A. maximum*, and ſhall therefore venture to propoſe it here as diſtinct, with that diffidence which muſt always attend the definition of a ſpecies taken up from deſcription.

16. A. *Kœnigii*. Single-fruited Amomum. (A. n. 2; Kœnig in Retz. Obſ. v. 3. 50.)—Spikes ſeſſile. Bracteas ovate, membranous. Capſule ſolitary, globoſe, deeply furrowed, with intermediate wings, and ſomewhat tuberculated. Creſt of three lobes; the middle one rounded, finely toothed. Leaves downy beneath.—Native of denſe woods in the Eaſt Indies. *Leafy ſtems* two feet high. Spikes or tufts of *flowers* ſeſſile at the root, each perfecting but one *capſule*, the ſize of a large cherry, containing rarely more than nine ſeeds.

Although we have made out a far more ample liſt of ſpecies, of genuine *Amomum*, than has ever been attempted before, we are aware that ſeveral may yet exiſt, of which imperfect traces are to be found in various authors, ſo that it is more likely our number ſhould be augmented than diminiſhed by future enquiry. This genus ought perhaps to be divided into two families, the firſt with ſpiked or racemoſe *flowers*, globular *fruit*, and angular *ſeeds*; the ſecond with capitate *flowers*, ovate pointed *fruit*, and ovate or oblong, even *ſeeds*. To the firſt belong *A. Cardamomum* and many of our latter ſpecies; to the latter the Cardamom tribe, compriſing the ſecond and all after it to the eighth incluſive.

AMPHIBOLE, or Hornblende. See Mineralogy, *Addenda*.

AMPHIGENE. See Leucite.

AMPHIPOGON, in *Botany*, αμφι and πωγων, as having a *beard*, or *awns*, upon *both* valves of the corolla.—Brown Prodr. Nov. Holl. v. 1. 175.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two nearly equal valves, ſingle-flowered. Corolla of two valves; outer valve with three ſegments; inner with two; all the ſegments ſetaceous, awned, uniform.

A genus of graſſes, growing in patches, with creeping *roots*, faſciculated *ſtems*, and ſetaceous *leaves*. The *flowers* compoſe an equal *ſpike*, which ſometimes aſſumes the form of a roundiſh *head*.

Sect. 1. *Spike capitate, the outermoſt flowers abortive, whorled, conſtituting a kind of involucrum. Calyx hairy.*

1. A. *laguroides*. Hare's-tail Amphipogon.—Head globoſe. Calyx-glumes hiſpid, with hairs dilated at the baſe; outer valve twice the length of its point.—Gathered by Mr. Brown, on the ſouth coaſt of New Holland.

2. A. *turbinatus*. Turbinate Amphipogon.—Head obovate. Calyx-glumes clothed with ſhaggy hairs, ſimple at the baſe; outer valve ſcarcely longer than its point.—From the ſame country.

Sect. 2. *Spike oblong. Calyx ſmooth.*

3. A. *ſtrictus*. Stiff Amphipogon.—Calyx-glumes fringed, undivided, ſhorter than the ſmooth corolla. Awns and leaves ſtraight.—Found by Mr. Brown, near Port Jackſon, New South Wales.

4. A. *debilis*. Weak Amphipogon.—Calyx-glumes three-cleft, ſhorter than the ſmooth corolla. Awns ſtraight. Leaves rather flaccid.—Gathered by the ſame on the ſouthern coaſt of New Holland.

5. A. *avenaceus*. Oat Amphipogon.—Calyx-glumes pointed, undivided, longer than the ſilky corolla. Awns ſpreading.—Native of the ſame country as the laſt.

We have ſeen no ſpecimens, and therefore are indebted to Mr. Brown for all the above information. We would obſerve that this genus affords an exemplification of what ſpecific characters ought to be, under the hand of a maſter, with nothing ambiguous or ſuperfluous, but ſuch a contraſt of diſtinctions between all the ſpecies, as can leave no doubt in the mind of a ſtudent.

AMPHORA. Add—As a wine meaſure at Venice, contains 4 bigoncia, and a bigoncia contains 4 quantari, 116 ſecchie, or 256lbs. peſo groſo; but a bigoncia of brandy is only 14 ſecchie, or 56lbs.

AMSTERDAM, in *Geography*, an iſland in the Indian ſea, lying in S. lat. 38° 42′. E. long. 76° 54′. This iſland is of volcanic origin, and ſtill in a ſtate of inflammation. The great crater on the eaſtern ſide, now full of water, is by far the largeſt here, or, perhaps, elſewhere, and is of an aſtoniſhing ſize, conſiderably exceeding in diameter thoſe of Etna or Veſuvius. Its length from N. to S. is upwards of four miles; its breadth from E. to W. about 2½ miles; and its circumference 11 miles, comprehending a ſurface of about eight ſquare miles, or 5120 acres, almoſt the whole of which is covered with a fertile ſoil. The iſland is inacceſſible, except on the eaſt ſide, where the great crater forms a harbour, the entrance into which is deepening annually, and might, by the aid of art, be made fit for the paſſage of large ſhips. The tides run in and out at the rate of three miles an hour, and riſe perpendicularly eight or nine feet on the full and change of the moon. Their direction is S.E. by S., and N.E. by N. A northerly wind makes the higheſt tide. The water is eight or ten fathoms deep almoſt cloſe to the edge of the crater. The ſea ſupplies this iſland with excellent fiſh, particularly a kind of cod, and cray-fiſh in abundance. Nevertheleſs, ſharks and dog-fiſh, of uncommon ſize, were very numerous in the ſame place. The penguin, diſtinguiſhed in the Linnæan ſyſtem by the name of "Chryſocoma," having large yellow feathers, forming two ſemi-circles over the eyes, like eyebrows, is found here in great abundance. Of the larger birds, here are alſo ſeveral ſpecies of the albatroſs, and alſo the large black petrel, or "procellaria equinoctialis" of Linnæus; the blue petrel, or "procellaria Forſteri;" and the ſtormy petrel. The ſmalleſt of the feathered tribe, inhabiting or viſiting this iſland, was the ſilver kind, or "ſterna hirundo," about the ſize of a large ſwallow or ſwift, with a forked tail. The iſland St. Paul's, lying to the northward of Amſterdam, preſented no very high land, or any riſing in a conic form. In ſir George Staunton's Embaſſy to China, we have a view and plan of the iſland of Amſterdam, and of the great crater on its eaſtern ſide.

AMUL, an ancient city of the Perſian empire, in the province of Mazanderan, ſituated in an agreeable plain at the foot of a mountain, on the banks of a river, and celebrated for a handſome bridge of twelve arches, an old fortreſs, and a palace of Shah Abbas the Great.

AMURATH (or Morad) III., in *Biography*, ſucceeded his father ſultan Selim II. in 1575, commencing his reign with cauſing his five brothers to be ſtrangled in his preſence. His reign was eventful in military tranſactions; but as he took no part in them, he is not much noticed by the Turkiſh hiſtorians. Amurath contributed to the election of Stephen Battori, as king of Poland; and this circumſtance favoured his own deſigns againſt Perſia. The invaſion of this empire by the Turks began in 1578, and after much ſlaughter, terminated in Amurath's poſſeſſion of Tauris, and three contiguous provinces of Perſia. The Krim Tartars, who revolted from the Turkiſh dominion, were reduced. In 1590, Amurath being at peace with the other powers declared war againſt the emperor of Germany, which was the cauſe of much devaſtation and bloodſhed; and the Turks triumphed in the capture of the important town of Raab, in Upper Hungary. During this war, Amurath died, in January 1596, at the age of 52. Chriſtian authors repreſent him as of a mild diſpoſition, a lover of juſtice, zealous in his religion, and a friend to temperance and order. Mod. Univ. Hiſt.

Amurath (or Morad) IV., ſurnamed *Ghazi*, or the Valiant, was ſon of Achmet I., and ſucceeded his depoſed uncle Muſtapha in 1622, in his 13th year. He loſt Bagdad at the beginning of his reign; and after many unſucceſsful attempts to retake it, he marched, in 1637, at the head of a numerous army, and after thirty days continual aſſault, and an immenſe loſs of lives, ſtormed the place. On this occaſion he ſhewed the brutal ferocity of his temper, not only by driving on his men with a ſcymetar to the attack, but by ſlaughtering 30,000 Perſians who had ſurrendered at diſcretion after the capture of the town. It is ſaid, that the only perſon who eſcaped was a famous harp-player, who requeſted the executioners to permit him to ſpeak to the ſultan before his death. When introduced into his preſence, and ordered to give a ſpecimen of his powers, he touched his inſtrument ſo ſweetly, accompanying the ſtrains with pathetic lamentations on the tragedy of Bagdad, and artful praiſes of Amurath, that the tyrant was ſoftened to tears, and not only ſaved him but the reſt of the ſurvivors. Habits of debauchery broke down the ſultan's conſtitution in the prime of life, and he ſacrificed his life in a revel at the feaſt of Bairam, in February 1640, at the age of 31. Mod. Univ. Hiſt.

AMUSKEAG FALLS, l. 10, for acroſs *r.* a little below.

AMWELL. Add—Alſo, a townſhip of Hunterdon, in New Jerſey, containing 5727 inhabitants.—Alſo, a townſhip of Pennſylvania, in Waſhington county, having 1673 inhabitants.

ANADENIA, in *Botany*, ſo named by Mr. Brown, from α, *without*, and αδην, *a gland*, becauſe the nectariferous glands, uſual in ſome neighbouring genera, are wanting.—Brown Tr. of Linn. Soc. v. 10. 166. Prodr. Nov. Holl. v. 1. 374.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Cal.* none. *Cor.* Petals four, equal, regular, cohering by their lower part into a tube, linear, at length revolute; their ſummits dilated, concave, bearing the ſtamens. *Stam.* Filaments four, very ſhort, inſerted into the hollow near the tip of each petal; anthers roundiſh, ſunk in the ſaid hollow. *Piſt.* Germen with rudiments of two ſeeds, ſuperior, ſtalked, half-ovate, erect, without any gland at the baſe; ſtyle cylindrical, incurved; ſtigma vertical, conical. *Peric.* Follicle ſtalked, of one cell, crowned with the ſtyle. *Seed* ſolitary, compreſſed, without a wing.

Eſſ. Ch. Petals four, regular. Stamens ſunk in the cavities of the limb. Nectariferous glands none. Stigma conical. Follicle of one cell. Seed ſolitary, without a wing.

A ſhrubby genus, akin to GREVILLEA. (See that article.) *Leaves* either pinnatifid or lobed, their outline wedge-ſhaped. *Spikes* terminal or lateral; *flowers* in pairs, each pair accompanied by a ſingle *bractea*, the uppermoſt ſometimes earlier than the reſt.

1. A. *pulchella.* Elegant Anademia.—Leaves pinnatifid, ſlightly hairy; lobes wedge-ſhaped, three-cleft or pinnatifid at the extremity. Spikes flowering from the top downwards. Follicles glutinous.—Native of ſtony hills in Lewin's land, on the ſouth coaſt of New Holland, where this, as well as the two following ſpecies, were gathered by Mr. Brown.

2. A. *trifida.* Three-cleft Anadenia.—Leaves wedge-ſhaped, triple-ribbed, without veins, three-cleft; ſilvery beneath: lobes entire, or the lateral ones with two or three teeth.—Found in woods, on a ſandy ſoil, in Lewin's land. *Leaves* only the length of the finger-nail. "Perhaps a diſtinct genus, the *corolla* being irregular, *ſtigma* a little different from the reſt, and the *follicle* woody, ſplitting into two parts." *Br. in Tr. of Linn. Soc.*

3. A. *ilicifolia.* Holly-leaved Anadenia.—Leaves wedge-ſhaped, veiny; ſilvery beneath; tapering at the baſe; pinnatifid half way down.—Found on the ſandy ſea-coaſt of Flinder's land, on the ſouth coaſt of New Holland, with unexpanded *flowers*, and no *fruit*. *Leaves* an inch long. *Brown.*

ANAGNORISIS. See CATASTROPHE.

ANALCIME. See ZEOLITE.

ANALYSIS, in *Chemiſtry*. The analyſis of *minerals*, including *earths*, *ſtones*, and the ores of metals, and the analyſis of *organized* bodies, or *vegetable* and *animal* ſubſtances, have been omitted; we ſhall, therefore, introduce a ſummary account of theſe ſubjects here, and at the ſame time endeavour to ſupply what has been omitted under other analogous heads.

Analyſis of Minerals.—The particular methods of analyſing different minerals and ores are given under their reſpective heads: our object here is to give a ſummary view of chemical analyſis in general, a ſubject often referred to in the Cyclopædia, but which has been unaccountably omitted.

"The progreſs," ſays Dr. Thomſon, "which the art of analyſing minerals has made within theſe laſt thirty years is truly aſtoniſhing. To ſeparate five or ſix ſubſtances intimately combined together, to exhibit each of them ſeparately, to aſcertain the preciſe quantity of each, and even to detect the preſence of the weight of ſubſtances which do not approach the five-hundredth part of the compound, would, at no very remote period, have been conſidered as a hopeleſs, if not an impoſſible taſk; yet this can now be done with conſiderable accuracy."

Margraff of Berlin was the firſt who undertook the analyſis of minerals. He was followed by Bergman and Scheele, who very much improved this department of chemiſtry. The indefatigable and ingenious Klaproth ſucceeded, to whom the preſent improved ſtate of the analyſis of minerals is more indebted than to any other individual. To Vauquelin and Berzelius likewiſe we are much indebted, as well as to many other eminent living chemiſts. In ſhort, this intereſting branch of chemiſtry is ſtill daily making rapid progreſs, and will doubtleſs ere long become much more perfect than it is even at preſent.

Minerals of a ſaline nature, and ſoluble in water, may be analyſed by the methods pointed out in the article WATER, *Mineral Analyſis of.*

Hard ſtony minerals are firſt to be reduced to a ſtate of powder. When they are extremely hard, they may be heated to redneſs, and then thrown into cold water, which will cauſe them to crack and fly to pieces; and this proceſs may be repeated, if neceſſary. The mineral is then to be reduced to a coarſe powder, in a ſteel or agate mortar (ſee LABORATORY); and when thus reduced, a given weight of it, 100 grains for example, is to be reduced in a ſimilar mortar (one of agate is preferable) to an impalpable powder. The powder, after this operation, will be generally found heavier than before, owing to the abraſion of the mortar; and this addition in weight is to be carefully noticed, and allowed for. If the mortar employed was agate, the addition in weight may be conſidered as ſilex.

Crucibles of platinium and ſilver, evaporating diſhes of glaſs or porcelain, and other apparatus and requiſites, will be neceſſary for the ſubſequent proceſſes, all which are deſcribed under the article LABORATORY above referred to. In the claſs of minerals commonly denominated *ſtones* and *earths*, the ingredients uſually met with are, ſilica, alumina, zirconia, glucina, lime, and magneſia; and the oxyds of iron, manganeſe, nickel, chrome, and copper. Seldom more than four or five of theſe, however, enter the compoſition of a mineral at the ſame time; though, to avoid repetition, we ſhall ſuppoſe them all to exiſt at once.

When a mineral of the above deſcription is to be analyſed, 100 grains of it in fine powder are to be mixed with three times their weight of pure potaſh and a little water, and then introduced into a ſilver crucible, and expoſed to a red heat for upwards of half an hour. Care muſt be taken to ſtir the mixture well till all the water be driven off, leſt, by the ebullition, any of the compound ſhould be forced out of the crucible.

From the appearances preſented during this ſtep of the operation, ſome conjectures may be uſually formed reſpecting the nature of the ſtone, ſo as to afford ſome aſſiſtance in the future ſteps of the analyſis. If the matter melts completely, it may be concluded that the mineral is chiefly ſiliceous. If it remains thick and opaque, the other earths are moſt abundant. If it aſſumes the form of a pulverulent bulky white powder, the ſtone is moſtly argillaceous. If the colour be dull green or browniſh, oxyd of iron is preſent. A bright graſs-green indicates the preſence of manganeſe, and yellowiſh-green chrome. When a ſtone is aluminous and very hard, potaſh acts very feebly upon it; and in this caſe, borax was uſed with great advantage by Mr. Chenevix.

The crucible being now removed from the fire, and cleaned externally, is to be placed in a porcelain capſule, and filled with water; and this is to be repeated till the whole of the matter is ſeparated. A portion of the compound of potaſh, with the ſilex and alumina of the mineral, is taken up by the water, which would indeed diſſolve the whole if added in ſufficient quantity.

The detached matter is then to be diſſolved in muriatic acid: at the commencement of the ſolution, an abundant precipitation takes place of a flocculent matter, which had been held in ſolution by the alkali, with which the acid combines. Then an efferveſcence takes place from the decompoſition of the alkaline carbonate formed after and during the fuſion, and at the ſame time the precipitate is rediſſolved. The portion of matter alſo not diſſolved by the water, and which had remained at the bottom in the form of a powder, is diſſolved; this not being attended with any efferveſcence, if it be alumina or ſilex; but if it contains lime, an efferveſcence takes place. If the muriatic ſolution be colourleſs, we may conclude that it contains very little or no metallic oxyd. If its colour be purpliſh-red, it is a further proof that manganeſe is preſent; orange-red indicates iron; and golden-yellow, chrome.

This ſolution is now to be evaporated to dryneſs upon a ſand-bath, in a flat porcelain veſſel looſely covered with paper. Towards the end of the operation, the fluid becomes gelatinous, and requires to be conſtantly ſtirred with a ſilver or porcelain rod, to facilitate the diſengagement of the water and acid, and to render the exſiccation uniform throughout the whole. If this precaution be not obſerved, there is a riſk of a portion of the alumina, from which the acid has been expelled, remaining with the ſilex; and with the alumina of a portion of ſilex being retained in ſolution; by the acid on account of its not being ſufficiently diſſipated.

When the matter is almoſt reduced to the form of a dry powder, a large quantity of diſtilled water is to be poured upon it; the whole is then to be gently heated, and thrown upon a filtre. The powder remaining on the filtre is to be waſhed with water, until the laſt portions added give no precipitate with ſolution of ſilver. This powder is *ſilex*. It is to be carefully dried between folds of blotting paper, expoſed afterwards to a red heat, and weighed while warm. It ought to be a fine white powder, inſoluble in acids. If it be coloured, the preſence of a metallic oxyd is indicated, which is a proof that the heat towards the end of the evaporation had been raiſed too high. To remove this oxyd, the powder is to be boiled with an acid, and afterwards waſhed and dried, and the liquor muſt be added to the filtered fluid above-mentioned.

The ſolution is then to be evaporated till its quantity does not exceed an Engliſh pint. A ſolution of carbonate of potaſh is to be poured in, till no farther precipitation takes place; and in order to render the ſeparation more complete, the whole ſhould be boiled for a few minutes. When all the precipitate has collected at the bottom, the ſupernatant liquor is to be decanted off; and water being ſubſtituted in its place, the precipitate and water are to be thrown upon a filtre. When the water has paſſed through, the filtre with the precipitate upon it is to be placed upon ſome folds of bibulous paper; and when the precipitate has acquired a little conſiſtence, it is to be carefully collected with an ivory knife, and mixed with a ſolution of pure potaſh, and boiled in a porcelain crucible. If any alumina or glucina be preſent, they will be diſſolved in the potaſh, while the other ſubſtances remain untouched in the form of a powder.

The ſolution of alumina in the potaſh is to be ſuperſaturated with an acid, that is, ſo much acid is to be added as is ſufficient to rediſſolve any precipitate that may be formed. Carbonate of ammonia is then to be added in exceſs, ſo as to be ſenſible to the ſmell. This will precipitate completely the alumina, if any be preſent, while the glucina will remain in ſolution. The *alumina* is to be collected on a filtre, waſhed with diſtilled water, and then dried at a red heat, and weighed. To determine if it be really alumina, diſſolve it in ſulphuric acid, and add a ſufficient quantity of ſulphate or acetate of potaſh; if it be alumina, the whole of it will be converted into cryſtals of alum. If *glucina* be preſent in the remaining liquor, it will fall down on boiling it for ſome time, ſo as to diſſipate the exceſs of ammonia. After being waſhed and dried as before, it is to be accurately weighed.

The matter remaining undiſſolved by the ſolution of potaſh above-mentioned may conſiſt of lime, magneſia, yttria, and the metallic oxyds. If yttria be ſuſpected, add carbonate of ammonia, which will diſſolve the yttria, and leave the other bodies. Then let the whole be diſſolved in dilute ſulphuric acid, and the ſolution be afterwards evaporated to dryneſs, ſo as to diſſipate any exceſs of acid. A little water is to be added to the ſolid reſiduum, which will take up the metallic ſulphates and the ſulphate of magneſia, but leave the ſulphate of lime, which is to be dried at a red heat, and weighed; and from its weight the quantity of lime preſent may be readily eſtimated. The ſubſtances retained in ſolution by the ſulphuric acid may be magneſia and the oxyds of iron, manganeſe, chrome, and nickel. To ſeparate theſe, the ſolution is to be diluted with a large quantity of water, a ſlight exceſs of acid added to it; and then a ſolution of carbonate of potaſh ſaturated with carbonic acid is to be poured in. The oxyds of iron, chrome, and nickel, will be precipitated, while the magneſia and manganeſe will remain in ſolution with the carbonic acid. To ſeparate theſe, hydro-ſulphuret of potaſh well ſaturated with ſulphuretted hydrogen is to be added to the ſolution, which will precipitate the manganeſe in the ſtate of hydro-ſulphuret, while the magneſia will ſtill remain in ſolution. The *magneſia* may then be ſeparated by a ſolution of pure potaſh, and its weight eſtimated after it is waſhed and dried at a red heat. To obtain the weight of the *oxyd of manganeſe*, its precipitate muſt be calcined with the admiſſion of air to expel the ſulphuretted hydrogen.

There ſtill remain to be ſeparated the oxyds of chrome, iron, and nickel. To do this, the precipitate is boiled in ſucceſſive portions of nitric acid, to bring the oxyd of chrome to the ſtate of acid. It is then heated for a few ſeconds with potaſh, and after being heated the liquid is poured off. The undiſſolved matters are to be waſhed with water, which waſhings are to be added to the other liquid. The chromic acid remains in ſolution combined with the potaſh; muriatic acid is added to it, ſo as to be in exceſs; it is then evaporated until it aſſumes a green colour. If pure potaſh be then added, the *oxyd* will be precipitated, and it may thus be collected, and its quantity aſcertained.

The undiſſolved matter of the preceding experiment may conſiſt of the oxyds of iron and nickel. To ſeparate them, they are diſſolved in muriatic acid, and ammonia is added in exceſs. The *oxyd of iron* will be thus precipitated, and its weight may be aſcertained. The exceſs of ammonia will retain the *oxyd of nickel* in ſolution, which may be laſtly obtained ſeparately by driving off the ammonia by heat.

When the different conſtituent principles of a foſſil have been thus obtained ſeparately, their united weight ought of courſe to be equal to the original weight of the foſſil itſelf. If they correſpond, or differ only by .03 or .04 of a part, we may conclude that the analyſis has been properly performed. But if the loſs of weight be conſiderable, the analyſis muſt be repeated; and if the reſult be ſtill the ſame, it may be concluded that the ſtone has contained ſome principle either volatile or ſoluble in water, which muſt, therefore, be ſought for. A proportion of the ſtone being broken to pieces, is firſt to be expoſed to a ſtrong heat in a retort of porcelain, to which a receiver is adapted. If it contains water, or any other volatile ſubſtance, this will be collected in the receiver, and its nature and quantity may be aſcertained. But if it ſuſtain no loſs by this operation, or a loſs not equivalent to the loſs indicated by the analyſis, it is probable that it contains ſome ſubſtance ſoluble in water.

To aſcertain the quantity of *potaſh* preſent in a mineral, Vauquelin (from whom the above account of the analyſis of ſtony bodies has been chiefly extracted) recommends that the ſtone reduced to an impalpable powder ſhould be cautiouſly heated with ſulphuric acid, and the maſs digeſted with water. The ſolution properly concentrated is ſet aſide for ſome days. If cryſtals of alum make their appearance, the ſtone contains *potaſh*. If no cryſtals appear, the ſolution is to be evaporated to dryneſs, and the reſidue expoſed to a moderate red heat. It is then to be digeſted in water, and the ſolution mixed with carbonate of ammonia, and filtered. It muſt be then again evaporated to dryneſs, the reſidue expoſed to a heat of 700°, and rediſſolved. The ſolution by proper concentration will yield cryſtals, either of ſulphate of ſoda or of potaſh, which may be readily diſtinguiſhed. The preſence or abſence of potaſh may be alſo aſcertained by means of the muriate of platina.

The following method has been recommended by Roſe for detecting and diſtinguiſhing the fixed alkalies in minerals, and is eaſier than the above. He fuſed one part of the mineral with four parts of nitrate of barytes in a porcelain crucible. A ſpongy maſs of a light blue colour, and completely ſoluble in muriatic acid, was obtained. The yellow-coloured ſolution formed was mixed with a ſufficient quantity of ſulphuric acid, not only to precipitate the barytes, but to expel the muriatic acid; and the liquid was evaporated to dryneſs. The maſs was digeſted in water, and thrown upon a filtre. The ſulphate of barytes and ſilica remained behind. The ſolution was now ſaturated with carbonate of ammonia, which ſeparated all the earthy and metallic bodies, leaving in the ſolution only the ſulphates of fixed alkali and ammonia, the latter of which was then expelled by heat. The fixed alkaline ſulphate thus obtained was rediſſolved in water, and decompoſed by means of the acetate of barytes. The ſulphate of barytes formed was then ſeparated by the filtre, and the liquid evaporated to dryneſs. The other ſalt was acetate of a fixed alkali, which was expoſed to a red heat in a crucible, the charry reſidue diſſolved in water, filtered, and cryſtallized; and thus a fixed alkaline carbonate was obtained, eaſily diſtinguiſhed by its properties.

Sir H. Davy adopted ſtill a different method. He fuſed one part of the mineral with two parts of boracic acid, diſſolved the fuſed maſs in diluted nitric acid, and concentrated the ſolution to ſeparate the ſilica. The liquid was then mixed with carbonate of ammonia in exceſs, and boiled and filtered; by which means all the earthy and metallic ingredients were ſeparated. The liquid was then mixed with a ſufficient quantity of nitric acid, and evaporated till the whole of the boracic acid ſeparated. Nothing now remained but the nitric acid, combined with the alkaline conſtituents of the mineral, and with ammonia. The nitrate of ammonia was diſſipated by heat, and the nature of the alkaline nitrate left was eaſily diſtinguiſhed by its properties.

When the mineral contains *fluoric* acid, Klaproth aſcertained its preſence by heating the mineral with ſulphuric acid in a glaſs retort. The corroſion of the retort, and the ſiliceous depoſit in the water of the receiver, ſufficiently demonſtrate the preſence of that principle. To determine its quantity, the mineral was fuſed with potaſh, and the ſilica ſeparated as uſual. The remaining liquid was precipitated by means of the carbonate of potaſh; and the liquid being neutralized was mixed with lime-water. The precipitate of fluate of lime thus obtained was heated to redneſs, and from its weight the quantity of fluoric acid preſent in the mineral was eſtimated.

Thoſe foſſils in which earths are combined with acids, forming compounds not ſoluble in water, require different modes of analyſis. The earthy *carbonates* are analyſed by calcination by heat, with or without charcoal, or by ſolution in dilute nitric or muriatic acid; eſtimating the quantity of carbonic acid diſengaged, by collecting it, and diſcovering the baſe by the nature of the ſalt obtained by evaporation; or by precipitation by re-agents, and eſtimating by the ſame modes their quantities. Earthy *ſulphates* may be decompoſed by boiling with carbonate of potaſh for a conſiderable time: the ſulphuric acid unites with the potaſh, and its quantity may be eſtimated by precipitating with barytes: the carbonic acid is attracted by the earthy baſe, and the carbonate thus obtained may be decompoſed in the ſame manner as a native carbonate, or the quantity of earth which it contains may be eſtimated by its weight. *Phoſphate* of lime, which is the only earthy phoſphate that has been diſcovered, may be diſſolved in diluted nitric acid by the aſſiſtance of heat; the lime may be then precipitated by ſulphuric or oxalic acid; the phoſphoric acid remaining in ſolution may be obtained concrete by evaporation; or its quantity may be eſtimated by combining it with lead, a ſolution of acetate of lead being added for the purpoſe.

Analyſis of Ores.—Metallic minerals, in general, admit more eaſily of analyſis in the humid way than the earthy foſſils, from their being leſs hard. In the dry way alſo, their compoſition may be ſometimes aſcertained by expelling the mineralizing ſubſtance by heat, and reducing the metal to its metallic ſtate.

Proper ſpecimens of the ore, free from all foreign matters, ſhould be choſen; and if the object be to aſcertain the quantity of metal it may contain, different ſpecimens taken from different parts of the metallic vein ſhould be examined, as it often happens that different parts of the ſame vein vary much in richneſs. The ore being powdered, the general proceſs, in the *dry* way, conſiſts in calcining it at a low red heat in an earthen veſſel looſely covered, to expel the ſulphur or other volatile matter. Or this operation may be performed in an earthen retort and receiver, when the object is to aſcertain the nature and quantity of the ſubſtance expelled. The reſidual matter in either caſe being weighed, to aſcertain the loſs of weight it has ſuffered, is mixed with three times its weight of black flux, and expoſed in a crucible, to a heat ſufficiently intenſe for its reduction and fuſion. Sometimes borax, pounded glaſs, or lime, are uſed as fluxes. The metallic matter, when the operation is well conducted, is collected in a button at the bottom of the crucible, and its nature and compoſition may be aſcertained in the humid way in the uſual manner by means of the proper re-agents, &c.

In ſubmitting an ore to analyſis in the humid way, the general proceſs is to digeſt it previouſly reduced to powder in different acids. Sulphur, if preſent, is precipitated, or is ſometimes partially converted into ſulphuric acid. If the quantity of ſulphur be large, it is beſt previouſly ſeparated as much as poſſible by roaſting the ore as above. The reſidual matter is then ſubmitted to the action of the different acids, theſe being often applied ſucceſſively; ſo that different metals, if preſent, are ſeparated by their proper ſolvents. The ſolutions afford by evaporation the metallic ſalts they contain, or each metal is detected in the ſolution by its proper teſt: it is alſo precipitated by the alkalies and other re-agents, and the precipitate is reduced to the metallic ſtate, as before, by the aid of fluxes and heat; or ſometimes it may be thrown down at once in the metallic ſtate, by another metal having a ſtronger attraction for oxygen.

Theſe are almoſt all the *general* rules that the analyſes of ores will admit of, as the proceſſes required for different ores differ extremely from one another, and are often very complicated. We refer our readers, therefore, for the analyſis of particular earthy foſſils and ores, to the different articles in the Cyclopædia, where they are deſcribed.

Analyſis of organized Bodies, including vegetable and animal Subſtances.—The older chemiſts attempted the analyſis of organic compounds by diſtillation, and thus obtained a variety of reſulting ſubſtances equally or perhaps more complicated in their nature than the original ſubſtance to be analyſed. When the theory of chemiſtry was changed by Lavoiſier, that illuſtrious chemiſt began to conſider the compoſition of organic ſubſtances in a proper point of view, and he endeavoured to diſcover the elements of theſe bodies, and to determine their proportions. He diſcovered the nature of their elements, though he was not ſo ſucceſsful in determining their properties. Lavoiſier's principle of analyſis was to oxydize organic bodies till he converted them into binary oxyds, the compoſition of which was known, and to perform the experiment in ſuch a manner, that the quantity of theſe binary compounds with oxygen could be correctly determined. His mode of operating was to burn organic ſubſtances in oxygen gas; but this method, though juſt in principle, did not enable him to determine by the balance with much accuracy, either the quantity of water or of carbonic acid formed by the combuſtion; ſo that his reſults could be only conſidered as approximations.

Some chemiſts, after Lavoiſier, endeavoured to determine the exact quantity of the products of dry diſtillation, and to calculate from them the compoſition of the body. Such was the attempt of Fourcroy and Vauquelin on the compoſition of urea, and of Dr. Higgins on the acetic acid. But the compoſition, and probably alſo the quantity of the products of diſtillation, being only imperfectly known, it is obvious that ſuch experiments, however exact, can only afford data for calculations hereafter, when the products of the diſtillation come to be better examined and more accurately known. Theodore de Sauſſure has analyſed alcohol and ether in Lavoiſier's manner, and the reſults he obtained probably approach nearer the truth than any preceding analyſis of a ternary compound. Thenard has alſo analyſed different ſpecies of ether in the ſame manner.

The firſt grand ſtep, however, towards proportion in the analyſis of organic ſubſtances, was made by Gay Luſſac and Thenard. Theſe celebrated chemiſts, in an intereſting memoir on the ſubject, after pointing out the difficulties and ſources of inaccuracy of the methods then generally employed, gave a deſcription of a new method of proceeding, by which they conſidered they were able to combine the hydrogen and carbon with the utmoſt quantity of oxygen with which they can unite; and thus, by proper data, to eſtimate the proportion of their conſtituent parts, and of oxygen exiſting in the compound analyſed. The ſubſtance ſelected to furniſh oxygen was the oxymuriate of potaſh, and the matter to be analyſed was mixed with this ſalt, and deflagrated in an apparatus contrived for the purpoſe, conſiſting of a thick glaſs tube, A, (*Plate* XXI. *fig.* 3. *Chemiſtry,*) ſet vertically in a fire, with a lateral tube, B, to conduct the gaſes produced to a mercurial apparatus; and a cock, C, above, the ſtopper of which was not perforated, but contained a depreſſion, D, into which a portion of the material to be analyſed was introduced; and by turning the cock downwards, this portion fell into the tube, and was there deflagrated. E is a veſſel containing ice, to keep the upper part of the tube cool. The proportion of the oxymuriate requiſite to burn completely the ſubſtance analyſed was aſcertained by previous trials in an open crucible; ſo much of the ſalt being required, that the reſidue after deflagration ſhould be quite white, or at leaſt not carbonaceous; and in the actual experiment a conſiderable exceſs of the oxymuriate was employed. The materials were then completely dried, by ſubmitting them for a conſiderable time to a temperature of 212°, and afterwards accurately weighed and mixed in a mortar, with a little water, ſo as to form an adheſive maſs, which was divided by being thruſt into a braſs mould, and the pieces ſhaped by the fingers into little balls, that they might drop clean from the ſtopper of the cock down into the deflagrating tube. Theſe balls were dried again at the ſame temperature before they were thus burnt.

The oxymuriate of potaſh was itſelf analyſed before it was uſed; and in order to inſure uniformity in its compoſition, a conſiderable quantity of it was fuſed and pulveriſed, and kept for uſe. If the ſubſtance to be analyſed was a vegetable acid, it was combined with lime or barytes before it was mixed with the ſalt; and this calcareous or barytic ſalt was ſeparately analyſed, and the carbonic acid remaining united with the earth after deflagration was properly eſtimated. The earthy or other incombuſtible matter belonging to the ſubſtance to be examined was alſo ſeparately eſtimated, by calcining this ſubſtance by itſelf in a platina veſſel, and lixiviating the reſidue.

The authors, in their memoir, have given at length all the precautions required in the management of the apparatus, both in preparing for the deflagration, and in the eſtimation of the gaſes obtained; and after the operation the reſults of the analyſis were made out in the following manner: "The proportion of combuſtible matter in the ſubſtance examined was previouſly found by calcination of another portion of the ſame; the actual quantity of oxygen employed in the deflagration was known by that of the oxymuriate uſed; the carbonic acid was abſorbed by potaſh, and its carbon eſtimated; the exceſs of oxygen was found by ſubſequent detonation with hydrogen; the hydrogen of the ſubſtance was preſumed to form water with all the oxygen unaccounted for; and the azote exiſted in the reſidual azotic gas."

Soon after the method of Gay Luſſac and Thenard was publiſhed, Berzelius turned his attention to the ſame ſubject; and after beſtowing, in his admirable eſſay, ſome juſt encomiums on the merits of his predeceſſors, proceeds to point out ſome defects in the apparatus and methods they employed, and propoſes new ones of his own. The eſſential principle of Berzelius's method is the ſame as that of Gay Luſſac and Thenard, *viz.* the complete combuſtion of the ſubſtance to be analyſed with the oxymuriate of potaſh; but the apparatus he employed was very different, and certainly much better adapted for the purpoſe. It conſiſted of a glaſs tube, between one-half and five-eighths of an inch in diameter, and of a length ſufficient to contain the mixture of the ſalt and ſubſtance to be analyſed. This tube was hermetically ſealed at one end, and at the other of the ſhape repreſented at A 1, (*Plate* XXI. *fig.* 4. *Chemiſtry*,) in order to facilitate the introduction of the mixture. When the mixture was introduced, this end was drawn into the ſhape A 2, in order to adapt its introduction into the ſmall thin receiver B. C is a tube about twenty inches long, and a quarter of an inch in diameter, filled with dry muriate of lime in a ſtate of coarſe powder; from one extremity of this, a bent tube D was connected with a ſmall mercurial gaſometer E; in this was introduced a ſmall globular glaſs veſſel, F, containing cauſtic potaſh, with the view of abſorbing the carbonic acid. All the joinings in this apparatus were made by ſmall caoutchouc tubes, prepared by cutting thin pieces of that ſubſtance into the requiſite ſhape, and preſſing the newly cut edges together, which unite readily. The tube expoſed to the fire was ſurrounded by a thin piece of tin plate, ſecured by wire to prevent its burſting. The apparatus was ſo managed, that by ſhifting the piece G the whole length of the tube could be heated in ſucceſſion by the fire H, and thus the ſlow and uniform combuſtion of the whole ſubſtance be enſured. The other parts of the apparatus will be readily underſtood from inſpection of the figures. At the end of the operation, the greater part of the water formed was found collected in the ſmall receiver B; the remainder of courſe was found in the tube C, abſorbed by the muriate of lime; and by ſubtracting the known weights previouſly aſcertained of theſe portions of the apparatus, from their weights after the experiment was concluded, the quantity of water was accurately determined. The greater portion of the carbonic acid was attached to the potaſh in the veſſel F, and its quantity aſcertained by weight. The minute portion adhering to the ſoda derived from the oxymuriate of ſoda was aſcertained as nearly as poſſible by eſtimation. The ſubſtances analyſed were all carefully dried at 212° in a vacuum with ſulphuric acid, and were generally combined with oxyd of lead. The quantity burnt was from five to eight grains of the ſubſtance with thirty or forty grains of the oxymuriate of potaſh. For further particulars we refer our readers to Thomſon's Annals of Philoſophy, vols. iv. and v.

Berzelius was induced to adopt the uſe of the oxymuriate of potaſh from the recommendation of Gay Luſſac and Thenard. Before that time he had employed the brown oxyd of lead.

In the analyſis of animal ſubſtances, and all compounds into which azote enters, the uſe of the oxymuriate of potaſh is very troubleſome, and liable to great objections from the uncertain ſtate of oxydation of the azote. It became, therefore, an object of the firſt importance to poſſeſs a ſubſtance that would oxydize hydrogen and carbon, but not azote; ſuch a ſubſtance has been happily lately pointed out by Gay Luſſac. This is the black oxyd of copper, which at a low heat, ſcarcely amounting to redneſs, parts readily with its oxygen to hydrogen and carbon, but not to azote. Berard, Dr. Prout, and others, have taken advantage of this in their recent analyſes of ſeveral animal ſubſtances, as will be mentioned under their proper heads. The apparatus employed by Dr. Prout cloſely reſembles that of Berzelius deſcribed above, but is more ſimple. Dr. Prout in general prefers making ſeparate experiments for aſcertaining the gaſeous and aqueous products, for the former of which he uſes a ſimple tube only; for the latter, a tube with a ſmall ball, analogous to the receiver of Berzelius, connected with a tube filled with dry muriate of lime. See for further particulars Medico-Chirurgical Tranſactions, vol. viii.

Analysis *of Soils.* See Soils.

Analysis *of Mineral Waters.* See Water.

ANAMENIA, in *Botany*, a name corrupted by Ventenat, Jard. de la Malmaiſ. t. 22, from the Arabian appellation of ſome flowers of the family of *Adonis* and *Anemone*, *Anahamen*, to which the preſent genus is related. See Knowltonia.

ANARHICHAS, l. 6. The ſpecies of this genus enumerated by Gmelin are, *Lupus*, *Minor*, *Pantherinus*, and *Strigoſus*.

Lupus; ſhark, or wolf-fiſh. (See Lupus *Marinus*.) This fiſh commonly frequents the deep parts of the ſea, but in ſpring-time approaches the coaſts, in order to depoſit its ſpawn among the marine plants, &c. It is taken both in nets and by the line; and though the fleſh is tolerable, its diſguſting appearance prevents its being much uſed as food, except by the fiſhermen. The Greenlanders, however, eat it, both freſh and dried, and make convenient ſatchels of the ſkin, in which they keep various kinds of utenſils.

Minor. Cinereous, black, with ſharper cartilaginous teeth: found near Greenland.

Strigosus, with tranſverſe duſky bands, racemoſe and ſomewhat leſs regular than uſual; ſuppoſed by Dr. Shaw to be merely a variety: found in the Britiſh ocean.

Pantherinus; Panther wolf-fiſh, marked over the whole body with round brown ſpots. This is allied to the firſt ſpecies, but differs much in colour, being of a deep yellow, variegated with numerous, round, deep-brown or blackiſh ſpots of different ſizes, the largeſt being on the back, upper part of the ſides, and dorſal fin: its length is about three feet or more. A native of the Northern ſeas.

ANARTHRIA, in *Botany*, from αναρθρος, *deſtitute of joints*, becauſe the ſtems are, in the unbranched ſpecies of this genus, deſtitute of knots, or articulations.—Brown Prodr. Nov. Holl. v. 1. 248.—Claſs and order, *Dioecia Triandria*. Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Reſtiaceæ*, Brown.

Eſſ. Ch. Male, Petals ſix, nearly equal. Filaments diſtinct. Anthers didymous, cloven at each end.

Female, Petals ſix, nearly equal. Styles three. Capſule three-lobed, three-celled. Seeds ſolitary.

The *root* is perennial. *Stems* compreſſed, ſimple, ſometimes branched in a proliferous manner; when ſimple they are without joints, and without ſheaths, having at the baſe vertical, equitant, two-ranked *leaves*. *Spikes* terminal, compound, each branch ſubtended by a ſheathing deciduous *bractea*; ſometimes they are ſimple, or the *flowers* are ſolitary. The *capſules* in ſome ſpecies form a kind of catkin, ſcarcely burſting. The ſtructure of the *flowers* and *fruit* comes neareſt to *Elegia*, but the want of ſheaths upon the *ſtem*, and the equitant vertical *leaves*, make a wide difference. This genus agrees with Lyginia, (ſee that article,) in having twin *anthers*, but differs altogether in habit.

1. A. *ſcabra*. Rough-edged Anarthria.—Stems perfectly ſimple, flat, rough-edged as well as the leaves. Petals of the male linear; of the female the three innermoſt are ſmalleſt.—Found by Mr. Brown on the ſouth coaſt of New Holland.

2. A. *lævis*. Smooth-edged Anarthria.—Stems perfectly ſimple, flattiſh, ſmooth-edged as well as the leaves. Petals

of the male elliptic-lanceolate ; of the female all nearly equal.—From the ſame country.

3. A. *gracilis*. Slender Anarthria.—Stems perfectly ſimple, thread-ſhaped, compreſſed, reſembling the leaves, and likewiſe ſmooth-edged. Spike racemoſe, divided. Petals lanceolate, keeled, nearly equal.—Native of the ſame country.

4. A. *pauciflora*. Slender-cluſtered Anarthria.—Stems ſimple, thread-ſhaped, compreſſed, nearly reſembling the ſolitary leaf, and likewiſe ſmooth. Cluſter looſe, of few flowers. Flower-ſtalks in pairs, unequal, ſhorter than the ſheathing bractea.—The male plant only was gathered by Mr. Brown, on the ſouthern coaſt of New Holland.

5. A. *prolifera*. Proliferous Anarthria.—Stems branched in a proliferous manner, two-edged, leafy. Flowers either ſolitary or ſomewhat ſpiked.—Found in the ſame part of New Holland as all the preceding. *Brown*.

ANATHO. For ANAH *r.* ANNA.

ANATOMY, *Pictureſque*, col. 4, l. 15, for head *r.* face.

ANCHOR, in *Architecture*, &c. l. 3, for Tuſcan *r.* Doric.

ANDALUSITE. See MINERALOGY, *Addenda*.

ANDANTE, l. 2, *dele* or *grazioſo* ; l. 5, *r.* or rather *grazioſo*.

ANDERSONIA, in *Botany*, received that denomination from the pen of Mr. Brown, in honour of three different botaniſts of the name of Anderſon. Firſt, Mr. William Anderſon, ſurgeon in the navy, the companion of captain Cook in two ſeparate voyages, during the latter of which he died. Although moſt devoted to the ſtudy of man, and of the animal kingdom, in thoſe new and remote regions which it was his lot to viſit, he did not overlook the vegetable world. Several of his manuſcript deſcriptions exiſt in the Bankſian library, where characters of ſome new genera, ſince publiſhed under other names, are to be found. The genus in queſtion alſo ſerves to commemorate Mr. Alexander Anderſon, curator of the botanic garden at St. Vincent's, ſo important, in a national point of view, as a nurſery for tropical plants, and for their interchange between our ſeveral colonies. Thirdly, this genus is well merited by a moſt aſſiduous and obſerving cultivator and botaniſt, Mr. William Anderſon, F.L.S., now ſuperintendant of the Apothecaries' celebrated garden at Chelſea. Let the writer of this be allowed to ſubjoin to Mr. Brown's liſt of theſe botanical worthies, the name of his lamented friend Mr. George Anderſon, F.L.S., whoſe early death, owing to a melancholy accident, January 10th, 1817, is a real loſs to ſcience. No one had paid more attention to the cultivation and diſtinction of the different kinds of Britiſh *Salices*, or the beautiful exotic tribe of *Pæoniæ* ; on which laſt ſubject a paper in the Linnæan Society's Tranſ. v. 12. 283, publiſhed under the care of his able friend Mr. Sabine, will always evince Mr. George Anderſon's juſt claim to botanical commemoration.—Brown Prodr. Nov. Holl. v. 1. 553. Dryand. in Ait. Hort. Kew. v. 1. 321.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Ericæ*, Juſſ. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, chaffy, coloured, in five deep, equal, lanceolate ſegments, erect after flowering, permanent, accompanied at the baſe by two, or more, imbricated ſcales. *Cor.* of one petal, wheel-ſhaped, in five very deep, linear-lanceolate, equal ſegments, nearly as long as the calyx, each of them bearded at the baſe. Nectary of five ſcales, below the germen, ſometimes combined. *Stam.* Filaments five, inſerted into the receptacle, linear, hairy, ſhorter than the corolla ; anthers vertical, oblong, diſtinct. *Piſt.* Germen ſuperior, roundiſh ; ſtyle ſimple, cylindrical, about as long as the ſtamens ; ſtigma obtuſe, crenate. *Peric.* Capſule oblong, with five furrows, five valves, and five cells, the partitions longitudinal, from the centre of each valve. *Seeds* ſeveral, ſmall, erect, inſerted into the angles of the ſhort central column.

Eſſ. Ch. Calyx in five deep ſegments, permanent, coloured, with two or more imbricated ſcales at the baſe. Corolla wheel-ſhaped, the length of the calyx ; ſegments bearded at the baſe. Stamens inſerted into the receptacle. Anthers unconnected. Nectary of five ſcales at the baſe of the germen. Capſule of five valves and five cells, the partitions from the middle of each valve.

This genus conſiſts of ſmall ſhrubs, with ſquarroſe, half-ſheathing *leaves*, no annular ſcars remaining on the denudated *branches*. *Flowers* terminal, either ſpiked or ſolitary, erect. *Receptacles* from the bottom of the capſule, ſhort. *Seeds* but few brought to maturity. *Brown*.

In habit, as well as in the general ſtructure of the fructification, nothing can be more abſolutely like our SPRENGELIA (ſee that article) ; inſomuch that no perſon could, at firſt ſight, form any idea of a difference between the two genera. (See alſo PONCELETIA.) The preſence of ſcales at the baſe of the *calyx*, ſo unlike it as to be more properly termed, with Mr. Brown, *bracteas*, but in that caſe not entitled to enter into the generic character ; the five nectariferous ſcales, wanting in *Sprengelia* ; and the bearded baſe of the ſegments of the *corolla* ; theſe are the diſtinctive marks of *Anderſonia*. Similar differences ſerve to ſubdivide the original genera of EPACRIS and STYPHELIA (ſee thoſe articles) ; but, as it ſeems to us, the genera thence derived are better defined, and accompanied with ſome diſtinctions in habit. In the preſent inſtance, with the greateſt deference to the acute and learned author of *Anderſonia*, we ſhould be inclined to reduce to one genus, under one eſſential character, plants ſo ſtrikingly alike, and ſo different from all others. *Genus dabit characterem*. One thing is certain, that we are in no danger of being ſuſpected of wiſhing, by this means, to get rid of the name *Anderſonia*, though *Sprengelia*, having been long previouſly eſtabliſhed, muſt be preferred to it. Its character indeed muſt be reformed, becauſe we were originally acquainted with but one ſpecies, the only one, it ſeems, whoſe anthers are connected. Such is the caſe with ſome ſpecies of *Gentiana*, but not with all. The following are Mr. Brown's ſix ſpecies of *Anderſonia*, ranged in two ſections.

Sect. 1. *Flowers with two ſcales, ſpiked.*

1. A. *ſprengelioides*. Spreading-leaved Anderſonia. Br. n. 1. Ait. n. 1.—Leaves ſpreading ; with a flat point. Flowers ſpiked.—Found by Mr. Menzies, at King George's ſound, on the ſouth-weſt coaſt of New Holland. Sent to Kew, by Mr. Good, in 1803. It is ſaid to flower moſt part of the year, being treated as a green-houſe plant. We received ſpecimens from Meſſrs. Lee and Kennedy's green-houſe in 1814, but this little ſhrub is far from being generally cultivated, nor has it yet been figured. The *ſtem* is a foot or more in height, determinately branched, round, rigid, ſmooth, all the *branches* covered with numerous, rigid, glaucous, ſeſſile, ſmooth, ovate, ſpinous-pointed, entire *leaves* ; roughiſh at the edges ; claſping the ſtem at their baſe ; each about a quarter of an inch long, permanent. *Flowers* pale roſe-coloured, ſcentleſs, in denſe, ſhort, leafy, terminal, upright *ſpikes*, not ſeparately ſtalked, or racemoſe, as in *Sprengelia incarnata*, but otherwiſe very nearly reſembling, in ſize and colour, the elegant bloſſoms of that plant.

2. A. *parvifolia*. Small-leaved Anderſonia. Br. n. 2.—" Leaves cloſe-preſſed ; with a triangular point."—Diſcovered by Mr. Brown, on the ſouthern coaſt of New Holland. We have not ſeen this ſpecies. The ſpinous point of

each *leaf* is ſomewhat triangular in the former, though with an obtuſe keel.

Sect. 2. *Flowers with many ſcales, ſolitary at the ends of ſmall branches.*

3. A. *cærulea.* Blue Anderſonia. Br. n. 3.—" Leaves moderately ſpreading; the young ones, as well as the calyx, externally downy."—Found by Mr. Brown, in the ſame part of New Holland as the laſt.

4. A. *ſquarroſa.* Squarroſe Anderſonia. Br. n. 4.—" Leaves prominent, divaricated and recurved, ſmooth; naked at the edges. Calyx and ſtyle ſmooth. Stem erect."—Native of the ſame country, where it was gathered by Mr. Brown. We have not ſeen this, nor either of the two preceding.

5. A. *depreſſa.* Procumbent Anderſonia. Br. n. 5. —Leaves prominent, divaricated, twiſted and recurved, downy; fringed at the edges. Calyx ſmooth. Style hairy in the middle. Stem depreſſed.—Gathered at King George's ſound, on the ſouth-weſt coaſt of New Holland, by Mr. Archibald Menzies, to whom we are obliged for ſpecimens. Mr. Brown alſo met with this ſpecies in the ſame country. The *root* is long and tapering. *Stem* hardly a ſpan long, much branched, for the moſt part in an alternate manner, thickly covered with imbricated, ſpreading, rigid, minutely pungent, lanceolate, variouſly twiſted and projecting *leaves;* ſmooth and ſomewhat glaucous on both ſides; dilated at the lower part, where eſpecially the edges are fringed. *Flowers* larger than in the firſt ſpecies, ſeſſile at the ends of the little lateral leafy branches, ſolitary, apparently fleſh-coloured. *Corolla* denſely clothed internally with long white hairs. *Style* juſt perceptibly hairy about the middle.

6. A. *micrantha.* Small-flowered Anderſonia. Br. n. 6. —" Leaves cloſe-preſſed. Style downy below the middle." —Found in the ſame part of New Holland as the reſt, by Mr. Brown. We have ſeen no ſpecimen.

ANDERTON, in *Geography*, a townſhip of Ohio, in the county of Hamilton, having 1358 inhabitants.—Alſo, a townſhip of Eaſt Tenneſſee, having 3959 inhabitants, of whom 260 are ſlaves.

ANDOVER, 2d article, l. 3, *r.* 3164; 3d article, l. 2, *r.* 1259; 4th article, l. 3, *r.* 957.

ANDOVER, *Eaſt*, a townſhip of Maine, in the county of Oxford, having 264 inhabitants.

ANDRÆA, in *Botany*, a very curious and diſtinct genus of Moſſes, is thus named by Ehrhart, in honour of his friend JOHN GERHARD REINHARD ANDREÆ. (See that article.) This genus was intended to have been inſerted by its author into the *Supplementum* of Linnæus, with the printing of which he was entruſted. (See LINNÆUS, or VON LINNE', CHARLES.) Such was the caſe with many others, belonging to the ſame natural order, and now well-eſtabliſhed, though the younger Linnæus then forbad their admiſſion into his book. Ehrhart called it *Andreæa*, but the above orthography is juſtified by many ſimilar examples among learned botaniſts.—Ehrh. Hannov. Mag. for 1778, 1601. Bieträge v. 1. 15 and 180. Hedw. Sp. Muſc. 47. Turn. Muſc. Hib. 13. Sm. Fl. Brit. 1178. Comp. ed. 3. 153. Hooker Tr. of Linn. Soc. v. 10. 381. Muſc. Brit. 1. t. 1. —Claſs and order, *Cryptogamia Muſci*. Nat. Ord. *Muſci*.

Gen. Ch. Male, terminal, bud-like. *Anth.* three to ſeven, nearly cylindrical, ſomewhat ſtalked, interſperſed with numerous, jointed, ſucculent threads, ſwelling upwards, taller than themſelves.

Female, terminal, ſeſſile. *Sheath* of ſeveral imbricated concave ſcales, ſhorter than the *fruit-ſtalk*, which is cylindrical, ſcarcely longer than the capſule, tumid at its baſe. *Peric.* Capſule on a turbinate fleſhy baſe, ovate or cylindrical, ſomewhat quadrangular, of four equal oblong valves, ſeparating longitudinally, cohering at their points, under the permanent lid: column cylindrical, about as long as the valves: lid minute, conical, permanent, confining the points of the valves. *Veil* membranous, pellucid, bell-ſhaped, torn irregularly from its baſe, and finally turned to one ſide, crowned with the ſlightly prominent ſtyle. *Seeds* minute, ſpherical, brown.

Eſſ. Ch. Capſule of four valves, cohering at the ſummit, crowned by the permanent lid. Veil irregularly torn.

Ehrhart firſt removed this genus from *Jungermannia*, with which it had been confounded, and properly referred it to the order of *Muſci*. But he miſtook, as he well might, the valves of the *capſule* for its *fringe* or *teeth;* an error firſt corrected by Mr. W. Hooker, who, in the Tranſ. of the Linn. Soc., has firſt given a juſt and clear view of the ſubject. In his *Muſcologia Britannica* the ſame author remarks, that the ſuppoſed *fruit-ſtalk*, as he himſelf had heretofore called it, is merely an elongated *receptacle*, bearing ſome abortive *piſtils*. This is certainly true, but we conceive it nevertheleſs to be analogous to the more extended *fruit-ſtalk* of the generality of Moſſes, truly wanting in *Sphagnum*. All the known ſpecies of *Andræa* are Britiſh, and amount to four.

1. A. *alpina.* Chocolate Alpine Andræa. Hedw. Sp. Muſc. 49. Fl. Brit. n. 2. Engl. Bot. t. 1278. Turn. Muſc. Hib. 13. Hook. Tr. of Linn. Soc. v. 10. 388. t. 31. f. 1. Muſc. Brit. n. 1. t. 8. (A. petrophila; Ehrh. Beitr. v. 1. 192. Crypt. 67. Roth Germ. v. 3. 359. Jungermannia alpina; Linn. Sp. Pl. 1601. Fl. Dan. t. 1002. f. 1. Lichenaſtrum alpinum atro-rubens teres, calycibus ſquamoſis; Dill. Muſc. 506. t. 73. (not 83.) f. 39.)—Stems branched. Leaves obovate, obtuſe with a ſmall point, concave, ribleſs, imbricated every way.—Found in the crevices of alpine rocks, in Ireland, Wales, and Scotland, but, according to Mr. Hooker, not common. Ehrhart gathered it likewiſe in Sweden and Germany. The numerous *ſtems* form little denſe tufts, uſually of a very dark chocolate brown, but varying ſomewhat in hue, as well as in denſity. The minute *leaves* are concave, ſtraight, neither keeled nor falcate, nor turned to one ſide. *Capſule* elliptic-oblong, on a paler baſe, raiſed on its white fleſhy *fruit-ſtalk* a little above the numerous ſcales of the *ſheath*.

2. A. *rupeſtris.* Duſky Rock Andræa. Hedw. Sp. Muſc. 47. t. 7. f. 2. Engl. Bot. t. 1277. Hook. Tr. of Linn. Soc. v. 10. 391. t. 31. f. 2. Muſc. Brit. n. 2. t. 8. (Jungermannia rupeſtris; Linn. Sp. Pl. 1601, excluding the ſynonym of Dillenius.)—Stems branched. Leaves ovate, taper-pointed, ribleſs; upper ones falcate.—On rocky mountains throughout Great Britain. *Hooker.* Smaller and greener than the former, with which it agrees in the want of a mid-rib; but differs from it in the tapering, more or leſs curved, *leaves*. All botaniſts confounded this ſpecies with the following, till Dr. Roth diſtinguiſhed them chiefly by the preſence of the mid-rib in that ſpecies.

3. A. *Rothii.* Black Mountain Andræa. Mohr Crypt. Germ. 385. t. 11. f. 7—9. Hooker Tr. of Linn. Soc. v. 10. 393. t. 31. f. 3. Muſc. Brit. n. 3. t. 8. Engl. Bot. t. 2162. (A. rupeſtris; Fl. Brit. n. 1. Turn. Muſc. Hib. 14. Lichenaſtrum alpinum nigricans, foliis capillaceis reflexis; Dill. Muſc. 507. t. 73. (not 83.) f. 40.)—Stems ſlightly branched. Leaves lanceolate, keeled, curved to one ſide, ſingle-ribbed. Scales of the ſheath without a rib. —This, according to Mr. Hooker, is common on alpine rocks. We have often gathered it in dry expoſed ſituations, in Weſtmoreland, as well as Scotland, where it compoſes little denſe tufts, of a very dark or blackiſh hue. The ſame

is alſo found in Germany, and doubtleſs in other mountainous parts of Europe. Like both the foregoing, it bears *capſules* in the ſpring and ſummer. The preſence of a ſtrong rib in the *leaves* clearly diſtinguiſhes it from thoſe ſpecies, though the paler, blunt, and more oblong, ſcales of the *ſheath* have no rib. The *ſtems*, generally almoſt ſimple, are occaſionally much branched, as in *Engl. Bot.*

4. A. *nivalis*. Tall Slender Andræa. Hook. Tr. of Linn. Soc. v. 10. 395. t. 31. f. 4. Muſc. Brit. n. 4. t. 8. Engl. Bot. t. 2334. (not 2507.)—Stems branched. Leaves looſely imbricated, lanceolate, ſingle-ribbed, curved towards one ſide. Scales of the ſheath ſimilar.—Gathered by Mr. Hooker and Mr. Borrer, on rocks upon the higheſt ſummit of the Scottiſh mountain Ben Nevis, at the eaſtern end. It is, like all the reſt, perennial, bearing *capſules* in ſummer.

This is by far the talleſt *Andræa* known, being three inches high, or more, forming rather lax olive-brown tufts, tinged with a chocolate-colour, of which laſt hue are the *capſules*, whoſe ſubſtance is ſtrongly reticulated. The ſcales of the *ſheath* being of the ſame lanceolate figure, furniſhed with a mid-rib, as the *leaves*, clearly defines the ſpecies. Mr. Hooker has obſerved this moſs on the granite rocks of the moſt elevated of the Swiſs alps, retaining all the characters of the Scottiſh ſpecimens.

ANDREW, *Knights of*, &c. l. 12, *r.* Favin; col. 2, l. 28, *r.* commiſſioner; l. 29, *r.* little for litter.

ANDROMACHA, l. 1, *r.* Zygæna.

ANDRONICUS II., PALÆOLOGUS, in *Biography*, ſon of Michael Palæologus, ſucceeded to the Greek empire in 1283. He is characterized as learned and virtuous, but feeble in his conduct, and abjectly ſuperſtitious. His old age was embittered by blindneſs and neglect; and having aſſumed the name of Father Antony, he cloſed his unquiet life four years after his abdication, A.D. 1332, aged 74.

ANDRONICUS III., *Palæologus*, the younger, was the ſon of Michael, eldeſt ſon and colleague of the elder Andronicus. With his grandfather he was a favourite, on account of his wit and beauty; and he was thus led into habits of intemperance and debauchery, which involved him in difficulties and diſgrace. Having compelled his grandfather to abdicate in 1328, he reigned alone, and contended againſt the Bulgarians and Turks, with the latter of whom he ſigned an ignominious treaty, relinquiſhing to them all the places which they had taken in Aſia. At length, exhauſted by his vices, he died in his 45th year, A.D. 1341. Gibbon.

ANDROPHYLAX, in *Botany*. See WENDLANDIA.

ANEILEMA, from α, *without*, and ειλημα, *an involucrum*, this genus being ſeparated by Mr. Brown, Prodr. Nov. Holl. v. 1. 270, from COMMELINA, (ſee that article,) on account of the want of the large folded *involucrum*, or rather *bractea*, which in *Commelina* contains a conſiderable number of flowers; whereas in *Aneilema* the infloreſcence is ſcattered, ſomewhat panicled. The difference between the two reſides therefore in this part of the plant, and not ſtrictly in the fructification.

The known ſpecies of *Commelina* referred by Mr. Brown to *Aneilema* are, *vaginata*, *nudiflora*, and *ſpirata* of Linnæus, *medica* of Loureiro, Vahl Enum. v. 2. 175. n. 28; and *gigantea* of Vahl, n. 34, found by Mr. Brown, in the tropical part of New Holland. To theſe the author adds nine new ſpecies, found by himſelf, either in New South Wales, or the warmer parts of New Holland, one of them only being deſcribed from the collection made in the latter country by ſir Joſeph Banks. Some have ſmooth *filaments*, others bearded ones. It is ſuſpected that *Pollia* of Thunberg may not be generically diſtinct from theſe; but the *fruit* in our ſpecimen is evidently a *berry*, according to Thunberg's deſcription, and remarkable, even after having been dried more than thirty years, for its bright blue colour. (See POLLIA.) The habit and infloreſcence are indeed, as Mr. Brown obſerves, ſimilar to his *Aneilema*. Whether *Cartonema* of this author be diſtinct, we do not preſume to judge, having ſeen no ſpecimen. In the regularity of its *flowers*, and the equality of their *ſtamens*, it differs from *Commelina* and *Aneilema*, and agrees with *Tradeſcantia*, but differs from the latter in ſeveral particulars pointed out by Mr. Brown, beſides its ſpiked infloreſcence.

ANEMIA, a genus of ferns, ſeparated from OSMUNDA, (ſee that article,) by Dr. Swartz, and thus named from ανειμων, *naked*, or *not covered*; becauſe its capſules are deſtitute of all covering or *involucrum* whatever. — Swartz Syn. Fil. 155. Willd. Sp. Pl. v. 5. 89. Ait. Hort. Kew. v. 5. 498.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, ſect. 2, *ſpuriè gyratæ*.

Eſſ. Ch. Capſules ſomewhat turbinate, concentrically ſtriated at the top, burſting laterally, ſeſſile on one ſide of a compound linear receptacle. Involucrum none.

The habit of this genus is different from *Oſmunda*, and extremely remarkable, on account of its compound ſpikes, always perfectly diſtinct from the leafy part of the frond, and generally ſituated in pairs, on long ſtalks, on the common ſtalk at the baſe of that leafy part. Such at leaſt is the caſe with the whole of the firſt ſection; in the ſecond, the fruit-bearing ſtalks are radical and ſolitary. It is cloſely related to BOTRYCHIUM, to be deſcribed hereafter; but that has globular capſules of two diſtinct valves, neither ſtriated nor annulated. Their receptacles, indeed, exactly agree; and the ſtriæ are ſo obſcure in *Anemia*, that we are much inclined to unite it with *Botrychium*.

Sect. 1. *Panicles of ſpikes in pairs, ſtalked, at the baſe of the leaf.*

1. A. *phyllitidis*. Broad-leaved Anemia. Swartz n. 1. Willd. n. 1. (Oſmunda phyllitidis; Linn. Sp. Pl. 1520. O. lanceolata et ſubtilitèr ſerrata; Plum. Fil. 133. t. 156. O. racemifera, phyllitidis folio vix crenato; Petiv. Fil. n. 163. t. 8. f. 15.)—Frond pinnate; leaflets ovato-lanceolate, pointed, finely ſerrated, ſmooth as well as the common ſtalk. — Native of South America and the Weſt Indies. Brought from Braſil, by the late ſir George Leonard Staunton, in 1793. A very handſome fern, eighteen inches or two feet high, its tufted *root* producing ſeveral upright *fronds*. Each of theſe conſiſts of a ſmooth, rather ſlender, ſtraight *common ſtalk*, bearing at the top an upright ſimply pinnate *leaf*, of from four to eight pair of ſmooth, veiny, bluntly ſerrated, ſomewhat ſtalked, *leaflets*, beſides an odd one; their length from two to four inches. Cloſe to the baſe of this pinnate leaf, on the upper ſide, or front, are ſtationed a pair of equal, long-ſtalked, triply pinnate *ſpikes*, of minute, pale, very numerous, *capſules*, ranged in double rows along one ſide of the linear compound ſtalk, or *receptacle*, the *common ſtalk* of the whole being ſomewhat hairy. Theſe compound *ſpikes* always riſe a little above the point of the terminal *leaflet*.

2. A. *hirta*. Rough-leaved Anemia. Swartz n. 2. Willd. n. 2. (Oſmunda hirta; Linn. Sp. Pl. 1520. O. hirſuta, lonchitidis folio; Plum. Fil. 134. t. 157. O. ſpicis geminis; Petiv. Fil. n. 164. t. 14. f. 5. Lonchitis hirſuta florida; Plum. Amer. 18. t. 26.)—Frond pinnate; leaflets oblong-lanceolate, hairy, finely ſerrated, and ſomewhat cut; very unequal at the baſe. Stalks all hairy.—Native of the Weſt Indies. Smaller in every part than the laſt, being ſcarcely above a foot high; and diſtinguiſhed alſo by the great dilatation of the upper ſide of each *leaflet*, at its baſe. The upper ones run into a ſort of pinnatifid elongated

point. Both ſides of the *leaflets* are hairy in our ſpecimen, as Plumier deſcribes them; though Willdenow and Swartz call them ſmooth. The denſe, twin, hairy, twice-compound *ſpikes* uſually riſe a little above the *leaf.*

3. A. *blechnoides.* Many-leaved Anemia. — Frond pinnate, longer than the ſpikes; leaflets numerous, parallel, oblong, obtuſe, ſerrated, ſmooth; rectangular on their upper ſide at the baſe.—Brought from Braſil, by the late ſir George Leonard Staunton, from whom we received ſpecimens in 1793. We cannot find any figure or deſcription of this ſpecies, though a very remarkable one. The *common ſtalk,* in its naked part, is ſmooth. The *leaflets* are about forty pair, parallel and crowded; the lowermoſt an inch and a quarter long, and oppoſite; upper ones gradually ſmaller and alternate; all together forming a linear-oblong *frond,* eighteen inches in length, with a ſlightly hairy *common rib,* which, by a hairy bud at the ſummit, ſeems as if it would take root there. *Spikes* lax, twice compound, meaſuring with their ſlightly hairy ſtalks, about two-thirds of the length of the leafy part. Their ſubdiviſions are extremely narrow.

4. A. *oblongifolia.* Oblong-leaved Anemia. Swartz n. 3. Willd. n. 3. (Oſmunda oblongifolia; Cavan. Ic. v. 6. 69. t. 592. f. 2.)—Frond pinnate; leaflets obovate, obtuſe, dilated at the upper angle of their baſe, fringed. Stalks ſmooth.—Gathered by Louis Née at Panama. Several ſtalked *fronds,* hardly ſix inches high, ſpring from the hairy crown of the tufted *root;* ſome of them barren. The *leaflets* of each are about ten pair, rather alternate than oppoſite, half an inch long, rounded at their extremity, as well as at the dilated angle. Both *ſpikes* riſe much higher than the leafy part, on ſlender *ſtalks,* and appear to be rather denſe. We know this and the following from the work of Cavanilles only.

5. A. *humilis.* Dwarf Anemia. Swartz n. 4. Willd. n. 4. (Oſmunda humilis; Cavan. Ic. v. 6. 69. t. 592. f. 3.)—Frond pinnate; leaflets obovate-wedgeſhaped, abrupt; crenate at the extremity; hairy beneath. Common ſtalk hairy.—Native of Tabago, an iſland on the Mexican coaſt, near Panama. Of more humble ſtature than the laſt, and further diſtinguiſhed by the wedge-like ſhape of its *leaflets,* which are fewer, rather larger, crenate, and not fringed. The *ſpikes* are much ſmaller than in the foregoing, raiſed high upon ſlender ſmooth ſtalks.

6. A. *filiformis.* Slender Hoary Anemia. Swartz n. 5. Willd. n. 5. (Oſmunda filiformis; Lamarck Dict. v. 4. 652.)—Frond pinnate, downy and hoary; leaflets oblong-wedgeſhaped, obtuſe; jagged at the extremity. Common ſtalk hairy. — Gathered in South America by Mr. John Fraſer, who is reported to have communicated a ſpecimen to Lamarck. We have never ſeen this plant. It is deſcribed as eight or nine inches high, beſprinkled in every part with white or hoary hairs. *Leaflets* ſtriated very copiouſly and conſpicuouſly beneath. *Spikes* ſlender, compound, on capillary ſtalks, riſing high above the leaf. *Savigny in Lamarck.*

7. A. *tenella.* Delicate Anemia. Swartz n. 6. Willd. n. 6. (Oſmunda tenella; Cavan. Ic. v. 6. 69. t. 592. f. 1.)—Frond pinnate; leaflets lanceolate, deeply pinnatifid, with linear-awlſhaped fringed ſegments. Common ſtalk ſmooth. — Found by Louis Née, on the trunks of trees in Quito, eſpecially on mount St. Antonio. A ſlender delicate fern, about ſix inches high, whoſe *leaflets* have many fine, acute, partly oppoſite, ſegments. The *ſpikes* are ſomewhat taller than the leaf.

8. A. *hirſuta.* Hairy Anemia. Swartz n. 7. Willd. n. 7. Ait. n. 1. (Oſmunda hirſuta; Linn. Sp. Pl. 1520. O. mollitèr hirſuta, et profundè laciniata; Plum. Fil. 139. t. 162. O. ſpicis geminis villoſa; Petiv. Fil. n. 165. t. 8. f. 16. Lunaria elatior, matricariæ folio, ſpicâ duplici; Sloane Jam. v. 1. 71. t. 25. f. 6.)— Frond pinnate, hairy; leaflets deeply pinnatifid; ſegments tapering downwards; obtuſe and jagged at the extremity.—Native of the Weſt Indies, growing on rocks. About a foot high, hairy all over, except the *ſpikes* and their *ſtalks.* Several of the *fronds* are barren, which we preſume is the caſe with moſt of the neighbouring ſpecies. Each *leaflet* is about an inch and a half long, with many narrow-wedgeſhaped, deep, ſtriated ſegments, hairy on both ſides, and ſharply notched. Each *ſpike,* near three inches long, is doubly pinnate, with flat cloſe ſegments, broader than in moſt of the genus, and the *capſules* are repreſented by Plumier as marginal, and blackiſh, with much more intermediate ſpace than uſual on each ſegment. Willdenow adverts to this circumſtance, and the hairineſs of the common ſtalk, as indicating a ſpecific difference between Plumier's plant and what he had examined. Specimens from the Weſt Indies, and from Dr. Swartz, certainly agree with Sloane's plant, and like that, have a ſmooth common ſtalk; but having ſeen none anſwering to Plumier's, we decline attempting a ſpecific definition, from his figure. He is, however, the original authority for *Anemia,* or *Oſmunda, hirſuta,* and Petiver copies him; but Sloane's ſynonym muſt be referred to the new ſpecies, if ſuch be eſtabliſhed.

9. A. *deltoidea.* Triangular Anemia. Swartz n. 8. Willd. n. 8. (Oſmunda deltoidea; Cavan. Ic. v. 6. 70. t. 593. f. 1.) — Frond triangular, pinnate; leaflets deeply pinnatifid, with rounded, crenate, crowded ſegments; glaucous above; hairy beneath. Common ſtalk hairy at the upper part.—Found on rocks in the plain of Buenos Ayres, by Louis Née. A ſpan high, with broader and rounder ſegments of the *leaflets* than any of the foregoing. The diviſions of the common *receptacle* of the *ſpike* alſo are broader, and more rounded, than uſual, approaching to thoſe in Plumier's plate of the laſt.

10. A. *villoſa.* Shaggy Anemia. Willd. n. 9. — "Frond doubly pinnatifid, oblong, ſhaggy on both ſides; ſegments roundiſh-ovate, obtuſe, entire; the lower ones obſcurely three-lobed. Common ſtalk ſhaggy."—Gathered by Humboldt and Bonpland in South America. *Common ſtalk* ſix inches high, or more, roundiſh, clothed with ſhort ruſty wool. *Frond* three or four inches long, covered with ruſty hairs; the upper ſegments roundiſh-ovate, very blunt, and entire; lower with two or three ſlight lobes; *common rib* denſely ſhaggy. *Spikes* triply compound, denſe, taller than the leaf, with hairy ribs and ſtalks. Apparently akin to the following, but the outline of the *frond* is oblong, not triangular, and the *rib* ſtraight, not zigzag. *Willdenow.*

11. A. *flexuoſa.* Zigzag Anemia. Swartz n. 9. Willd. n. 10. (Oſmunda flexuoſa; Lamarck Dict. v. 4. 652.)— "Frond doubly pinnatifid, triangular, downy; ſegments oblong, obtuſe, nearly entire; common rib zigzag. Common ſtalk downy." — Suppoſed to be a native of Peru, but for this there is no direct authority. We have ſeen no ſpecimen. Savigny in Lamarck deſcribes this ſpecies as related, in many reſpects, to *A. hirſuta,* n. 8, but the principal *leaflets* are ſimply pinnatifid. The *ſtalks* are about a foot high, ſemi-cylindrical, channelled, beſprinkled with rather rigid, tawny hairs. *Fronds* from five to ſeven inches long, with narrow, deeply pinnatifid, *leaflets;* their ſegments oval, or ſomewhat oblong, nearly oppoſite, very blunt, decurrent, ribbed, entire, or ſlightly notched; paler beneath.

The ſummit of each *frond* is obtuſe, and ſimply pinnatifid. *Spikes* triply and minutely compound, with linear ſhort ſegments; their *ſtalks* hiſpid.

12. A. *tomentoſa.* Downy Anemia. Swartz n. 10. Willd. n. 11. (Oſmunda tomentoſa; Lamarck Dict. v. 4. 652.)—Frond doubly pinnate, oblong, clothed with tawny down; leaflets creſcent-ſhaped, entire; the lower ones bluntly pinnatifid. Common ſtalk downy.—Found by Commerſon at Buenos Ayres. A pretty ſpecies, ſeven or eight inches high, exhaling the ſmell of myrrh, and covered all over with fine, long, cottony, tawny down. The *common ſtalk* is rather ſtout, twice the length of the leafy part, which is about two inches broad. *Spikes* compound, on ſlender decurrent *ſtalks*. *Savigny.*

13. A. *fulva.* Tawny Branching Anemia. Swartz n. 11. Willd. n. 12. (Oſmunda fulva; Cavan. Ic. v. 6. 70. t. 593. f. 2.)—Frond doubly pinnate, triangular, ſomewhat downy; leaflets elliptic-oblong, bluntly pinnatifid, or ſerrated. Spikelets partly whorled. All the ſtalks hairy.—Gathered by Louis Née, on the hill called *Pan de Azucar*, or the Sugar-loaf, thirty-two miles from Monte Video. Above a foot high, with very hairy *ſtalks*, and a broad *frond*, doubly pinnate throughout, except at the very top. *Leaflets* three-quarters of an inch long, and one-third as broad, uniform, ſomewhat decurrent. The *ſpikes* ſeem to be ſimply compound, their *branches* horizontal, linear, deeply notched, many of them in whorls of three or four together; their *common ſtalks* and *ribs* hairy, ſending off one or three lateral branches, which we have ſeen in no other ſpecies.

14. A. *adiantifolia.* Maiden-hair-leaved Anemia. Swartz n. 13. Willd. n. 13. Ait. n. 2. (Oſmunda adiantifolia; Linn. Sp. Pl. 1520. O. filiculæ folio major; Plum. Fil. 135. t. 158. O. adianti nigri facie; Petiv. Fil. n. 167. t. 9. f. 1. Adiantum ſaxoſum floridum; Plum. Amer. 29. t. 43.)

β. Willd. (A. aſplenifolia; Swartz n. 10. Oſmunda aſplenifolia; Savigny in Lamarck Dict. v. 4. 652.)

Frond doubly or triply pinnate, triangular; leaflets obovate, ſharply toothed at the end, partly notched, hairy, as well as their common rib. Common ſtalk nearly ſmooth. Spikelets digitate.—Native of the Weſt Indies, particularly of Hiſpaniola, in dry rocky or ſtony places. Its large handſome, ſhining, ſtriated *frond* bears conſiderable reſemblance to our common *Aſplenium Adiantum-nigrum*, to which, and not to the real genus *Adiantum*, the ſpecific name alludes. The naked *ſtalk* is often a foot high; the length of the leafy part almoſt as much. The copious *leaflets* meaſure about half an inch, and are ſtrongly ſtriated; convex above; paler, and rather moſt hairy, beneath; all their ſtalks hairy. *Spikes* ſomewhat panicled; their ultimate diviſions radiating, or finger-like, linear, flat. *Capſules* of a light ſhining brown.

Sir Joſeph Banks has favoured us with ſeveral ſpecimens of a variety of this fern, gathered at Campechy by Houſtoun, which differs chiefly in being not above a ſpan high, with a leſs compound *frond*, and having ſometimes, from the ſame *root*, much narrower, almoſt linear, *leaflets*. The *common ſtalks* are alſo rather more hairy, and the *ſpikes* more compact. It is nevertheleſs an evident variety, and probably the β of Willdenow, to the characters of which it anſwers.

Sect. 2. *Panicles of ſpikes on radical ſtalks.*

15. A. *bipinnata.* Great Radical Anemia. Swartz n. 14. Willd. n. 14. (Oſmunda bipinnata; Linn. Sp. Pl. 1521. O. latis crenis inciſa; Plum. Fil. 133. t. 155.)—Frond oblong, doubly pinnate; leaflets elliptical, acute, entire. Spikes on radical ſtalks, doubly pinnate; their ultimate ſegments denſely crowded.—Gathered by Plumier in a dry ſtony tract of land in Hiſpaniola. We find no good authority for its having ever been found elſewhere, nor by any other botaniſt. Linnæus adopted this ſpecies entirely from Plumier, between whoſe figure and deſcription there is a ſtrange contrariety. The plate, drawn and engraved by himſelf, evidently exhibits the barren *fronds* as doubly pinnate, each of the numerous primary diviſions being compoſed of a rather ſmaller number, (about thirty,) of oval or ovate, ſomewhat decurrent *leaflets*, except a few of the uppermoſt, which run into a terminal ſerrated point. His deſcription ſays, "the tufted *root* bears ſeven or eight *ribs*, about a foot and a half long, garniſhed nearly throughout their whole length, with longiſh, narrow, pointed, yellowiſh-green *leaves*, but ſlightly furrowed, and all cut into rather broad, and ſomewhat pointed notches." As the author is known to have loſt many of his ſpecimens, we can only ſuppoſe this deſcription was made from too ſlight a view of his own drawing, without a re-examination of the plant, which he ſeems to have gathered but once. A few taller and more ſlender *ſtalks*, ſpringing alſo from the root, and doubly pinnate in the firſt inſtance, bear innumerable *capſules* crowded into denſe maſſes, which we preſume to be compoſed of narrow compound ſegments, like the other ſpecies. At leaſt the analogy of *A. filiculifolia* hereafter deſcribed juſtifies this ſuppoſition.

16. A. *aurita.* Auricled Radical Anemia. Swartz n. 15. Willd. n. 15. (Oſmunda aurita; Swartz Ind. Occ. 1578.)—"Frond pinnate; upper leaflets ſimple, ovate, obtuſe, finely toothed, unequally wedge-ſhaped at the baſe; lower ternate. Spikes compound, on radical ſtalks; ſpikelets digitate."—Found by Dr. Swartz, on the ſides of lime-ſtone rocks, in the interior part of Jamaica. *Roots* creeping, ſlender. *Common ſtalks* ſeveral, crowded, about a ſpan high, ſlender, moſt hairy and ſcaly at the baſe; downy and roughiſh upwards. Each bears an erect *frond*, ſix inches in length; doubly pinnate in its lower part, the *leaflets* ſmall, roundiſh, the terminal ones larger and rhomboidal: the upper part is ſimply pinnate; *leaflets* oblong, oblique at the back, dilated on the upper edge, at the baſe, into an obtuſe angle: all the *leaflets* are coriaceous, ſmooth and ſhining, ſlightly convex, ſtreaked with radiating veins; finely crenate at the margin; more opaque beneath. *Cluſters*, (or rather *ſpikes*,) compound, on radical *ſtalks*, cloſe to, and reſembling, thoſe of the barren *fronds*; their branches compound, nearly oppoſite, ſpreading; their ultimate ſegments digitate, lanceolate, acute, bearing on the upper ſide roundiſh-ovate bivalve *capſules*, with concentric ſtreaks on their apex, and interſperſed with minute ſcales or hairs. *Swartz.* By this deſcription, the genus is put out of all doubt.

17. A. *verticillata.* Whorled Radical Anemia. Swartz n. 16. Willd. n. 16. (Oſmunda verticillata; Linn. Sp. Pl. 1520. Plum. Fil. 137. t. 160. Petiv. Fil. n. 171. t. 12. f. 4.)—Frond three-branched, triply pinnate; leaflets elliptic-oblong, acute, ſerrated; terminal ones lanceolate, pointed. Spikes in whorled branches, on radical ſtalks.—Gathered once only, in the foreſts of Hiſpaniola, by Plumier, nor does it appear that any other botaniſt has even ſeen this ſpecies, his work having been Linnæus's ſole authority. The genus, therefore, can only be preſumed from analogy, but we think this analogy as fair as in any ſimilar inſtance. The tufted *root* ſends up many barren *fronds*, which are ſupported by long rough *ſtalks*, and three-cleft in the firſt inſtance, then doubly pinnate; their common outline pentagonal, a foot in diameter; their *leaflets* uſually

near an inch long. The height of each *frond*, with its *ſtalk*, is about two feet. A few rather more ſlender *ſtalks*, from the root, bear each a long interrupted, whorled *ſpike*, with ſix or eight drooping, obtuſe, denſe, blackiſh *branches*, in every whorl, above an inch long, on capillary ſtalks, but how they are ſubdivided we have no information. Plumier compares them to little black caterpillars.

18. A. *filiculifolia*. Hemlock-leaved Radical Anemia. Swartz n. 17. Willd. n. 17. (Oſmunda filiculifolia; Linn. Sp. Pl. 1521. O. filiculæ folio altera; Plum. Fil. 138. t. 161. O. cicutæ folio; Petiv. Fil. n. 170. t. 9. f. 3.)—Frond three-branched, pinnate, pinnatifid; ſegments wedge-ſhaped, decurrent; notched at the extremity. Spikes panicled, on radical ſtalks.—Found but rarely by Plumier, in the foreſts of Hiſpaniola. A ſpecimen, without any indication from whence it came, is preſerved in the Linnæan herbarium, and referred to *Oſmunda* (*Anemia*) *bipinnata*, (ſee n. 15.) Linnæus appears to have had it when he wrote the firſt edition of Sp. Pl., but all he ſays of either of theſe ſpecies is entirely taken from Plumier, who is the primary authority for both. *A. filiculifolia* varies from five inches to above a foot in height. The *barren fronds* have ſlender, roughiſh, rather long, *ſtalks*, and are nearly pentagonal in their outline; having three principal branches, which are firſt pinnate, then more or leſs deeply pinnatifid and cut, always in a wedge-like manner; they are hairy on both ſides. The common *mid-rib* is winged. From the ſame tufted *root* grow one or more rather taller *ſtalks*, each bearing a triply-compound, ſlightly hairy, *panicle*, or compound *ſpike*, whoſe linear ultimate ſegments are laden, on one ſide, with rather large, and not very numerous, *capſules*, each having a very diſtinct, brown, ſhining, radiated top, below which is a lateral fiſſure. The engraving of Plumier gives no idea of the ſize or nature of theſe *capſules*, nor of their arrangement, ſo that we may ſuppoſe him equally incorrect with regard to our fifteenth or ſeventeenth ſpecies.

Dr. Swartz, Syn. Fil. 158, points out, as a probable ſpecies of this genus, *Filicaſtrum americanum minus, foliis ramoſis hirſutis*, Ammann in Comment. Petrop. v. 10. 295. t. 19. This was found by Dr. Houſtoun at Vera Cruz, and however unlike the figure may ſeem to Plumier's t. 161, our ſpecimen mentioned, and partly deſcribed, under the laſt ſpecies, ſerves to prove them, at leaſt in our opinion, one and the ſame plant; for it explains the inaccuracies of both figures, and is intermediate between the two in the ſtructure of the barren *frond*. We cannot doubt its being one of Houſtoun's ſpecimens. The panicled *infloreſcence* agrees with Ammann's figure, but the detail of that figure is no leſs incorrect than Plumier's, ſo that nothing preciſe can be gathered from either.

ANEMOMETER, col. 2, for IX. inſert VIII. No. 3.

ANEMONE, in *Botany*, has received ſo much improvement and illuſtration from the pen of profeſſor De Candolle, that our former article is by no means ſufficient to give a complete, or an accurate, idea of this genus. Linnæus indeed had but an imperfect acquaintance with its ſpecies, nor do all authors agree with him as to its generic limits. M. De Candolle however excludes HEPATICA only. (See that article hereafter.) His view of the ſubject cannot but prove inſtructive and intereſting.—De Cand. Syſt. v. 1. 188. Linn. Gen. 279. Schreb. 375. Willd. Sp. Pl. v. 2. 1272. Mart. Mill. Dict. v. 1. Sm. Fl. Brit. 580. Prodr. Fl. Græc. Sibth. v. 1. 374. Ait. Hort. Kew. v. 3. 336. Purſh 386. Juſſ. 232. Tourn. t. 147. Lamarck Illuſtr. t. 496. Gærtn. t. 74.—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Multiſiliquæ*, Linn. *Ranunculaceæ*, Juſſ. De Cand.

Gen. Ch. *Cal.* none, except a three-leaved, variouſly cut, involucrum. *Cor.* Petals from five to fifteen, ovate or oblong. *Stam.* Filaments numerous, capillary, not half the length of the corolla; anthers two-lobed, erect. *Piſt.* Germens numerous, collected into a head, ſingle-ſeeded; ſtyles tapering; ſtigmas blunt. *Peric.* none. *Recept.* globoſe or oblong, covered with ſmall excavations. *Seeds* numerous, crowded, roundiſh, pointed with the permanent ſtyle, which in ſome is lengthened out into a feathery tail.

Eſſ. Ch. Involucrum three-leaved, cut. Petals from five to fifteen. Seeds numerous, capitate.

This genus conſiſts of perennial herbs. *Roots* (or perhaps ſubterraneous *ſtems?*) either tuberous, or horizontally creeping, or ſimply fibrous. *Leaves* radical, ſtalked, ſimple (or compound), lobed or cut. *Flower-ſtalk* radical, bearing at the ſummit an *involucrum* of three, rarely but two, leaves, variouſly cut, but conformable in general to the proper foliage. From this *involucrum* proceeds uſually one or many ſimple, naked, ſingle-flowered *ſtalks;* ſome apparently cauleſcent ſpecies have one ſuch leafleſs *ſtalk*, and, beſides, a ſort of branch, bearing another *flower-ſtalk*, accompanied by a two-leaved *involucrum*. The *flowers* are inodorous, very variable, and readily become double.

The recent plants are acrid, and raiſe bliſters in the ſkin, if applied externally: internally they are poiſonous in ſome degree, though ſeveral have been preſcribed in chronical ophthalmia, and venereal caries of the bones.

The forty-five ſpecies, with which we are at preſent acquainted, inhabit paſtures, hills, woods or thickets, of temperate climates, principally in the northern hemiſphere; the *Pulſatillæ* are found on rough expoſed hilly fields; *Preonanthi* on the loftieſt mountains; *Pulſatilloideæ* at the Cape of Good Hope; *Anemonantheæ* in meadows, paſtures, or woods; *Anemonoſpermi* in North and South America and in Aſia; *Omalocarpi* in mountainous ſituations. There are two ſpecies from the Cape of Good Hope, four from South America, eleven from North America, ſeventeen are natives of Europe, three of the Levant, five of Siberia, two of Nepaul, and one of Japan. Four appear to be common to North America and Europe.

Anemone is a very natural genus, and De Candolle declares his opinion againſt ſubdividing it; firſt, becauſe the ſection *Preonanthus* has the habit and flower of the *Anemonantheæ*, with the feathery-tailed fruit of *Pulſatilla;* ſecondly, becauſe the fruit being furniſhed with ſuch an appendage, or deſtitute of it, is not to be conſidered eſſential in the preſent caſe, the ſame circumſtance proving of no avail in the genus *Clematis*, ſo nearly related to the preſent.

The following diviſions, founded on the whole habit as well as the fruit, prove extremely natural.

Sect. 1. *Pulſatilla.* Seeds terminating in long, bearded tails. Involucral leaves ſeſſile, deeply palmate, with linear lobes. Species 1—7.

2. *Preonanthus.* Seeds terminating in long bearded tails. Involucral leaves ſtalked, in three ſegments. Species 8.

3. *Pulſatilloides.* Seeds very hairy. Petals fifteen to twenty. Involucral leaves two or three, ſeſſile, cut at the ſummit. Species 9 and 10.

4. *Anemonanthea.* Seeds without tails, ovate. Partial flower-ſtalks ſolitary or in pairs, always leafleſs and ſingle-flowered. Involucral leaves ſtalked. Species 11—32.

5. *Anemonoſpermos.* Seeds without tails, rather compreſſed. Partial flower-ſtalks ſeveral; one of them leafleſs and ſingle-flowered; two or three others bearing a two-leaved partial involucrum. Species 33—40.

6. *Omalocarpus.* Seeds compreſſed flat, orbicular, or ſlightly oval, ſmooth, without tails. Partial flower-ſtalks numerous, umbellate, leafleſs, ſingle-flowered. Species 41—43.

† Species not ſufficiently known ; 44 and 45.

We have corrected ſome accidental numerical errors, and we take the liberty of uſing the Linnæan terminology, as to *calyx* or *corolla*, here as in *Aconitum*, &c. *Carpella*, a word uſed by our learned friend for partial fruits, ſeveral of which belong to one flower, as in *Uvaria*, *Unona*, &c., ſeems to us well expreſſed, in Engliſh at leaſt, by the plural, *fruits;* the ſingular, *fruit*, being always uſed when the pericarp is ſimple, or ſolitary. *Cariopſis* is uſed by Richard and De Candolle for the naked ſeed of Graſſes, as well as of *Ranunculaceæ*, of which we do not ſee the utility. A multiplication of terms, without abſolute neceſſity, is burthenſome to ſcience, and we rather wiſh the learned would labour to compreſs, inſtead of extending, the terminology of natural hiſtory.

Sect. 1. *Pulſatilla*. Bauh. Pin. 177. Tourn. t. 148.

Seeds terminating in long bearded tails. Involucral leaves ſeſſile, dilated at the baſe, divided upwards, in a palmate manner, into linear ſegments. Petals five or ſix. Glands, (abortive ſtamens,) in ſeveral ſpecies, on ſhort ſtalks, between the perfect ſtamens and petals. The radical leaves are moſtly divided in a pinnate manner, their ſegments many-cleft, with linear or wedge-ſhaped lobes. *Flowers* in general purple or crimſon.

1. A. *vernalis*. Parſley-leaved Spring Anemone. Linn. Sp. Pl. 759. Fl. Lapp. ed. 2. 189. De Cand. n. 1. Willd. n. 4. Ait. n. 3. Fl. Dan. t. 29. (A. n. 1147 ; Hall. Hiſt. v. 2. 61. t. 21. Pulſatilla altera alpina ; Dalech. Hiſt. 851. P. apii folio vernalis, fl. majore, et fl. minore ; Bauh. Pin. 177. Prodr. 94. " Helw. Pulſ. 63. t. 9.") — Leaves pinnate ; leaflets elliptic-wedgeſhaped, notched or three-cleft, nearly ſmooth. Flower erect. Involucrum very hairy. Petals ſix, ſtraight, elliptic-oblong. —Native of rocky paſtures on the loftieſt mountains of Switzerland, the Pyrenees, Germany, Sweden, and Norway, flowering among the melting ſnow in ſpring. The broad *leaflets*, with the beautifully ſilky *involucrum* and *petals*, diſtinguiſh this ſpecies. The *flower-ſtalk* is three or four inches high, hairy, much elongated above the *involucrum* after flowering, as in all the *Pulſatilla* tribe. *Flower* white, variegated with purple, extremely elegant ; we have ſome doubt whether the report of its being ever yellow be well founded, and whether the term " golden" in Dalechamp, copied by J. Bauhin, may not apply to the brilliant yellow pubeſcence of the living as well as dried *flowers*, noticed by Haller.

2. A. *Halleri*. Silvery Swiſs Anemone. Allion. Pedem. v. 2. 170. t. 80. f. 2. De Cand. n. 2. Willd. n. 5. Villars Dauph. v. 3. 725. (A. n. 1148 ; Hall. Hiſt. v. 2. 62.)—Leaves pinnate, deeply cut, with linear-lanceolate, pointed ſegments ; very hairy beneath. Flower erect. Petals ſix, ſtraight, elliptic-lanceolate.—Native of the alps, flowering in ſummer. Haller gathered it in the valley of St. Nicholas, in the Upper Vallais ; Villars in Dauphiny ; Molineri on the Piedmonteſe mountains ; De Candolle in the eaſtern Pyrenees. The *leaflets* and their ſegments are much longer and narrower than in the foregoing ; pubeſcence of the *flower* and *involucrum* ſilvery, not yellow. *Petals* dull purple, converging, not ſpreading.

3. A. *cernua*. Drooping Japaneſe Anemone. Thunb. Jap. 238. De Cand. n. 3. Willd. n. 3.—" Leaves pinnate ; ſhaggy and ſomewhat downy beneath ; leaflets pinnatifid, with notched oblong ſegments. Flower rather drooping. Petals ſix, elliptic-oblong, ſpreading."—Native of Japan, about Jedo and Nagaſaki, (*Thunberg*,) flowering in ſpring. All the *ſtalks* are very hairy, as are the *leaves* beneath, eſpecially when young. The ſegments of the latter are intermediate between *vernalis* and *Pulſatilla*. *Stalk* ſix inches high. *Flower* dark purple, hairy externally, ſmaller than in *A. Pulſatilla*. *De Candolle.*

4. A. *patens*. Naked-flowering Anemone. Linn. Sp. Pl. 759. De Cand. n. 4. Willd. n. 2. Ait. n. 2. (Pulſatilla polyanthos violacea, anemones folio ; Breyn. Cent. t. 61. " Helw. Pulſ. 52. t. 2, 3.")—Leaves later than the flower ; leaflets ternate, wedge-ſhaped, deeply and acutely pinnatifid and cut. Flower erect, ſpreading.—Native of Siberia, Poland, Sileſia, &c. ; recently found by Mr. Schleicher in Switzerland. The *flowers* are as large as any of this ſection, and more ſpreading, either pale yellow, white, or purpliſh, on a very ſhort partial ſtalk ; the *involucrum* in very narrow, linear, hairy ſegments. The *leaves* expand after the flower is paſt, and are ternate, not pinnate, with radiating, very acute, variouſly notched, ſegments. The *partial ſtalk* is greatly elongated, from ſix to nine inches, as the *fruit* ripens. *De Cand.*

5. A. *Pulſatilla*. Paſque-flower Anemone. Linn. Sp. Pl. 759. De Cand. n. 5. Willd. n. 6. Fl. Brit. n. 1. Engl. Bot. t. 51. Fl. Dan. t. 153. Bull. Fr. t. 49. Ehrh. Pl. Off. n. 135. (Pulſatilla ; Matth. Valgr. v. 1. 568. Dalech. Hiſt. 849. P. vulgaris ; Lob. Ic. 281. Ger. Em. 385.)—Leaves doubly pinnate, cut, with linear ſegments. Flower ſomewhat drooping. Petals ſix, rather ſpreading, ſtraight.—Found in wild open fields, and on dry hills, eſpecially where the ſoil is chalky, throughout moſt parts of Europe, flowering in April or May. The finely divided, doubly or triply pinnate, *leaves*, whoſe ſegments are ſometimes nearly awl-ſhaped, diſtinguiſh this from all the preceding. Its *flower*, uſually of a dull purpliſh blue, is ſaid to be occaſionally red, greeniſh, or white, none of which variations have we noticed in England. The *petals* are an inch and a half long, finely downy at the back. Head of *ſeeds* large and hairy, raiſed on a tall ſtalk.

6. A. *pratenſis*. Dark Meadow Anemone. Linn. Sp. Pl. 760. De Cand. n. 6. Willd. n. 7. Ait. n. 5. Fl. Dan. t. 611. Woodv. Med. Bot. t. 148. (Herba venti ; Trag. Hiſt. 413. Pulſatilla ; Camer. Epit. 392. P. flore clauſo ; Lob. Ic. 283. P. flore minore ; Ger. Em. 386. P. altera ; Dalech. Hiſt. 850.)—Leaves doubly or triply pinnate, with lanceolate, elongated ſegments. Flower pendulous. Petals ſix, erect ; reflexed at the ſummit.—Native of meadows, as well as of dry open fields, in Sweden, Denmark, Ruſſia, Germany, France, and, according to the abbé Seſtini, near Conſtantinople with the preceding. This ſpecies is diſtinguiſhed from *A. Pulſatilla*, by the larger coarſer ſegments of its *leaves*, and ſmaller, darker-coloured *flower*, whoſe *petals* are recurved at the top. Dr. Storck recommended an extract or infuſion of the herb, in chronic diſeaſes of the eyes, and even confirmed lues. Hence it has attracted the notice of phyſicians, who have been commendably anxious to procure the true plant, which is not found wild in Britain. Probably its virtues, whatever they may be, exiſt likewiſe in the *A. Pulſatilla*. Both are eaſily cultivated.

7. A. *albana*. Pale Caucaſian Anemone. " Steven Mem. Soc. Nat. Moſc. v. 3." De Cand. n. 6.* addend. 545.—Leaves doubly pinnate, with numerous oblong-linear ſegments. Flower drooping. Partial ſtalk ſcarcely longer than the involucrum. Petals ſix, erect, ſlightly reflexed at the ſummit.—Gathered by Mr. Steven, on the lofty mountains of the eaſtern part of Caucaſus. Allied to *A. pratenſis*, but differing firſt in the lobes of the *leaves*, and their ſubdiviſions being ſhorter as well as more obtuſe, rather oblong than truly linear : ſecondly, in the *partial ſtalk*, even throughout the whole duration of the flower, riſing ſcarcely above

the *involucrum*, inſtead of being four times longer: thirdly, in the *flower* being whitiſh, or ſulphur-coloured, not purple: fourthly, in the total want of *glands*, or abortive *ſtamens*, at leaſt in the ſpecimen ſeen by profeſſor De Candolle; which are very abundant in the preceding ſpecies.

8. A. *Nuttalliana.* Louiſiana Anemone. De Cand. n. 7.—Leaves ternate, palmate, many-cleft; ſegments linear, elongated. Involucrum in numerous linear diviſions. Flower erect. Petals ſix, ſtraight, converging.—Gathered in Louiſiana, by Mr. Nuttall. The habit reſembles *A. Pulſatilla*, but the *leaves* are ternate, not pinnate. *Footſtalks* three inches long, covered with cloſe hairs. *Flower-ſtalk* from ſix to twelve inches high; ſometimes ſmooth. *Involucrum* very hairy at the baſe. *Partial ſtalk* various in length. *Flower* purpliſh. *Petals* acute, externally hairy, eight or ten lines long. *Fruit* like *Pulſatilla. De Cand.*

Sect. 2. *Preonanthus.* Ehrh. Phytoph. 95.

Seeds terminating in long bearded tails. Involucral leaves ternate, ſtalked, pinnate, with deeply ſerrated, notched lobes. Petals five or ſix. No glands, or abortive ſtamens. Radical leaves ternate; their diviſions pinnate, doubly compound, cut and ſerrated. Flowers white or yellowiſh.

9. A. *alpina.* Alpine Anemone. Linn. Sp. Pl. 760. De Cand. n. 8. Willd. n. 8, β. Ait. n. 6. Ehrh. Phytoph. 95. Crantz Auſtr. faſc. 2. 105. t. 3. f. 2. Villars Dauph. v. 3. 726. (A. n. 1149; Hall. Hiſt. v. 2. 62. A. alpina alba major; Bauh. Pin. 176. Prodr. 94. Pulſatilla prima alpina; Dalech. Hiſt. 850.)

β. Flower white, as in α, but much ſmaller. (A. alpina; Jacq. Auſtr. t. 85. Willd. n. 8, α. A. ſylveſtris altera; Cluſ. Hiſt. v. 1. 245. Pulſatilla alba; Lob. Ic. 282. Dalech. Hiſt. 849. P. flore albo; Ger. Em. 386.)

γ. Fl. large, yellow. (A. apii folia; Jacq. Miſc. v. 2. 47. t. 4. Willd. n. 9. A. ſulphurea; Linn. Mant. 78. A. myrrhidifolia β; Villars Dauph. v. 3. 727, from the author. A. n. 1149, β; Hall. Hiſt. v. 2. 63. Pulſatilla lutea; Camer. Epit. 393. P. tertia; Dalech. Hiſt. 851, bad.)

Leaves ternate, pinnate, with pinnatifid, decurrent, ſerrated lobes. Involucral ones ſimilar. Petals ſix, ſpreading.—Native of paſtures and rocky declivities in moſt alpine parts of the middle of Europe, Switzerland, the Pyrenees, the ſouth of France, Auſtria, Carinthia, &c.; flowering in ſummer. The conformity of ſtructure between the *involucrum* and the radical *foliage*, clearly aſcertains this ſpecies. We readily concur with Haller and De Candolle, that the difference of colour between the yellow, lemon-coloured, or white *flowers*, or of ſize between the large-white and the ſmall, indicate mere varieties. But we ſcarcely ſee any reaſon to mark the more or leſs hairy *leaves* as permanent varieties; the former being cauſed by more dry and expoſed ſtations of the ſame plant. The *petals* are always more or leſs pale, purpliſh, and hairy, at the back. The flowering plant is from two to twelve inches high. When in ſeed its dimenſions are every way doubled. A ſingular monſtroſity of variety β, ſent us by the late Mr. Davall, has one of its *petals* ſlipped down, if we may ſo expreſs it, into the *involucrum*, and greatly enlarged. This, as M. De Candolle juſtly obſerves, proves an analogy between the *petals*, (his *calyx*,) and the *involucrum;* but it will not prove them to have more affinity than the *petals* and actual *leaves* of a Tulip, which we have ſeveral times ſeen running into each other, or half and half of the perfect nature of each.

Sect. 3. *Pulſatilloides.* De Candolle.

Seeds very hairy. Petals from ſeven to twenty, oblong. Involucrum of two or three leaves, ſomewhat ſheathing at their baſe; cut and toothed upwards. Leaves twice ternate, cut.

10. A. *capenſis.* Broad-leaved Cape Anemone. Lamarck Dict. v. 1. 164. De Cand. n. 9. (Atragene capenſis; Linn. Sp. Pl. 764. Willd. Sp. Pl. v. 2. 1286. Ait. Hort. Kew. v. 3. 342. Andr. Repoſ. t. 9. Curt. Mag. t. 716. Pulſatilla foliis trifidis, dentatis, flore incarnata, pleno; Burm. Afric. 148. t. 52.)—Leaves twice-ternate, rigid, ſmooth; ſegments wedge-ſhaped, ſharply toothed.—Native of ſtony acclivities of mountains, at the Cape of Good Hope, flowering from October to March. It is ſaid to have been firſt cultivated in England, by Meſſrs. Lee and Kennedy, in 1795. This plant is ſomewhat cauleſcent, but the *leaves* are crowded about the lower part, almoſt cloſe to the woody root. Their texture is extremely firm; their ſegments varying greatly in ſize, breadth, and ſhape; the young ones villous. *Flowers* one or two from each *involucrum*, which reſembles the leaves, but is ſmaller, with a dilated inflated ſtalk. The partial *flower-ſtalks* are long and downy. *Petals* thirteen to eighteen, linear-oblong, above an inch in length, pink, or pale bluſh-coloured, ſpreading, very handſome. *Germens* extremely hairy, ovate, each with a recurved ſtyle.

11. A. *tenuifolia.* Fine-leaved Cape Anemone. De Cand. n. 10. (Atragene tenuifolia; Linn. Suppl. 270. Willd. Sp. Pl. v. 2. 1286. Thunb. Prodr. 94. A. tenuis; Thunb. Jap. 239, note.) — Leaves thrice-ternate, rigid, ſmooth; leaflets pinnatifid, with linear-threadſhaped, acute, entire lobes.—Found by Thunberg at the Cape of Good Hope. The *leaves* are more compound, and more finely divided than thoſe of the preceding ſpecies; the plant is deſcribed as more cauleſcent, and the *flowers* but half as large, with only from ſeven to nine *petals*. We have ſeen no authentic ſpecimens, but are not without a ſuſpicion that Linnæus confounded this with the laſt.

Sect. 4. *Anemonanthea.* De Cand.

Seeds nearly ovate, hooked with the permanent ſtyle, either very hairy or ſhaggy, or in ſome inſtances nearly ſmooth. Partial flower-ſtalks ſolitary in each involucrum, or very rarely two together, always ſingle-flowered and naked. Petals from five to fifteen.

**Involucral leaves ſeſſile. Root-ſtock tuberous, ſomewhat ovate.*

12. A. *coronaria.* Poppy Garden Anemone. Linn. Sp. Pl. 760. De Cand. n. 11. Willd. n. 10. Ait. n. 7. Curt. Mag. t. 841. Sm. Fl. Græc. Sibth. t. 514, unpubl. Lamarck f. 1. (Anemone; Camer. Epit. 386. A. hortenſis tenuifolia, ſimplici flore, n. 2—20; Cluſ. Hiſt. v. 1. 255—260; alſo pleno flore; ibid. 263. A. tuberoſa radice, et coccinea multiplex; Lob. Ic. 277. Ger. Em. 374; ſee alſo ſeveral in his ſubſequent pages.)—Leaves twice-ternate, pinnatifid; ſegments linear-wedgeſhaped, ſmooth-edged, ſharply cut. Involucrum ſeſſile, many-cleft. Petals ſix, oval, concave, converging.—Native of dry, as well as rather moiſt, paſtures, in the ſouth of France, Italy, and the Levant, flowering in the early ſpring. Very common on dry hillocks in Greece, according to Dr. Sibthorp, who concurred with former botaniſts in thinking it the ανεμωνη ἑμερα of Dioſcorides; and the learned Sprengel takes the ανεμωνη of Hippocrates to be the ſame plant. This ſpecies, however, bears the ſame name in modern Greek, παπαρȣνα, as the Field Poppy, *Papaver Rhœas;* nor is the hiſtory of theſe two flowers, however different, free from ambiguity. *A. coronaria* has been the delight of floriſts ever ſince the time of Gerarde, and its numerous double varieties, diſplaying every beauty and ſplendour of colour, are among the moſt rare and admired decorations of a parterre. We

confeſs a predilection for the ſingle kinds, equally beautiful and various in colour, which may be raiſed abundantly from ſeed in any airy and ſunny ſpot, and require but little trouble in tranſplantation every fourth or fifth year. They flower moſt in the winter or ſpring. The *leaves* vary in breadth. The natural colour of the *flower*, which is cup-ſhaped, and full two inches broad, is a light purpliſh-blue, as repreſented in Dr. Sibthorp's drawing, and as we have gathered it in the groves and graſſplats of the Roman villas. The *ſeeds* are covered with long, ſoft, tenacious down, concerning the effect of which an amuſing ſtory is told by Tournefort and Miller. A lawyer in the ſouth of France ſtole theſe ſeeds from a covetous *amateur*, by ordering his page to drop, as if by accident, the ſilk train of his robe, when they paſſed over the bed of ſeeding Anemonies, and thus obtained a plentiful ſupply.

13. A. *puſilla*. Dwarf Anemone. De Cand. n. 12.—Leaves thrice ternate, pinnatifid, many-cleft, with linear pointed ſegments. Involucrum ſeſſile ; cut at the ſummit. Petals ſix, oblong, diſtant.—Gathered in Cyprus by Labillardiere. Nearly akin to the laſt, and perhaps a variety. *Root* tuberous, the ſize of a filberd. *Leaves* ſmooth, ſtalked, with narrow linear ſegments. *Flower-ſtalk* a finger's length, ſlender, downy, erect. *Involucrum* of three leaves, acutely cut and toothed at the apex. *Partial ſtalk* either the length of the involucrum, or twice or thrice as long. *Flower* erect, pale purple. *Petals* ſix, rarely but four or five, oblong, bluntiſh, diſtant and ſpreading, about four times the length of the *ſtamens*. *Seeds* woolly, collected into an oval-oblong head. *De Cand.*

14. A. *pavonina*. Peacock Garden Anemone. Lamarck Dict. v. 1. 166. De Cand. n. 13. " Fl. Franc. v. 5. 634." Brot. Luſit. v. 2. 363, not 263. (A. hortenſis latifolia, pleno flore, et flore coccineo ; Cluſ. Hiſt. v. 1. 261, 262, with three figures. A. maxima chalcedonica polyanthos ; Ger. Em. 375. Lob. Ic. 278. A. ſtellata, geranii aut aconiti folio, duplicato flore purpureo ; Cupan. Panph. v. 1. t. 121. ed. 2. t. 22.)—Leaves ternate or deeply three-lobed ; leaflets or ſegments wedge-ſhaped, cut and toothed. Involucrum ſeſſile, its leaves oblong, entire or ſlightly cut. Petals ten or twelve, lanceolate, very acute.—Found in vineyards in Navarre, alſo in the ſouth of France, and probably in the Levant. *De Candolle.* Differs from *A. coronaria* in its leſs divided *leaves*, and eſpecially thoſe of the *involucrum*, which are five or ſix, elliptic-lanceolate, rough-edged, moſt of them quite entire, one or two only partially notched. The narrow and acute *petals* are alſo peculiar. We feel convinced with Lamarck and De Candolle that this muſt be a diſtinct ſpecies, though confounded by Linnæus and others with the more frequent *A. coronaria*. We have not ſought out its varieties among the double Anemonies, but there is a ſcarlet one not uncommon. The French know ſome of theſe varieties by the names of *Oeil de paon*, *Candiote*, &c. If this be not diſtinct, it ſhould ſeem to belong to the following rather than to any other.

15. A. *hortenſis*. Starry Garden Anemone. Linn. Sp. Pl. 761. Willd. n. 11. Ait. n. 8. Curt. Mag. t. 123. Sm. Fl. Græc. Sibth. t. 515, unpubl. (A. hortenſis latifolia ſimplici flore, n. 3—18 ; Cluſ. Hiſt. v. 1. 249—254. A. prima ; Dod. Pempt. 434. A. ſecunda ; Camer. Epit. 387. A. tuberoſa, bulbocaſtani radice ; Lob. Ic. 279. Ger. Em. 375. f. 5. A. n. 1152 ; Hall. Hiſt. v. 2. 64. A. ſtellata ; Lamarck Dict. v. 1. 166. Brot. Luſit. v. 2. 363. Savi Etruſc. v. 2. 122. De Cand. n. 14. " Fl. Franc. v. 5. 634.")—Leaves ternate ; leaflets wedge-ſhaped, rough-edge, three-cleft, cut. Involucrum ſeſſile ; its leaves lanceolate, undivided or partly cut. Petals ten or twelve, elliptic-lanceolate, obtuſe.—Found on banks, ruins, or buſhy waſte ground, in the ſouth of Europe ; very commonly in Italy and Greece, flowering in the early ſpring ; leſs abundantly in the ſouth of France, and Switzerland. Cluſius obſerved this ſpecies near Mentz. It has been known in gardens as long as the *coronaria*, but being inferior in beauty and variety, has given place to that popular ſpecies. We cannot follow Lamarck in its ſpecific appellation, becauſe there is no end of changing names for the better ; unleſs all leading botaniſts would concur in a general reform ; and even in that caſe, poſitively erroneous names only ſhould be altered. This pretty ſpecies has an oblong tuberous *root*, producing many *leaves* and *ſtems*. The latter are ternate, on long ſtalks ; their *leaflets* coriaceous, ſtrongly veined, either cut half way down into three broad lobes, or divided nearly to the baſe, into three ſubdivided narrow ones ; their ſegments all acute ; their edges remarkably rough, though both ſurfaces are uſually, if not always, ſmooth and naked. *Involucral leaves* three, an inch long, ſilky, rough-edged ; one of them in general ſlightly notched at the end. *Partial ſtalk* long, ſilky, eſpecially near the top. *Flower* ſcarcely above an inch wide, of a delicate roſe-colour, or full carnation ; the *petals* ſilky at the back, veiny, often emarginate. The rough-edged *leaves* and *involucrum* are characteriſtic of this ſpecies, but the *involucrum* of *pavonina*, (we have not examined its *leaves*,) has the ſame character, which *coronaria* has not. We are ſtrongly perſuaded of *pavonina* being a variety of *hortenſis*, and that the acuteneſs or bluntneſs of the *petals* is variable.

16. A. *palmata*. Cyclamen-leaved Anemone. Linn. Sp. Pl. 758. De Cand. n. 15. Willd. n. 12. Ait. n. 9. Andr. Repoſ. t. 172. Vahl Symb. v. 3. 73. Desfont. Atlant. v. 1. 432. (A. hortenſis latifolia, ſimplici flavo flore ; Cluſ. Hiſt. v. 1. 248. Moriſ. ſect. 4. t. 25. f. 3. A. latifolia Cluſii ; Lob. Ic. 279. Ger. Em. 376. A. latifolia flava ; Barrel. Ic. t. 792.)—Leaves ſimple, heart-ſhaped, rounded, with three or five blunt, ſharply-toothed lobes. Involucrum ſeſſile ; its leaves in three linear, acute, hairy lobes. Petals ten or twelve, oblong, obtuſe.—Native of rather moiſt waſte ground, in Portugal, Spain, the ſouth of France, and the north of Barbary, flowering early in ſpring. Rarely cultivated with us, except in curious gardens, though the brilliant golden *flowers* are very handſome. The *leaves*, notwithſtanding Mr. Andrews's doubts, are truly palmate, differing from the laſt in being ſimple, and, though more or leſs hairy, not rough at the edges as in that ſpecies. They are coriaceous, ſtrongly veined ; often purple beneath. The *involucral* ones are three, almoſt uniform, hairy or ſilky, an inch long, narrow, each divided about half way into three nearly equal, ſometimes notched, linear lobes ; the edges apparently fringed, but not rough. *Stalk* above the *involucrum* rather long, ſilky. *Flowers* an inch and a half or two inches broad. *Petals* linear-obovate ; the ſix outer ones remarkably hairy externally, and ſo diſpoſed in Linnæus's only ſpecimen, that he took them for the ſame kind of cloſe *calyx* as occurs in *Hepatica*, only with a double number of ſegments. Thus he was led to place *A. palmata* in his firſt ſection, *Hepaticæ*, and this will ſolve Vahl's difficulty, recorded in his *Symbolæ* above cited. But it will not account for this author's extraordinary quotation of Linnæus's words, which are " *calyx ſexpartitus, integerrimus, villoſus, coloratus, nec a flore remotus.* Vahl cites this paſſage, " *calyx hexaphyllus, coloratus, a flore remotus.*" The ſuppoſed double variety of the preſent ſpecies,

cies, Cluſ. Hiſt. v. 1. 249. f. 1, and Ger. Em. 376. f. 7, which De Candolle marks with doubt, and has never ſeen, is repreſented with the many-knobbed *root* of a *Ranunculus*, to which genus we ſhould not be ſurpriſed if it proved to belong.

17. A. *decapetala*. Little Three-leaved Anemone. Arduin. Spec. 2. 27. t. 12. Linn. Mant. 79. De Cand. n. 16. Willd. n. 17. Lamarck Dict. v. 1. 167. ("A. trilobata; Juſſ. Ann. du Muſ. v. 3. 247. t. 21. f. 3.")—Leaves ternate; leaflets rounded, unequally three-lobed and toothed. Involucral leaves ſeſſile, twice three-cleft, with linear ſegments. Petals ten or twelve, elliptic-lanceolate, obtuſe.—Sent by Father Panegai to profeſſor Arduino, from Braſil, where Commerſon alſo met with this curious little plant; as did Dombey and Née in Peru and Chili. The root is ovate and tuberous, about the ſize of a filberd. *Leaves* ſmaller than the laſt, and perfectly ternate, obſcurely dotted, beſprinkled with ſhort hairs, but not rough-edged; their teeth unequal, bluntiſh, often callous-pointed. *Stalk* two or three inches high, ſilky at the top, with an *involucrum* about the middle, totally unlike the leaves, being doubly, but imperfectly, three-cleft, with linear ſegments, callous at the tips. *Flower* ſcarcely half the ſize of *A. hortenſis*, which it reſembles in form. The *petals* appear to be white; ſilky and purpliſh at the back.

18. A. *parviflora*. Small-flowered American Anemone. Michaux Boreal.-Amer. v. 1. 319. De Cand. n. 17. ("A. cuneifolia; Juſſ. Ann. du Muſ. v. 3. 248. t. 21. f. 1." Purſh 386.)—Leaves ternate; leaflets wedge-ſhaped; abrupt and crenate at the extremity. Involucral leaves ſeſſile, deeply three-cleft, ſomewhat notched. Petals ſix, oval-oblong.—Native of banks of rivulets at Hudſon's bay, Labrador, and Newfoundland, flowering from March to May. Akin to the two laſt. Radical *leaves* ſmooth and naked; involucral ones with oblong ſegments. *Stalk* very long. *Flowers*, according to Purſh, white, the ſize of *A. nemoroſa*. *Seeds* woolly, pointed, forming a globular head. *De Candolle*.

19. A. *caroliniana*. Little Carolina Anemone. Walt. Carol. 157. De Cand. n. 18. (A. tenella; Purſh n. 4.)—"Leaves ternate; leaflets deeply three-cleft, cut, ſharply toothed. Involucral leaves three-cleft, notched. Petals ten or twelve, linear."—Gathered in Carolina, by the late Mr. Walter; on the banks of the Miſſouri, by governor Lewis; flowering in May. *Root* ſmall, tuberous. *Herb* tender and delicate. *Leaflets* ſome with only toothed, and others with deeply three-cleft, jagged, and ſharply toothed, lobes. *Stalk* ſingle-flowered. *Involucrum* of three leaves, with jagged ſegments. *Partial ſtalk* long. *Petals* ſmall, purpliſh, externally downy. *Seeds* pointed, woolly. The fourth *Ranunculus*, Pluk. Almag. 310, cited doubtingly by De Candolle, who has omitted the word *procerus* in tranſcription, ſeems to us at beſt very uncertain, and particularly ſo on account of that very word.

20. A. *triternata*. Fine-leaved Braſil Anemone. Vahl Symb. v. 3. 74. t. 65. De Cand. n. 19. Willd. n. 18. Lamarck f. 3. ("A. fumariæfolia; Juſſ. Ann. du Muſ. v. 3. 247. t. 20. f. 2.")—Leaves thrice ternate; leaflets cut; ſegments lanceolate, acute. Involucral leaves in many ſetaceous diviſions. Petals ten or twelve, oblong, obtuſe. Fruit cylindrical.—Gathered by Commerſon at Monte Video. It is ſaid to have been alſo found in Peru, by Leubaz; flowering in November. The *root* and *flowers* bear a great reſemblance to *A. decapetala*; but the *leaves* are totally different, being cut into innumerable, fine, divaricated ſegments, quite ſmooth, entire at the edges, and not at all toothed or ſerrated. The *involucrum* too is ſomewhat different, each of its three leaves being firſt divided half way down, into three parts, and thoſe ſubdivided into many ſlender, tapering ſegments. The ſeeds are numerous, tapering, beaked, very hairy, cloſely imbricated in a cylindrical, ſomewhat elliptical, head, an inch long.

21. A. *biflora*. Two-flowered Oriental Anemone. De Cand. n. 20.—"Leaves ternate; leaflets deeply divided into linear, obtuſe, partly cut, lobes. Involucral leaves ſeſſile, in many deep ſegments. Partial flower-ſtalks in pairs, one of them with a partial involucrum."—Gathered by Michaux in the Levant. Of this De Candolle deſcribes two varieties.

α, with two leaves in the general, and two in the partial, involucrum. *Root* an oblong *tuber*, tapering upwards, fibrous below. *Leaves* ſmooth, on long ſtalks, ternate; their *leaflets* in deep, linear, ſomewhat notched, obtuſe, thickiſh lobes. *Common flower-ſtalk* round, the length of the footſtalks, about four inches. *Involucrum* of two ſeſſile leaves, in numerous deep diviſions, reſembling the radical foliage. *Partial ſtalks* two, ſingle-flowered, cloſely downy; one naked; the other furniſhed, near the baſe, with a two-leaved *partial involucrum*, like the general one. *Flowers* rather drooping, yellow, with five *petals*, which are oval-oblong, obtuſe, externally downy, rather larger than in *A. ranunculoides*. *Stamens* few in the flower, with a two-fold *involucrum*; numerous in the other. *Germens*, on the contrary, many in the former, few in the latter.

β, with three leaves in the only involucrum.

Footſtalks, as well as *flower-ſtalks*, much ſhorter. *Flowers* on much longer partial ſtalks, white with a tinge of purple. *General involucrum* of three leaves. *Petals* blunter, and rather more villous, than in α. *Seeds* woolly, as in *A. balderſis*. Poſſibly a diſtinct ſpecies.

** *Involucral leaves ſtalked. Root-ſtock tuberous, ſomewhat ovate.*

22. A. *apennina*. Blue Mountain Anemone. Linn. Sp. Pl. 762. De Cand. n. 21. Willd. n. 24. Fl. Brit. n. 3. Engl. Bot. t. 1062. Prodr. Fl. Græc. Sibth. n. 1250. Curt. Lond. faſc. 6. t. 35. (A. geranifolia; Bauh. Hiſt. v. 3. 405. Ger. Em. 377. Lob. Ic. 280. A. hortenſis tenuifolia, ſimplici flore; Cluſ. Hiſt. v. 1. 254. Ranunculus nemoroſus, flore cæruleo, duplex, apennini montis; Mentz. Pugill. t. 8.)—Leaves twice ternate, pinnatifid, ſharply notched. Involucral ones ſtalked, ternate, pinnatifid and cut. Petals twelve to fourteen, oblong, obtuſe.—Native of groves and thickets in ſome parts of England, but rare, as near as Wimbleton, Luton-hoe, and Berkhamſtead. *Fl. Brit.* In Italy it occupies the place of *A. nemoroſa* in the more northern parts of Europe, and is equally plentiful, flowering in March and April. Dr. Sibthorp noticed it in the Morea; Dr. Clarke on the banks of the Simois; and the baron Marſchall von Bieberſtein in the Iberian Caucaſus. The *root* is ſmaller than a filberd, bearing one or two *leaves*, each on a zigzag *footſtalk*, very ſlender at the baſe. The *leaves* much reſemble *Geranium robertianum*; thoſe of the *involucrum* are ſimilar, but leſs divided, with narrower ſegments. *Stalk* ſolitary, from four to nine inches high, ſilky above the involucrum. *Flower* of a fine blue, with pale *ſtamens* and *piſtils*, very beautiful, ſaid to be occaſionally white.

23. A. *cærulea*. Small Blue Anemone. De Cand. n. 22.—"Leaves...... Involucral ones on ſhort ſtalks, triply pinnate, cut and toothed. Petals four or five, oval."—Gathered by Mr. Patrin, near Zmeof in Siberia, flowering in the early ſpring. The *root* and radical *leaves* are wanting in the ſpecimens ſeen by De Candolle. This ſpecies agrees in deſcription with the laſt, but the *partial ſtalk* is

much ſhorter than the *involucrum*, and the ſmall blue *flower* has only four or five roundiſh, very obtuſe *petals*, more like *A. nemoroſa*, except in colour.

*** *Involucral leaves ſtalked. Root-ſtock cylindrical, ſlender, elongated.*

24. A. *baldenſis*. Strawberry-fruited Anemone. Linn. Mant. 78. De Cand. n. 23. Willd. n. 14. Allion. Pedem. v. 2. 172. t. 44. f. 3, and t. 67. f. 2. (A. fragifera; Jacq. Miſc. v. 2. 55. Ic. Rar. t. 103. A. alpina; Scop. Carn. v. 1. 384. t. 26. A. n. 1151; Hall. Hiſt. v. 2. 63.)—Leaves twice-ternate, many-cleft; ſegments linear-wedge-ſhaped, acute. Involucral ones ſimilar, ſtalked, leſs compound. Petals eight to ten, elliptic-oblong. Fruit ovate, woolly.—Native of the alpine precipices of mount Baldus, as well as of Switzerland, Dauphiny, Savoy, Auſtria, the Tyrol, &c., firſt cultivated in England by Mr. Loddige, in 1792. It flowers early in ſummer. The *root* is long and woody. *Leaves* firm and rather glaucous, ſmooth, like rue, but narrower; their *footſtalks* hairy, an inch and a half long. *Flower-ſtalk* hairy, erect, three or four inches high, with a large three-leaved *involucrum* below the middle. *Flower* white, rather larger than *A. apennina*, with fewer and broader *petals*. *Fruit* the ſize and ſhape of a ſmall ſtrawberry, with the reddiſh beaks of its *ſeeds* ſticking out of the copious denſe maſs of tawny ſilky wool. *Receptacle* perfectly cylindrical.

25. A. *nemoroſa*. Common Wood Anemone. Linn. Sp. Pl. 762. De Cand. n. 24. Willd. n. 23. Fl. Brit. n. 2. Engl. Bot. t. 355. Prodr. Fl. Græc. Sibth. n. 1249. Curt. Lond. faſc. 2. t. 38. Fl. Dan. t. 549. Bull. Fr. t. 3. (A. nemorum alba; Ger. Em. 383. Herba ſylveſtris, ignoti nominis; Brunſ. Herb. v. 2. 80. Ranunculi quarta ſpecies lactea; Fuchſ. Hiſt. 161. Ranunculus ſylvarum; Cluſ. Hiſt. v. 1. 247, 248. R. candidus; Trag. Hiſt. 95.)

β. Michaux Boreal.-Amer. v. 1. 319. Purſh 386. (A. quinquefolia; Linn. Sp. Pl. 762. Willd. n. 22. Ranunculus nemorum, fragariæ foliis, virginianus; Pluk. Phyt. t. 106. f. 3.)

Leaves ternate; leaflets in three, or five, deep, three-lobed, notched, lanceolate, acute ſegments. Involucral ones ſimilar, ſtalked, leſs compound. Petals ſix, elliptical.—Common in groves and thickets throughout Europe, where *A. apennina* ſcarcely occurs, flowering in ſpring. About the ſize of that ſpecies, with ſome reſemblance of foliage; but there is leſs difference between the *leaflets* of the radical *leaves* and thoſe of the *involucrum*. The *root* alſo is long and ſlender, not ovate. The *flowers* are white, often tinged with purple externally, formed of ſix broad *petals*, totally unlike *apennina*. The double variety is very elegant. That with five deep lobes in each *leaflet*, occurs occaſionally in England as well as North America, and is evidently a moſt trifling variety, though Linnæus, led perhaps by Plukenet's bad figure, made it a ſpecies.

26. A. *iſopyroides*. Wedge-leaved Anemone. "Juſſ. Ann. du Muſ. v. 3. 249. t. 20. f. 3." De Cand. n. 25.—"Leaves twice ternate; leaflets ſomewhat wedge-ſhaped, deeply three-toothed. Involucral leaves ſtalked, ternate; lateral ſegments divided. Petals five, oblong."—Deſcribed by De Candolle, from Juſſieu's herbarium, but the native country of the plant is unknown. It is ſaid to be extremely ſimilar to *A. nemoroſa*. The *root* is horizontal. *Radical leaves* on long ſtalks, whoſe partial ſtalks bear each three nearly wedge-ſhaped, cut, or toothed, *leaflets*. The lateral *leaflets* of each *involucral leaf* being divided, give the appearance of five leaflets in each. *Flowers* one or two to an involucrum. *Petals* oblong, narrow, elongated. *De Cand.*

27. A. *lancifolia*. Lanceolate-leaved Anemone. Purſh n. 2. De Cand. n. 26.—Leaves all ſtalked, ternate; leaflets lanceolate, bluntly toothed. Petals five, ovate, acute.—On high mountains in a boggy ſoil, in Pennſylvania and Virginia, flowering from May to July. Reſembles *A. nemoroſa*, but the *flowers* are larger, of a clear white. *Purſh.* De Candolle ſays the *leaves* ſcarcely differ from *A. trifolia*, by which we are led to ſuſpect that Plukenet's t. 106. f. 3, cited by Linnæus and others for *quinquefolia*, with which it does not well accord, may belong to the ſpecies before us.

28. A. *trifolia*. Three-leaved Anemone. Linn. Sp. Pl. 762. De Cand. n. 27. Willd. n. 21. Ait. n. 16. Dod. Pempt. 436. Ger. Em. 377. Moriſ. ſect. 4. t. 25. f. 1. (A. trifolia, flore albo; Bauh. Hiſt. v. 3. 412. Alabaſtrites, ſive Dentaria alba; Lob. Ic. 281.)—Leaves and involucrum ſtalked, ternate; leaflets of all ovate, acute, ſerrated. Petals five or ſix, elliptical, obtuſe.—Native of rather mountainous groves and thickets, in France, Piedmont, Tuſcany, Carniola, Carinthia, and Siberia, flowering in ſpring. Gerarde appears to have cultivated this ſpecies, but we have never ſeen or heard of it in modern times. The *root* is oblong, horizontal, ſomewhat toothed. *Leaves* two or three inches high, each of three leaflets about an inch long, with hairy ribs and edges. *Stalk* about a ſpan high, or more, angular, ſmooth, bearing an *involucrum* of three uniform ſtalked *leaves*, like the radical ones, but rather larger; the lateral leaflets very unequal at their baſe; the central one tapering into the *footſtalk*. *Partial flower-ſtalk* about the length of the ſtalks of the involucrum, ſolitary, ſimple, ſlender, hairy. *Flower* ſcarcely an inch broad. *Petals* from five to ſeven, white; purpliſh underneath.

29. A. *minima*. Leaſt Anemone. De Cand. n. 28.—"Leaves...... Involucral ones ſtalked, deeply three-cleft; lobes ovate, pointed, ſerrated externally and at the extremity. Petals five, oval-oblong, obtuſe."—Native of the Allegany mountains in Virginia; *Paliſot de Beauvois*. Remarkably tender and delicate, reſembling *A. trifolia*, but only one-third its ſize. *Root* long, ſlender, horizontal, ſending out a few fibres. *Radical leaves* wanting in the ſpecimens. *Stalk* ſlender, round, ſmooth, a finger's length. *Leaflets* of the *involucrum* cloſely downy; the lateral ones ſtrongly ſerrated at their outer margin, and from the middle to the end at both margins. *Partial ſtalk* the length of the involucrum, erect, downy, ſimple. *Flower* ſmall, white. *Petals* ſmooth, four lines long, and two broad. *Stamens* half as long. *Germens* few, downy. *De Cand.*

30. A. *ranunculoides*. Yellow Wood Anemone. Linn. Sp. Pl. 762. De Cand. n. 29. Willd. n. 26. Fl. Brit. n. 4. Engl. Bot. t. 1484. Fl. Dan. t. 140. Savi Etruſc. v. 2. 123. (A. n. 1153; Hall. Hiſt. v. 2. 64. A. nemorum lutea; Ger. Em. 383. Ranunculi quarta ſpecies lutea; Fuchſ. Hiſt. 162. R. tertia ſpecies; Cord. Annot. 120, with Tragus's figure of *A. nemoroſa*, of which the larger part reſembles that ſpecies, the ſmaller this. Ranunculus nemoroſus luteus; Bauh. Pin. 178. Lob. Ic. 674. Moriſ. ſect. 4. t. 28. f. 11.)—Leaves ternate or quinate; leaflets three-lobed, deeply notched; wedge-ſhaped at the baſe. Involucral ones ſimilar, ternate or quinate, ſomewhat ſtalked. Flowers moſtly in pairs. Petals five or ſix, elliptical.—Frequent in groves, thickets, and hilly paſtures, throughout the north and middle of Europe, as well as Siberia and part of Caucaſus, but rare in England. Mr. Hudſon found it in Kent and Hertfordſhire; and the late Mr. Geo. Anderſon brought us ſpecimens from near Abbot's Langley, flowering early in April. The *root* is ſlender, horizontal. *Herbage* not unlike *A. nemoroſa*, but

the *leaflets* are more elongated and cut, and the ſtalks of the *involucrum* much ſhorter. The *petals* are broader, and of a full yellow. *Flowers* often two together, one of which, according to De Candolle, is ſometimes deficient in *piſtils.* The *partial ſtalk* appears to droop as the fruit ripens. The *germens* are nearly orbicular, compreſſed, downy, the *ſtyle* of each forming a ſtrong incurved beak. There is ſaid to be a violet-coloured variety found on the Pyrenees.

31. A. *reflexa.* Reflexed Anemone. Stephen. in Willd. n. 25. De Cand. n. 30.—" Leaves ternate; leaflets ſomewhat three-cleft, toothed at the extremity. Involucral ones ſimilar, ſtalked. Petals five or ſix, linear, obtuſe, reflexed."—Native of Siberia. *Stalk* ſlightly downy at the top, ſlender, a palm in height. *Involucral leaves* ſmooth, on downy ſtalks; their *leaflets* acute, tapering at each end. *Partial ſtalk* ſolitary, ſhorter than the involucrum while in flower, erect, ſlightly hairy. *Flower* yellow, one-third the ſize of the laſt. *Stamens* very numerous, ſhorter than the *petals. De Candolle, Willd.*

**** *Involucral leaves ſtalked. Root of tufted fibres.*

32. A. *ſylveſtris.* Snow-drop Anemone. Linn. Sp. Pl. 761. De Cand. n. 31. Willd. n. 15. Ait. n. 12. Curt. Mag. t. 54. Bull. Fr. t. 59. (A. ſylveſtris prima; Cluſ. Hiſt. 244. A. tertia; Matth. Valgr. v. 1. 565. Lob. Ic. 280. Camer. Epit. 388. Dalech. Hiſt. 843. A. Matthioli; Ger. Em. 377. A. n. 1150; Hall. Hiſt. v. 2. 63.)—Leaves ternate or quinate; leaflets lobed; deeply notched at the end. Involucral ones ſimilar, ſtalked. Flower ſolitary. Petals ſix, elliptical. Fruit very woolly. Root fibrous.—Found in woods and hedges in various parts of France, Switzerland, the north of Italy, Germany, Siberia, &c. but not in England, though a very deſirable hardy perennial in our gardens, flowering in ſpring, and ſometimes in autumn. The *root* conſiſts of long, black, rather ſtout fibres, and creeps rather extenſively. *Leaves* large, dark-green, veiny, nearly ſmooth, coarſely notched; their leaflets or lobes wedge-ſhaped at the baſe. *Flower-ſtalk* fifteen or eighteen inches high, erect, downy at the top, bearing about the middle three, rarely four, large, ſtalked *involucral leaves,* whoſe *leaflets,* five or more, are ſcarcely diſtinct at the baſe. *Flower* pure white, rarely purpliſh, or greeniſh, externally downy; its *petals* near an inch long, ſlightly coriaceous. *Fruit* ovate, the *ſeeds* cohering for ſome time by their denſe cottony wool, which at length, by ſpreading itſelf, wafts them away. We have one Swiſs ſpecimen with two *partial ſtalks,* one of which bears a partial *involucrum,* as in the next ſection.

33. A. *alba.* Cotton Anemone. " Juſſ. Ann. du Muſ. v. 3. 248. t. 20. f. 1." De Cand. n. 32.—" Leaves ternate or quinate; leaflets deeply toothed at the end. Involucral ones ſimilar, ſtalked. Flower ſolitary. Petals five, obovate. Fruit very woolly. Root fibrous."—Native of Dauria, and the Crimea. Very like the laſt, but rather ſmaller. *Petals* five, not ſix, ſhorter, rounder, and very obtuſe. The *ſeeds* are ſo woolly, that Demidow aſſerts they ſupply the place of cotton. *De Candolle.* We concur in opinion with our author, that this plant is probably a variety, we ſhould ſay a very ſlight one, of the foregoing ſpecies. If diſtinct, the name of *goſſypina* would have been far preferable to *alba.* We would alſo ſuggeſt, that this laſt diviſion of the fourth ſection of the genus, rather belongs to the fifth, which is ſhewn by its habit, and by the caſual variation in the infloreſcence of *A. ſylveſtris* above noticed, of which we have ſeen more examples.

Sect. 5. *Anemonoſpermos* of De Candolle; not of former authors.

Seeds rather compreſſed, villous, hooked with the permanent ſtyle. Petals five, very rarely ten. Umbel ſpuriouſly compoſed, there being ſeveral ſtalks in one involucrum; one of them naked and ſingle-flowered; two or three others bearing each a two-leaved partial involucrum, from whence ſprings a ſingle-flowered ſtalk.

34. A. *virginiana.* Virginian Anemone. Linn. Sp. Pl. 761. De Cand. n. 33. Willd. n. 16. Ait. n. 13. Purſh n. 10. (A. virginiana, tertiæ Matthioli ſimilis, parvo flore; Herm. Parad. 18, with a plate.)—Leaves ternate, downy; leaflets three-cleft, pointed, notched, ſharply ſerrated. General and partial involucrum ſimilar, ſtalked. Petals five, elliptical.—In woods, on the ſides of dry ſandy hills, from Canada to Carolina, flowering in May and June. *Flowers* ſmall, greeniſh-yellow. *Purſh.* The *leaflets* and their ſegments are much more pointed, and more ſharply and copiouſly ſerrated, than in *A. ſylveſtris.* Whole *herb* downy, ſoft to the touch. *Seeds* very woolly, in an oval head, on a cylindrical *receptacle.*

35. A. *multifida.* Magellanic Anemone. " Poiret in Lamarck Suppl. v. 1. 364." De Cand. n. 34.—Radical leaves ternate; leaflets in many deep linear ſegments. General and partial involucrum ſimilar, many-cleft, ſomewhat ſtalked. Petals five to ten, elliptical, obtuſe.—Gathered by Commerſon at the ſtraits of Magellan. The *root* is woody. Radical *leaves* on long, looſely hairy, ſtalks. *Common flower-ſtalk* ſtout, erect, taller than the leaves, about ſix inches high. *General involucrum* of three leaves, about two inches long, including their broad hairy ſtalks, being rather larger than the radical leaves, but all ſimilarly divided into linear, or narrow-wedgeſhaped, partly three-cleft, looſely hairy, lobes. *Partial flower-ſtalks* three; the middle one earlieſt, four or five inches long, hairy, leafleſs; the others much ſhorter, ſpreading, each bearing two ſmaller, but otherwiſe ſimilar, involucral leaves; all ſingle-flowered. *Flowers* about the ſize of *A. apennina,* pale yellow, or buff-coloured, according to Commerſon; externally hairy. *Seeds* hairy, collected into a globular head.

M. De Candolle ſaw, in the Bankſian herbarium, a plant from Hudſon's bay, which he conſidered as a variety, differing from the Magellanic ſpecimens in having only one *flower;* or, at moſt, two, one of which bore a partial *involucrum* below the middle. He ſuggeſts that it may poſſibly conſtitute a diſtinct ſpecies.

36. A. *pennſylvanica.* Pennſylvanian Anemone. Linn. Mant. 247. De Cand. n. 35. Willd. n. 19. Ait. n. 14. Purſh n. 8. (A. irregularis; Lamarck Dict. v. 1. 167. *De Cand.* A. aconitifolia; Michaux Boreal.-Amer. v. 1. 320.)—Leaves deeply three-cleft; ſegments three-lobed, notched, acute. Involucral ones ſimilar, ſeſſile. Petals five, elliptical. Seeds villous.—In meadows, and on the borders of woods, from Canada to Pennſylvania, flowering in June and July. *Flowers* large, white, with yellow *anthers. Purſh.* Sir Joſeph Banks has ſpecimens from Fort Albany and Hudſon's bay. *De Cand.* We have one from the late Peter Collinſon's garden at Mill-hill, probably of an earlier date than 1766; ſee Hort. Kew. This is a tall, apparently cauleſcent, ſpecies, whoſe *flower-ſtalk* is angular, a foot and a half or two feet high, twice forked, and variouſly compound. The radical *leaves* we have not ſeen; De Candolle deſcribes them with long *footſtalks,* as tall as the flowering ſtalk, and deeply divided into three or five principal lobes, which are oblong-lanceolate; wedge-ſhaped at the baſe; pointed, cut and toothed, at the extremity. Such, nearly, are the general, as well as partial, *involucral leaves,* but ſeſſile, the former three, the latter two, at each diviſion of the ſtalk; all ſtrongly ribbed, two or three inches long, ſlightly downy with ſmall, cloſe, ſcattered hairs.

Partial ſtalks long, ſtraight and ſlender, ſingle-flowered, rarely ſomewhat leafy. *Petals* three-quarters of an inch long, obtuſe. *Seeds* compreſſed, pointed, ſparingly downy. A variety, or perhaps a diſtinct ſpecies, found by Laxmann in Siberia, is mentioned by De Candolle, which approaches *A. narciſſiflora* in the firſt appearance of its *infloreſcence*, but is really more akin to *pennſylvanica*, differing, as it ſeems, chiefly in the ſituation of each ſmall *partial involucrum*, near the bottom of their reſpective ſtalks. We have not ſeen any ſpecimen.

37. A. *dichotoma*. Forked Anemone. Linn. Sp. Pl. 762. De Cand. n. 36. Willd. n. 20. Ait. n. 15. Purſh n. 9, excluding the ſyn. of Lamarck. Linn. Fl. Dec. 2. 29. t. 15. (A. n. 37; Gmel. Sib. v. 4. 197, excluding the ſynonyms. Ranunculus Braſilianus; Linn. Am. Acad. v. 1. 155. n. 102.)—Leaves deeply three-cleft; ſegments oblong, cut and toothed at the end. Involucral ones ſimilar, ſeſſile, all two-leaved. Petals five, elliptical. Seeds ſmooth. —Frequent throughout Siberia. *Gmelin*. In wet woods, and natural meadows, of Canada, and the weſtern parts of New York, flowering in May and June. *Purſh*. *Root* ſlender. *Herb* ſmaller than the preceding, and ſmoother, with only two leaves to the *general involucrum*, and the *leaflets* or ſegments have larger, but much fewer, teeth or ſerratures. The *flower* moreover is ſmaller, tinged with red on the outſide; and the *ſeeds* are ſmooth.

38. A. *mexicana*. Mexican Anemone. "Humb. Bonpl. et Kunth, MSS." De Cand. n. 37.—"Leaves three-cleft; ſegments oval, ſomewhat wedge-ſhaped, deeply toothed. Involucral ones in pairs, ſeſſile, cut. Germens downy."—Native of Mexico, near Santa Roſa. *Herb* rather hairy all over. Segments of the *leaves* ſcarcely pointed; the lateral ones often divided. *General involucrum* of only two leaves, its central *flower-ſtalk* naked; the lateral *ſtalks*, from one to three, bearing a ſmall two-leaved *partial involucrum* near the bottom. *Flowers* white, much like *pennſylvanica*. *Germens* downy, oblong, taper-pointed. *De Cand.*

39. A. *helleborifolia*. Hellebore-leaved Anemone. De Cand. n. 38.—"Leaves pedate; leaflets ſmooth, rather coriaceous, three-cleft; wedge-ſhaped at the baſe, and ſomewhat ſtalked; lobes ſerrated, acute. Involucral ones all three-leaved, nearly ſeſſile. Germens ſmooth."—Gathered by Dombey, near Huaſa-Huaſi, in South America. A handſome very diſtinct ſpecies. *Root* round, rather thick, with numerous fibres. *Radical leaves* numerous, on hairy ſtalks three or four inches long. *Flower-ſtalk* round, hollow, twelve or eighteen inches high; its firſt branches three or four, long and ſmooth; ſecondary ones rather hairy, moſtly three-flowered. *Involucral leaflets* rather ſhaggy at their baſe, three-cleft; their lobes three-cleft, ſerrated, acute. *Flowers* white. *Petals* five, oval. *Stamens* ſhort. *Seeds* fifteen to twenty, oval, ſmooth, each with a hooked ſtyle, crowded upon a hairy *receptacle*. Sometimes a third *partial involucrum* is found under the flower. *De Cand.*

40. A. *vitifolia*. Vine-leaved Anemone. Buch. MSS. De Cand. n. 39.—Leaves palmate, acutely ſeven-lobed, ſerrated; downy and hoary beneath. Involucral ones ſimilar, three or five-lobed, ſtalked, heart-ſhaped, two or three together. Petals five, obovate. Germens ſmooth.—Gathered by Dr. Francis Buchanan, near Sembu (not Lamba), and Narainhetty, in Nepaul, flowering in Auguſt and September. The *radical leaves*, in his own ſpecimens, are from ſix to ten inches wide, ſmooth above, ſtrongly and copiouſly veined, cut more than half way down, into three principal, pointed lobes, with two or three more ſhallow, rounded, and imperfect ones at each ſide. *Footſtalks* a foot long, angular, hairy. *Involucral leaves* much ſmaller, and leſs lobed; their *ſtalks* of various proportions; three at the firſt ſubdiviſion of the tall downy *flower-ſtalk*; two at the upper ones. *Flowers* the ſize of *A. ſylveſtris*, white; externally ſilky, reddiſh, and ſtrongly ribbed. *Seeds* numerous, covering a globular *receptacle*, interſperſed with long, white, woolly down. This ſpecies is remarkable for the great ſize, and white downy backs, of its *leaves*, ſome of which rival thoſe of *Rubus odoratus* in dimenſions.

41. A. *rivularis*. Water Anemone. Buch. MSS. De Cand. n. 40.—Leaves ternate, hairy on both ſides; leaflets wedge-ſhaped, three-cleft, notched, and ſharply toothed; involucral ones ſeſſile, deeply three-lobed, pinnatifid, cut. Petals five, ovate.—Native of the moiſt banks of rivulets in Upper Nepaul; gathered by Dr. Buchanan, near Chitlong, April 12, 1802. *Root* rather woody, as thick as the thumb. *Radical leaves* numerous, three inches broad, on hairy ſtalks from four to eight inches long. *General involucral ones* three, larger, more elongated and pinnatifid; *partial* two, with ſtill narrower lobes. *Flowers* half the ſize of the laſt, white; purpliſh and hairy beneath.

Sect. 6. *Omalocarpus*. De Candolle.

Seeds compreſſed flat, oval-orbicular, very ſmooth, perfectly deſtitute of point or tail. Flower-ſtalks numerous, ſingle-flowered, naked, forming an umbel in the involucrum; rarely ſolitary.

42. A. *narciſſiflora*. Narciſſus-flowered Anemone. Linn. Sp. Pl. 763. De Cand. n. 41. Willd. n. 27. Ait. n. 20. Purſh n. 7. Jacq. Auſtr. t. 159. Curt. Mag. t. 1120. (not 1170.) Crantz Auſtr. faſc. 2. 102. t. 3. f. 1. (A. n. 1155; Hall. Hiſt. v. 2. 65, excluding the references to Matthiolus and Lobel. Ranunculus alpinus, narciſſi flore, et R. montanus albus hirſutus; Bauh. Hiſt. v. 3. app. 844, 845. R. montanus 2 and 3; Cluſ. Hiſt. v. 1. 235. R. hirſutus alpinus, fl. albo, et R. montanus hirſutus purpureus; Ger. Em. 956. Aconitum candidum; Dalech. Hiſt. 1743.)

β. Willd. et De Cand. (A. faſciculata; Linn. Sp. Pl. 763. Ranunculus orientalis, aconiti lycoctoni folio, flore magno albo, vel purpuraſcente; Tourn. Cor. 20. Voy. v. 2. 106, with a plate.)

γ, monantha. De Cand. (A. dubia; Bellard. App. ad Fl. Pedem. 26. t. 5, (not 232. t. 7.)

Radical leaves ſlightly hairy, in three or five, very deep, wedge-ſhaped ſegments, with many, unequal, linear-lanceolate lobes. Flowers umbellate.—Found in mountainous paſtures, eſpecially on a calcareous ſoil, almoſt throughout the northern hemiſphere; in the Pyrenees and all the alpine countries, in Siberia, Caucaſus, Cappadocia, as well as in Canada, and on the north-weſt coaſt of America; but not in Britain, Greece, nor the Archipelago, as far as we have any information. It flowers early in ſummer, and is of an elegant appearance, though ſeldom ſeen in gardens. The *umbel* of pure white *flowers*, with obovate *petals*, occaſionally tinged, eſpecially underneath, with purple, readily diſtinguiſhes this ſpecies. The *involucrum* is ſeſſile, divided like the *leaves*, and like them hairy on both ſides, but not particularly ſo at the edges. The *germens* and broad *ſeeds* are quite ſmooth. Tournefort's plant, our β, is a very ſlight variety, with a more denſe *umbel*. We know Dr. Bellardi's *A. dubia* merely from his figure, for he himſelf never ſaw more than one ſpecimen; but we concur with profeſſor De Candolle, who appears to have occaſionally ſeen a two-flowered ſpecimen, in making it a variety. Concerning the two Siberian plants, to which De Candolle alludes, as poſſible varieties of *narciſſiflora*, we have not materials to form any opinion; nor were thoſe with which he was furniſhed quite ſatisfactory.

43. A. *umbellata.* Fringed Umbellate Anemone. Willd. n. 28. De Cand. n. 42. (A. faſciculata; Vahl Symb. v. 3. 74, excluding the ſynonym. Ranunculus orientalis, napelli folio lanuginoſo, flore albo; Tourn. Cor. 20.)—"Radical leaves in three or five, very deep, three-cleft, entire, denſely fringed ſegments. Flowers umbellate.—Gathered by Tournefort, on the mountains of Cappadocia. De Candolle, who examined his original ſpecimens, deſcribes the radical *leaves* as conſiſting of numerous deep ſegments, which are three-cleft, acute, with entire lobes, whoſe margins are denſely fringed, with very long, white, cloſe-preſſed hairs, ſuch as occur on the *footſtalks*, ſcarcely two inches in length. *Flower-ſtalk* a palm in height, with ſimilar, but more ſcattered, hairs. *Involucral leaves* deeply three-cleft; their lobes entire, chiefly hairy at the edges. *Partial ſtalks* two or three, ſimple, longer than the *involucrum*. *Petals* five, white, oval, obtuſe, externally hairy. We have Siberian ſpecimens, probably ſuch as M. Patrin communicated to De Candolle. Theſe anſwer to his deſcription of the hairy-edged *leaves*, but ſeem to us not ſpecifically diſtinct from *narciſſiflora*, with which they agree in ſize, and in certain pale glands, between the ſegments of the *leaves*, peculiarly viſible in theſe Siberian ſpecimens, though not noticed by authors in any. We ſuſpect that theſe ſpecimens may prove the identity of *A. umbellata* and *narciſſiflora*.

44. A. *ſibirica.* Siberian Tawny Anemone. Linn. Sp. Pl. 763. De Cand. n. 43. Willd. n. 13. (A. n. 41; Gmel. Sib. v. 4. 199.)—Leaves deeply three-lobed; lobes wedge-ſhaped, in many deep, linear-oblong, bluntiſh, fringed ſegments. Involucral ones ſimilar, on ſhort ſtalks, partly notched. Flower ſolitary. Petals ſix, orbicular. Germens ſmooth.—Native of Siberia, from the river Yeniſſey to the country beyond the lake Baikal. *Gmelin.* That author ſays not a word more concerning the plant in queſtion. One of his ſpecimens is in the Linnæan herbarium, and appears evidently allied, in the general nature of its *foliage*, as well as the ſmooth *germens*, to the two laſt-deſcribed. The *footſtalks* and the *flower-ſtalk*, which is only four inches high, bear many, long, ſcattered, ſpreading, tawny hairs. The *flower* is an inch and a quarter broad, with orbicular ſpreading *petals*, longer than the *involucrum*, and, as far as can be judged from a plant ſo long dried, they appear to have been yellow, or orange-coloured, reſembling a *Trollius*.

† Species not ſufficiently known.

45. A. *Walteri.* Walterian Anemone. Purſh n. 5. De Cand. n. 44. (Thalictrum carolinianum; Walt. Carol. 157.)—"Radical leaves palmate, on long ſtalks. Flower-ſtalk radical, erect, long, ſingle-flowered. Petals five. Root tuberous and fibrous." *Walter.*—Native of Carolina. Mr. Purſh never found this plant, nor could he meet with a ſpecimen in Mr. Walter's herbarium; but he conſidered it as more probably belonging to *Anemone* than to *Thalictrum*. Profeſſor De Candolle ſuſpects it may prove akin to *A. parviflora*, n. 18.

46. A. *pedata.* Pedate Anemone. "Rafineſque Schmaltz in Deſv. Journ. Bot. for 1808. v. 1. 230." De Cand. n. 45.—"Leaves deeply five-cleft, pedate; lobes laciniated. Stalk ſingle-flowered, ſhort. Petals ſix."—Native of New Jerſey. *Raf. Schm.*

†† The following ſynonyms could not be reduced by De Candolle to any known ſpecies.

Anemone n. 1, 2. 4, 5, 6, and 9 of Matthiolus; ſee the Valgriſian edition, v. 1. 563—567, where are figures of the firſt five, copied in Bauhin's edition of 1598, p. 460, 461; Dalech. Hiſt. 442—444; and criticiſed in Bauh. Hiſt. v. 3. 409. Theſe are very obſcure, and perhaps, as De Candolle obſerves, fictitious; ſome of the cuts repreſenting ſpecies of *Adonis*, we ſhould ſay *Papaver*, rather than any *Anemone*.

A. quinta; Camer. Epit. 390, copied in Bauh. Hiſt. v. 3. 408, 409, by the name of A. ranunculi facie lutea. This ſeems a confuſion of *Eranthis* (*Helleborus*) *hyemalis*, and *Ranunculus montanus*.

Ranunculus nemoroſus, Anemones flore minor; Bauh. Prodr. 95.—Found at Montpellier; but not known to Magnol.

A. folio aconiti, radice rapunculi, flore ex purpurâ albicante; Bauh. Hiſt. v. 3. 407, no figure.—Found on ſunny hills near Warſaw.

A. folio coriandri, radice olivæ, flore purpureo, Tabern; Bauh. Hiſt. ibid. Probably, as De Candolle ſuggeſts, *A. coronaria*.

A. folio multiplicato hirſuto, flore quadrifido, rubro, albo, cæruleo; Bauh. Hiſt. ibid.—Native of Italy, Sclavonia, and the Morea.

A. Anguillaræ lutea quadrifolia, foliis multifidis; Bauh. Hiſt. v. 3. 408.—Native of Apulia.

A. lutea Rauwolfii; Bauh. Hiſt. ibid.—Found about Aleppo.

Pulſatilla flore obſoleto, caule nudo; Breyn. Cent. 1. 135. Raii Hiſt. v. 1. 636. Pluk. Almag. 308 (not 30).—Found in the Caſſubian mountains, flowering in May. Ray ſuſpects this to be a monſter.

P. orientalis tenuiſſimé diviſa et villoſa, flore rubro; Tourn. Cor. 20.

A. flemmenſis; Scop. Ann. Hiſt. Nat. 2. 54.—Native of mount Feudo, in the Tyrol. This ſeems, by the author's deſcription, to belong to *A. alpina*, as M. De Candolle ſuſpects. We do not underſtand the reference of the latter to "Fl. Auſtr. 2. p. 41." There is nothing to the purpoſe in that vol. and page of Jacq. Fl. Auſtr. nor in Scopoli's own Flora Carniolica.

A. dodecaphylla; "Krock. Sileſ. 2. 1. p. 235. t. 20." (A. decapetalæ var. β; Gmel. Syſt. Linn. v. 2. 871.)—Found in Sileſia.

To theſe may be added A. anomala, Rafineſque in Florula Ludoviciana 82.—"Leaves ternate, ſeſſile, cut. Petals five, unequal. *Stem* about a foot high.

A. *thalictroides.* Linn. Sp. Pl. 763. Willd. n. 29. Ait. n. 21. Purſh n. 6. Curt. Mag. 866; is *Thalictrum anemonoides;* De Cand. Syſt. v. 1. 186. Michaux Boreal.-Amer. v. 1. 322. See THALICTRUM hereafter.

For A. *Hepatica*, Linn. Sp. Pl. 758; ſee HEPATICA hereafter.

ANEURISM. Subſequently to the period when the article ANEURISM was inſerted in the early part of this Cyclopædia, many new and valuable obſervations have been made upon the ſubject; and the ſucceſs of operations for the cure of the diſeaſe has been proved in a manner which has ſurpaſſed the expectations of the moſt ſanguine. The firſt grand improvement in this branch of operative ſurgery was unqueſtionably that of not opening the tumour itſelf, but cutting down to the veſſel at a certain diſtance from the diſeaſe, and there applying the ligature ſo as to impede the flow of blood into the aneuriſmal ſac. The removal of the ſwelling was then left to the gentle and gradual action of the lymphatics; a proceſs infinitely ſafer than the violent and painful proceeding of laying open the large tumour with a knife, extracting the coagulated blood, and leaving an ample cavity to ſuppurate. But theſe were not the only objections to the old method of operating; for the ſac was opened, and the artery tied in a ſituation where its coats were actually in a diſeaſed ſtate. Hence the ligatures moſtly failed in their effect; the veſſel did not undergo favourably the adheſive inflammation by which it was to be cloſed; and the patient frequently either loſt his life by hemorrhage, or was reſcued by the performance of amputation under the worſt and moſt diſadvantageous circumſtances. The genius of a Hunter was ſoon ſtruck with the defects of the former plan of operating, and inſtead of meddling with the tumour itſelf, and tying the artery in a place where it was in a morbid condition, this diſtinguiſhed ſurgeon conceived that it would be far better practice to tie the veſſel where it was more likely to be found, *viz.* at a point ſome way from the diſeaſe towards the heart. Thus in the popliteal aneuriſm, he avoided the painful operation of laying open the ſwelling in the ham, and more ſkilfully and ſcientifically took up the femoral artery itſelf in the middle of the thigh. From this important innovation, all the ſucceſs which has characterized this department of modern ſurgery has unqueſtionably been derived. By extending the ſame principles to other caſes of aneuriſm, and putting due confidence in the competency of the collateral and anaſtomoſing veſſels to carry on the circulation, ſome of our preſent ſurgeons have deviſed and practiſed operations for the cure of ſuch aneuriſms, as a few years ago would have been abandoned as hopeleſs and inevitably fatal. Not only have the carotid, the external iliac, and the ſubclavian arteries been repeatedly tied with the moſt ſucceſsful reſult, the internal iliac itſelf, whoſe ſituation ſeems to render it almoſt inacceſſible to the inſtruments of the moſt ſkilful operator, has now had a ligature put round it in two memorable examples, one of which we have already noticed in the article Surgery. The other operation was performed by Mr. Atkinſon, of York; the caſe being a gluteal aneuriſm, the ſame kind of diſeaſe for which Mr. Stevens operated at Santa Cruz. The patient, whoſe name was Thomas Coſt, aged twenty-nine, preſented himſelf at the York county hoſpital, April 29, 1817. He was a tall, ſtrong, active bargeman, not corpulent, but very muſcular. He was enduring great pain from a large, renitent, pulſating tumour, ſituated under the glutæus of the right ſide, an obvious aneuriſm. It had exiſted about nine months, and was the conſequence of a blow from a ſtone. In a conſultation with Dr. Lanſon and Dr. Wake, the neceſſity of the operation was determined upon, and it was performed on the 12th of May, without any material difficulty or interruption, except what depended on the aneuriſm-needle not being pliable enough, and what was the conſequence of the diviſion of, and bleeding from, the ſmall muſcular arteries. Having got command of the internal iliac artery within the pelvis, which, ſays Mr. Atkinſon, required the complete length of the fingers to accompliſh, the veſſel was tied. Sufficient proof of its being the identical artery was repeatedly obtained, by the preſſure upon it ſtopping the pulſation in the tumour. Dr. Wake, Mr. Ward, and all the pupils, were quite aſſured of the circumſtance. The artery being then tied, the pulſation of the ſwelling entirely ceaſed. The patient went on tolerably well for ſome time after the operation; the pulſe never exceeded 130, and, after a time, ſunk to 85 or 90. He became exhauſted, however, partly by the diſcharge, and partly by hemorrhage, and died on the 31ſt of May, about nineteen days after the operation. It is to be regretted, that ſome eſſential particulars are omitted in the narration of the caſe, eſpecially thoſe reſpecting the exact parts divided in the operation, and the place of the external inciſion; yet, on the whole, whoever reads the account can, we think, entertain no doubt about the important fact, *viz.* that the internal iliac was actually tied. See the Med. and Phyſ. Journ. vol. xxxviii. p. 267.

Although this operation did not ſucceed like that executed by Mr. Stevens, the record of it is highly intereſting, as tending to diſpel the doubts which have been entertained about the practicable nature of the proceeding. Even the aorta itſelf has now been tied in the human ſubject. Of courſe, the circumſtances which juſtified ſuch a bold proceeding were deſperate in the extreme, nor could much hope of the patient's life be indulged; yet, as it was the only thing from which a poſſibility of preſervation could be derived, we think, notwithſtanding its failure, much credit is due to the enterpriſing ſurgeon who performed it. We ſhall introduce a few particulars of the caſe in another place. See Aorta.

In the article Aneurism, in the early part of this Cyclopædia, will be found ſome obſervations tending to make the reader imagine, that this diſeaſe ariſes from ſuch a kind of weakneſs as may be ſuppoſed to ariſe from the diviſion of the outer coat or coats of an artery. We therefore take this opportunity of correcting the ſtatement, ſince it has been fully proved by the experiments of Hunter, Home, Scarpa, &c. that aneuriſm never originates from this cauſe; and that even ſtripping off the external coat of the veſſel will not give riſe to ſuch an effect.

With reſpect to tying the ſubclavian artery for the cure of axillary aneuriſms, we ought to have remarked, that the operation, as performed by making an inciſion above the clavicle, has never had a ſucceſsful reſult in this country; but, from a communication lately made to the Medical and Chirurgical Society of London, ſuch an operation appears to have been recently executed with complete ſucceſs by Dr. Poſt, of New York. We believe this to be the only inſtance in which this mode of operating has cured the diſeaſe, and ſaved the patient's life. The artery, however, has been ſeveral times taken up in this way in London; once by the late Mr. Ramſden, and again by Mr. Thomas Blizard; but their patients did not recover. The particulars of Dr. Poſt's caſe are inſerted in the Medico-Chirurgical Tranſ. vol. ix. p. 185, &c.

ANGAR Island, in *Geography*, an iſland of the Perſian gulf, ſomewhat larger than Ormuz, and equally barren. It is now uninhabited, but preſents traces of former population in the ruins of a conſiderable town, and many reſervoirs for water. It has two wells and a ſtream of good water, is covered with pits of ſalt and metallic ores, and alſo a ſoft rocky ſubſtance reſembling lava: its hills, which are overſpread with ſhells of oyſters and other fiſh, abound in wild goats, rabbits, and partridges. It forms an excellent harbour, which has been recommended for a ſettlement.

ANGELO Amerigi, &c. l. 7, *r.* Domenichino; l. 17, after life, add—The maſter-piece of all his works, *viz.* the Entombing of Chriſt, is now in the Louvre at Paris.

ANGIOPTERIS, in *Botany*, from αγγος, *a veſſel*, and πτερις, *a fern*, a faulty name, as being compoſed of one already eſtabliſhed.—Hoffm. Comm. Gott. v. 12. 29. Willd. Sp. Pl. v. 5. 69. Swartz in Schrad. Journ. for 1801. 273. t. 2. f. 4. Syn. Fil. 166. (Clementea; Cavan. Leccion. 553.)—Claſs and order, *Cryptogamia Filices*; ſect. *exannulatæ*. Nat. Ord. *Filices dorſiferæ*.

Eſſ. Ch. Capſules aggregate, in elliptical, crowded, maſſes, obovate, of two equal valves, and one cell, without a ring. Involucrum none.

This is one of thoſe curious genera of ferns, which like Danæa, Gleichenia, and Marattia, (ſee thoſe articles,) bear their capſules on the back of the leaf, or frond, without either a ring or involucrum. In the preſent inſtance, indeed, theſe *capſules* are not of many cells, like thoſe of *Danæa* and *Marattia*, but as perfectly ſimple as in Osmunda already deſcribed, or Botrychium hereafter to be mentioned. They are, however, not diſperſed, or irregularly placed, but compoſe oval *maſſes*, of twelve or more *capſules*, which maſſes are ranged ſide by ſide, in a denſe uninterrupted line, near the margins of each *leaflet* of the *frond*, a vein from the mid-rib running along the baſe, or inſertion, of each maſs, between its two rows of capſules. That theſe *maſſes* are determinate aſſemblages of capſules of an appropriate figure, is evinced by their having at each end a ſolitary tranſverſe capſule, completing their oval outline, which is not perfectly expreſſed in Dr. Swartz's figure. The genus is, doubtleſs, very diſtinct; and as its preſent name is not only faulty, but unmeaning, it would be well if *Clementea*, in honour of an able cryptogamic Spaniſh botaniſt, Don Simon de Roxas Clemente, had been retained. We ſhould certainly now, without ſcruple, have reſtored it, were there not ſeveral other names of ferns, compoſed of *pteris*, which muſt ſtand or fall with *Angiopteris*.

1. A. *evecta*. Tall Angiopteris. Hoffm. Comm. Gott. v. 12. 29. t. 5, excluding the ſynonyms, except Forſter's. Swartz Syn. Fil. 166. 395. Willd. n. 1. (Polypodium evectum; Forſt. Prodr. 81. Clementea palmiformis; Cavan. Leccion. 554.)—Native of the Society iſles, and of Maria's iſlands. We have an Otaheite ſpecimen from Mr. Menzies. The *main ſtem* is ſaid to be arboreſcent, five feet high, and a ſpan in diameter. *Fronds* ſix feet long, doubly pinnate; *leaflets* from two to four inches long, oppoſite, ſeſſile, linear-lanceolate, taper-pointed, ſmooth, as well as their *common ſtalk;* their margins finely crenate, the point ſerrated. *Capſules* brown, ſmooth, very numerous, ſcarcely larger than grains of ſea-ſeed.

ANGLE, Rectilinear, l. 2, for I. *r.* II.

Angle *at the Periphery*, for I. *r.* II.

ANGOY. See Goy and Loango.

ANGRA, l. 1, *r.* Terceira.

ANGUILLA. For Mytus *r.* Myrus.

ANGUILLARIA, in *Botany*, a genus dedicated by Mr. Brown, to the memory of Luigi Anguillara, (ſee that article,) apothecary, in the univerſity of Padua, to the Venetian republic, who left an Italian work on the *Materia Medica*, which has been publiſhed at various times, and tranſlated into Latin. Haller ſpeaks of its author as deeply learned in this ſubject, and perhaps the beſt Italian botaniſt of the earlier part of the ſixteenth century, having travelled much in Europe and the Levant, and ſtudied critically the writings of thoſe who had gone before him. Gærtner has called a genus *Anguillaria*, from the ſingular appearance of its embryo, reſembling an eel, *Anguilla;* but this is the Ardisia of all authors at preſent. (See that article.)—Brown Prodr. Nov. Holl. v. 1. 373.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Melanthaceæ*, Brown.

Gen. Ch. *Cal.* none, unleſs the corolla be ſo called. *Cor.* Petals ſix, lanceolate, inferior, ſpreading, equal, deciduous, each furniſhed with a claw. *Stam.* Filaments ſix, inſerted into the baſe of each petal, awl-ſhaped, ſhorter than the corolla; anthers oblong, peltate, reverſed. *Piſt.* Germen ſuperior, oblong, furrowed; ſtyles three, ſpreading, ſhorter than the ſtamens; ſtigmas acute. *Peric.* Capſule ovate-oblong, naked, of three cells and three valves, the partitions from the middle of each valve. *Seeds* numerous, nearly globular.

Eſſ. Ch. Calyx none. Petals ſix, equal, ſtalked, deciduous. Stamens inſerted into the claws. Stigmas acute. Capſule of three cells, with many ſeeds.

Obſ. *Anguillaria* is nearly akin to Ornithoglossum. (See that article.) It conſiſts of herbs, exactly reſembling the Cape ſpecies of *Melanthium*, eſpecially in their *leaves* and *roots*. The *flowers* are ſometimes dioecious, or polygamous. The claw of each *petal* is, in ſome inſtances, marked with a double gland. *A. indica*, in habit, colour of the *flowers*, the perfectly deciduous *corolla*, and perhaps the ſituation of the *embryo*, differs from the reſt; can it be a diſtinct genus? *Brown*.

1. A. *dioica*. Dioecious Anguillaria. Br. n. 1.—"Flowers ſpiked, dioecious. Claws of the petals ſomewhat ſtriped at the upper part."—Obſerved by Mr. Brown, at Port Jackſon, New South Wales, as well as in Van Diemen's iſland.

2. A. *biglanduloſa*. Glandular Anguillaria. Br. n. 2.—Flowers united. Spikes few-flowered. Claws of the petals with two glands at the upper part.—Sent from Port Jackſon, by Dr. John White, where alſo it was gathered by Mr. Brown. The *ſtem* is ſolitary, from four to ſix inches high, ſimple, round, bearing two diſtant, linear, ſmooth, recurved *leaves;* ſheathings inflated, and broad at their baſe. *Spike* ſolitary, terminal, zigzag, of from three to five pale, perhaps yellowiſh, *flowers*, half an inch broad, each *claw* bearing a ſemi-lunar, glandular, prominent, dark-coloured glandular ſpot.

3. A. *uniflora*. Single-flowered Anguillaria. Br. n. 3.—"Stem ſingle-flowered. Leaves lax, with hooded ſheaths."—Native of Van Diemen's iſland.

4. A. *indica*. Indian Anguillaria. Br. n. 4. (Melanthium indicum; Linn. Mant. 2. 226. Willd. Sp. Pl. v. 2. 268.)—Stem with few flowers. Partial ſtalks longer than the petals; the ſide-ones having a collateral leafy bractea. Leaves ſtraight, with tight ſheaths.—Native of Tranquebar and Pondicherry, as well as of the tropical part of New Holland. *Root* bulbous. *Stem* from ſix to ten inches high, ſimple, erect, ſmooth and ſlender. *Leaves* two or three, linear, taller than the ſtem. *Flowers* terminal, uſually two or three, one much earlier than the others, on angular ſtalks, with lanceolate *bracteas* various in ſize and number. *Petals* narrow, of a dark dull purple, as well as the *ſtyles*, which are dilated and revolute. *Capſule* elliptical, crowned with the permanent *ſtyles*.

ANGUIS, l. 9, *dele* which ſee reſpectively, and add—See Serpentes.

ANGULOA, in *Botany*, named in honour of Francis de Angulo, a Spaniſh naturaliſt, of whom or his works we have no information.—"Ruiz et Pavon Prodr. Fl. Peruv. et Chil. 118. t. 26." Swartz Orchid. in Schrad. Neues Journal, v. 1. 89.—Claſs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth ſuperior, reverſed, of three ovato-lanceolate, concave, converging leaves. *Cor.* Petals two, reſembling the calyx, but rather narrower. Nectary a lip ſhorter than the calyx, ſtalked, pitcher-ſhaped, ſomewhat bell-ſhaped, ſplit longitudinally at the inner ſide, two-lobed; lobes rounded, reflexed at the margin; having in the notch in front a ſmall, lanceolate, reflexed ſegment; in the poſterior part another, tongue-ſhaped, concave, erect appendage. *Stam.* Anther a vertical, large, hemiſpherical, incumbent lid, pointed in front, of two cells, deciduous; maſſes of pollen two, globular. *Piſt.* Germen inferior, cylindrical; ſtyle erect, gibbous, three-toothed at the top, the middle tooth with three points; ſtigma tranſverſe, in front. *Peric.* Capſule with ſix angles, three of them larger than the reſt, of one cell, and three valves. *Seeds* numerous.

Eſſ. Ch. Calyx reverſed, converging. Petals rather narrower than the calyx-leaves. Lip ſtalked, pitcher-ſhaped, two-lobed, ſhorter than the calyx. Anther a deciduous lid.

1. A. *uniflora.* "Syſt. Veg. Peruv. et Chil. 228."—Native of Peru, about Muna, Tarma, and Chincao.

ANHYDRITE. See MINERALOGY, *Addenda.*

ANJENGO, l. *ult.* N. lat. 8° 39′. E. long. 76° 40′.

ANIGOZANTHUS, in *Botany*, perhaps from ανοιγω, *to expand*, or *be apparent*, and ανθος, *a flower*, as the author commends its beauty.—Labillard. Voyage, Engl. ed. v. 1. 441. Gawler, now Ker, in Curt. Mag. v. 29. 1151. Brown Prodr. Nov. Holl. v. 1. 301. Ait. Hort. Kew. v. 2. 222.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Hæmodoraceæ*, Brown.

Gen. Ch. *Cal.* none, unleſs we take the corolla for ſuch. *Cor.* of one petal, ſuperior, tubular, externally clothed with compound hairs; tube curved, rather ſwelling upwards; limb in ſix deep, irregular, lanceolate, acute, unequal ſegments, much ſhorter than the tube, directed upwards; the two lowermoſt largeſt and moſt ſpreading. *Stam.* Filaments ſix, awl-ſhaped, inſerted into the mouth of the tube, ſhorter than the limb, oppoſite to its ſegments, and having a ſimilar direction; anthers linear-oblong, erect, burſting lengthwiſe in front. *Piſt.* Germen inferior, oval; ſtyle thread-ſhaped, aſcending, on a level with the ſtamens, deciduous; ſtigma undivided, tumid. *Peric.* Capſule nearly ſpherical, of three cells and three valves, crowned with the permanent corolla, burſting at the ſummit. *Seeds* numerous, angular, inſerted into the inner angle of each cell.

Eſſ. Ch. Corolla ſuperior, tubular, incurved; limb irregular, in ſix deep diviſions. Stamens inſerted into the throat, aſcending. Seeds angular.

A genus of perennial herbs. *Root* of numerous thick faſciculated fibres. *Stem* unbranched, except at the top. *Leaves* ſword-ſhaped, turned, half-ſheathing at the baſe. *Flowers* ſomewhat corymboſe, in ſhort *ſpikes* (rather *cluſters*) with a lanceolate *bractea* at the baſe of ſome of the partial ſtalks. *Brown.*

1. A. *rufa.* Reddiſh Anigozanthus. Labill. Voy. as above 441. t. 22. Nov. Holl. v. 2. 119. Brown n. 1.—"Stem permanently downy. Anthers pointleſs."—Native of Lewin's land, in dry ſandy deſarts, where it flowers in December. The *ſtem* is two feet or more in height, round, moſt downy in the upper part; ſomewhat leafy below. *Leaves* linear, acute, narrow, entire, finely ſtriated. *Panicle* corymboſe, downy. *Flowers* externally covered, like the whole of the panicle, with reddiſh, branched and tufted hairs. Their *partial ſtalks* are ſhort. Labillardiere's figure repreſents the *anthers* with a point, but not an incurved one. Nothing is recorded concerning the colour of the inſide of the flower. The *ſtamens* appear to be dilated at the baſe.

2. A. *flavida.* Ruſſet-green Anigozanthus. Br. n. 2. Ait. n. 1. Redout. Liliac. t. 176. Curt. Mag. t. 1151. (A. grandiflora; Saliſ. Parad. t. 97.)—"Stem and leaves very ſmooth. Down of the panicle deciduous. Anthers with a little reflexed point."—Obſerved by Mr. Brown on the ſouth-weſt coaſt of New Holland. We rely on that gentleman for the above ſpecific characters; otherwiſe we ſhould, like Mr. Ker, have ſcarcely conſidered theſe two plants as diſtinct. The preſent is ſaid to have been ſent to Kew by Mr. Good, in 1803. It was raiſed from ſeed, in Mr. Vere's garden, by Mr. Anderſon, now of Chelſea, who found it required merely to be protected from froſt, and flowered during moſt part of the ſummer. The *leaves* are ſword-ſhaped, much broader than the foregoing. *Flowers*, according to Mr. Brown, ſmaller than in that ſpecies. They ſeem to be two inches long, externally green, covered with red, tufted, branched hairs, as well as their *footſtalks*; inſide of the limb ſmooth, dull purple. *Anthers* red on one ſide, yellow on the other, not repreſented with ſo much of a point in the Botanical Magazine, as thoſe of the firſt ſpecies in Labillardiere's figure. We have ſeen no ſpecimens of either. M. Redouté has detected the ſame ſpecific marks as Mr. Brown, and is the author of the above name. He had ſpecimens of both from his friend Labillardiere, and on minute examination determined them to be moſt probably diſtinct. The *flowers* of *A. flavida* are ſmaller in his figure than in the Botanical Magazine.

ANIMAL FLOWER, l. *ult.* See CALENDULA.

ANISACANTHA, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 410. See SCLEROLÆNA.

ANISOMELES, from ανισος, *unequal*, and probably μηλα, *the cheeks*, or *parts ſurrounding the mouth*, alluding to the great difference in ſhape and ſize between the upper and under lips of the corolla.—Brown Prodr. Nov. Holl. v. 1. 503. Ait. Hort. Kew. v. 3. 364.—Claſs and order, *Didynamia Gymnoſpermia.* Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Brown.

Eſſ. Ch. Calyx tubular, five-cleft, with ten furrows. Upper lip of the corolla ſmalleſt, undivided; lower three-cleft, middle ſegment two-lobed. Stamens prominent, aſcending. Anthers of the ſhorter ones with two adjoining cells; often the longer ones halved, or diſſimilar. Seeds ſmooth.

Downy herbaceous plants, growing within the tropics. *Leaves* crenate. *Flowers* whorled, with minute *bracteas.* *Calyx* glandular. *Corolla* purple. The genus is akin to *Ajuga* and *Teucrium*, but ſufficiently diſtinct from both one and the other. The upper lip of *Ajuga* is extremely ſhort, and has a ſmall central notch. Its *anthers* are obſerved by Mr. Brown to be uniform, kidney-ſhaped, of only one cell; and the *ſeeds* reticulated.

1. A. *moſchata.* Muſky Aniſomeles.—Leaves elliptical, downy and hoary like the ſtem. Flowers few in each whorl. Calyx greyiſh, with conſpicuous glands.—Gathered by Mr. Brown, as well as the two following ſpecies, in the tropical part of New Holland.

2. A. *inodora.* Scentleſs Aniſomeles.—Leaves elliptical, nearly ſmooth; dotted beneath. Whorls remote. Calyx green, with conſpicuous glands.

3. A. *ſalvifolia.* Sage-leaved Aniſomeles.—Hoary and downy. Leaves lanceolate; ſoft and ſmooth above; rugged beneath. Whorls many-flowered. Glands of the calyx imbedded in ſoft down.

4. A. *ovata.* Broad-leaved Aniſomeles. Brown in Ait. n. 1. (Nepeta indica; Linn. Sp. Pl. 799, excluding the ſynonyms. Willd. Sp. Pl. v. 3. 57. Ballota diſticha; Linn. Mant. 83. Ait. ed. 1. v. 2. 304. Willd. Sp. Pl. v. 3. 108. Marrubium odoratiſſimum, betonicæ folio; Burm. Zeyl. 153. t. 71. f. 1.)—Leaves ovate, or ſomewhat heart-ſhaped, ſtrongly crenate or ſerrated. Whorls many-flowered. Bracteas linear. Calyx hairy; with ſcarcely viſible glands.—Native of the Eaſt Indies, from whence it is ſaid to have been imported by the firſt earl of Bute, in 1783. The plant has hardly perhaps been preſerved in the ſtoves, being an annual, of no great beauty, however intereſting to the curious botaniſt. The whole *herb* has a velvet-like ſoftneſs, owing to its fine, ſhort, ſoft, depreſſed hairs; its habit and ſize very like our *Ballota nigra.* The *leaves* ſometimes very much reſemble thoſe of the common *Urtica dioica*, in ſize, ſhape, and ſerratures, but are often rather crenate than ſerrated. *Whorls* for the moſt part crowded into thick, partly leafy, *ſpikes.* Calyx very curiouſly reticulated with copious tranſverſe veins; its teeth large, broad, pungent. The ſhort upper lip of the *corolla* did not eſcape Linnæus, who founds thereon his ſpecific character of this plant, as a *Nepeta.* His

herbarium proves Mr. Brown's ſuſpicion to be correct, of *Ballota diſticha* being the ſame plant. The *ſeeds* well anſwer to the generic character of *Aniſomeles*, being beautifully poliſhed, elliptical, of a ſhining black.

Theſe plants, at leaſt the three New Holland ſpecies, ſeem moſt allied to *Teucrium Iva* and *ſalicifolium* of Linnæus, now removed to *Ajuga*. The muſky odour of the firſt ſpecies is found in *Ajuga Iva*, whence a ſingular variety of that plant, with regular flowers, being taken by Forſkall for a new genus, received the name of Moscharia. (See that article.) The elliptical form of the *leaves* in *Aniſomeles moſchata*, rare in this natural order, agrees nearly with the Linnæan *Teucrium Laxmanni*, which is likewiſe an *Ajuga*. See Teucrium.

ANISOPOGON, from ανισος, *unequal*, and πωγων, *a beard*, alluding to the inequality and diſſimilarity of the awns.—Brown Prodr. Nov. Holl. v. 1. 176.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two lax, membranous, ribbed, equal valves, ſingle-flowered. Corolla ſtalked, of two valves; outer cylindrically involute, three-awned at the top, the middle awn twiſted, the lateral ones briſtle-ſhaped; inner longer, unawned.

1. A. *avenaceus*. Oat-like Aniſopogon.—Native of the neighbourhood of Port Jackſon, New South Wales. A graſs three feet high, reſembling an Avena. (See that article.) *Stems* unbranched. *Leaves* involute, with a fringed *ſtipula*. *Panicle* looſe. *Calyx-glumes* large. The outer valve of the *corolla* is ſilky, connected with its awn by an obſolete joint. A ſmall briſtle, at the baſe of the inner valve, indicates this genus to be more ſtrictly allied to Danthonia, (ſee that ſupplementary article,) than to Aristida, which latter the reader will find in its proper place.

ANKER. Add—An anker of brandy contains 10 gallons. It is alſo a liquid meaſure not only at Amſterdam, but at Copenhagen, Hamburgh, and other places. (See Vat.) At Copenhagen, a fuder of wine contains 2 pipes = 4 oxhofts = 6 ahms; the ahm or tierce being = 4 ankers = 40 ſtubgens = $77\frac{1}{2}$ kannes = 155 pots = 620 pocles. A ſtuckfaſs is = $7\frac{1}{2}$ ahms = 30 ankers: 32 pots hold the weight of a Daniſh cubic foot of water, each being $6\frac{1}{2}$ Daniſh inches high, $3\frac{1}{4}$ ditto wide, and containing 64 cubic inches: 55 Daniſh pots, or $27\frac{1}{2}$ Daniſh kannes = 14 Engliſh gallons, and an ahm = $39\frac{1}{2}$ gallons nearly. The ahm at Hamburgh is the ſixth part of the fuder, and is = 4 ankers = 5 eimers = 20 viertels = 40 ſtubgens = 160 quartiers = 320 oeſſels. See Measure.

ANN, Queen, in *Geography*, a county of Maryland, containing 16,648 inhabitants, of whom 6381 are ſlaves.

ANNA, a money of account in India. See Rupee.

ANNAPOLIS Royal, l. 13, for ſtem *r.* ſtern.

ANN-ARUNDEL, l. 4, *r.* 26,668; l. 5, *r.* 12,693.

ANNONA, in *Botany*, (ſee our former article,) is a name of barbarous origin, made into Latin by Linnæus, in alluſion, as he tells us in Hort. Cliff. 222, to the value of the fruit, as yielding a grateful harveſt or crop, *annona*, to the people where it grows. *Anona* is generally ſuppoſed to have been the original word, and is accordingly retained by the French ſchool. But by Bauhin's Pinax, *Annona* appears to have full as authentic claims, on the ſcore of priority, as *Anona*. The latter is moreover a Portugueſe corruption of the original *Anon*, which Cluſius taking from Oviedo, makes *Anon*, *Anonis*. *Anona*, *æ*, is very incorrect. We truſt our learned friends in France will not inſiſt on ſuch an inaccuracy, any more than on their great countryman Plumier's name, *Guanabanus*, which they have commendably rejected, though of older authority than Linnæus or Juſſieu.—Linn. Gen. 279. Schreb. 374. Willd. Sp. Pl. v. 2. 1264. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 333. Juſſ. 283. De Cand. Syſt. v. 1. 466. "Dunal Monogr. 58." Lamarck Dict. v. 2. 123. Illuſtr. t. 494. Gærtn. t. 138. (Guanabanus; Plum. Gen. 42. t. 10.)—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juſſ. *Anonaceæ*, De Cand.

Eſſ. Ch. Calyx in three, more or leſs deep, concave, ſomewhat heart-ſhaped, ſharpiſh lobes. Petals ſix, thickiſh, the three innermoſt ſmaller or wanting. Anthers numerous, nearly ſeſſile, covering the receptacle; angular and dilated at the ſummit. Germens numerous, coaleſcing into a ſingle ſeſſile berry, whoſe coat is either tubercular, ſcaly, or reticulated, the internal ſubſtance pulpy, ſurrounded with numerous, ſingle-ſeeded cells. De Candolle.

N.B. In our former article, line 12, read (or a compound berry, as in *Rubus*).

The ſpecies are trees or ſhrubs, whoſe *bark* is often reticulated, glandular, and aromatic. *Leaves* undivided, ſometimes beſprinkled with pellucid dots. *Flower-ſtalks* either axillary, or oppoſite to the leaves, often ſolitary, bearing one or more *flowers*, ſometimes accompanied by ſmall *bracteas*.

Obſ. Very rarely the *calyx* has four lobes. The inner *petals* are occaſionally imperfect.

Twenty-ſeven ſpecies are defined by De Candolle, but of theſe five are marked as imperfectly known. They are diſpoſed in five ſections, by the ſhape and conſiſtence of their petals.

Sect. 1. *Petals concave, thick, rather coriaceous, either heart-ſhaped or ovate.* Eleven ſpecies, ſubdivided as follows.

* Outer petals acute; inner ones obtuſe, and rather ſmaller. Sp. 1—4.

** Outer petals obtuſe. Sp. 5.

*** Petals all acute; inner ones rather the ſmalleſt. Sp. 6—11.

A conciſe view of the ſpecies will be ſufficient, following the numbers of De Candolle.

1. A. *muricata*. (See Annona *n.* 1.) Linn. Sp. Pl. 756. Jacq. Obſ. faſc. 1. 10. t. 5. (Zuurſack; Merian Surin. t. 14.)—Leaves ovato-lanceolate, ſmooth, ſomewhat ſhining. Stalks ſolitary, ſingle-flowered. Outer petals heart-ſhaped, pointed; inner obtuſe. Fruit armed with ſleſhy pointed tubercles.—Native of South America and the Weſt Indies. The *flowers* are large, yellow. *Fruit* as big as a large pear, green or yellow, much eſteemed.

2. A. *purpurea*. "Dunal Monogr. 64. t. 2."—Leaves nearly ſeſſile, lanceolate; rather ruſty beneath. Flowers axillary, almoſt ſeſſile. Outer petals heart-ſhaped, acute; inner roundiſh.—Found in Mexico. *Fruit* unknown. Outer *petals* yellowiſh-brown; inner purple.

3. A. *Humboldtii*. "Ibid. 64. t. 3."—Leaves oblong, pointed, ſmooth, ſlightly dotted. Stalks axillary, ſolitary, ſhort, ſingle-flowered. Outer petals ovate, ſomewhat heart-ſhaped, acute; inner bluntiſh.—Found by Humboldt and Bonpland, in the South American province of Cumana. A *ſhrub*. *Flowers* yellowiſh, dotted with purple and red.

4. A. *laurifolia*. "Ibid. 65. (Anona, &c.; Cateſb. Carol. v. 2. t. 67.")—Leaves ovato-lanceolate, ſmooth. Stalks ſolitary, ſingle-flowered, drooping. Outer petals heart-ſhaped, acute; inner rounded. Fruit ſmooth, obovate. —Native of South America, and ſome parts of the Weſt Indies. *Outer petals* large, green; *inner* white. *Fruit* green, ſhaped like an inverted pear.

5. A. *obtuſiflora*. "Tuſſac Antill. t. 28. Dunal Monogr. 65."—Leaves oblong-lanceolate, wavy, pointed, copiouſly ribbed; the young ones downy. Stalks axillary, ſingle-

flowered. Outer petals obtuſe.—Cultivated in Hiſpaniola. *Fruit* roundiſh, tuberculated.

6. A. *paluſtris.* (See ANNONA n. 6.) Linn. Sp. Pl. 757. (A. aquatica, &c.; Sloane Jam. v. 2. 169. t. 228. f. 1.)—Leaves ovate-oblong, coriaceous, very ſmooth. Flowers ſolitary, ſtalked. All the petals acute. Fruit reticulated.—Native of the banks of rivers in South America and Jamaica.

7. A. *longifolia.* Aubl. Guian. 615. t. 248. Willd. n. 6.—Leaves oblong, taper-pointed, ſmooth. Flowers axillary, ſtalked. All the petals acute. Fruit ovate, nearly globular, dotted and reticulated.—Native of the borders of creeks in Guiana. A *ſhrub,* fifteen feet high. *Flowers* large, purpliſh. *Fruit* pulpy, gelatinous, and eatable.

8. A. *punctata.* Aubl. Guian. 614. t. 247. Willd. n. 7.—Leaves ovate-oblong, acute, ſmooth. Flowers axillary, ſolitary, nearly ſeſſile. All the petals acute. Fruit nearly globular, ſlightly dotted.—Found by Aublet in the foreſts of Cayenne and Guiana. A *ſhrub* twenty feet high. *Flowers* ſmall, yellowiſh. *Fruit* reddiſh, eatable.

9. A. *peruviana.* Dunal Monogr. 67.—Leaves elliptic-oblong, acute, rather coriaceous, ſlightly decurrent. Stalks axillary, bracteated. Petals all acute. Fruit globoſe, reticulated.—Found by Humboldt and Bonpland, in bogs about Guyaquil in Peru. *Flowers* yellow; three outer *petals* marked with a red ſpot, near the baſe on the inſide. *Fruit* four inches in diameter, not eatable.

10. A. *Ambotay.* Aubl. Guian. 616. t. 249. Willd. n. 13.—Leaves elliptic-oblong, acute; clothed with ruſty down beneath. Flowers axillary, ſolitary, nearly ſeſſile. Petals acute.—Native of woods in Cayenne. A *ſhrub,* eight feet high. *Flowers* greeniſh, minute. *Fruit* not obſerved by Aublet, who alone ſeems to have ſeen this ſpecies, flowering in November.

11. A. *paludoſa.* Aubl. Guian. 611. t. 246. Willd. n. 4.—Leaves oblong, acute; rather downy above; downy, ſilky, reddiſh, and ribbed beneath. Flowers on ſhort ſtalks. Petals all acute. Fruit ovate, tuberculated.—Found by Aublet, in boggy meadows in Guiana, flowering in November, ripening its thickly tuberculated yellow fruit in April. The *ſtem* is ſhrubby, four or five feet high. *Petals* green, externally ſilky.

Sect. 2. *Outer petals ovate, concave, acute, coriaceous; inner wanting. Fruit not well known, ſo that the plants of this ſection are referred to the preſent genus by their habit only.* Two ſpecies.

12. A. *echinata.* "Dunal Monogr. 68. t. 4."—Leaves ovato-lanceolate, rather acute; very ſmooth above; downy beneath. Branches rugged. Stalks ſolitary, ſingle-flowered. Petals three. Fruit ovate, prickly.—Gathered by M. Patris, in Cayenne.

13. A. *ſericea.* "Ibid. 69. t. 5."—Leaves ovate-oblong, pointed; ſmooth above; ſilky with ruſty down, like the young branches, beneath. Flowers ſolitary, axillary, ſtalked; externally ruſty. Petals three.—Found likewiſe in Cayenne, by M. Patris.

Sect. 3. *Outer petals linear-oblong, narrow; triangular at the point; concave at the baſe only; often converging, ſo as to conceal the organs of impregnation; the inner ones extremely minute.* Six ſpecies.

14. A. *ſquamoſa.* (See ANNONA n. 3.) Linn. Sp. Pl. 757. Jacq. Obſ. faſc. 1., 13. t. 6. f. 1. (Atamaram; Rheede Hort. Malab. v. 3. 21. t. 29.)—Leaves lanceolate, ſmooth, with pellucid dots. Outer petals ſomewhat converging. Fruit ovate, ſcaly.—Native perhaps of South America. *De Candolle.* Cultivated in both Indies, within the tropics. A *tree,* twenty feet high, with a ſpongy bark. *Flowers* green externally, white within, fœtid. *Fruit* eatable, of a pleaſant taſte, and fragrant ſcent, as big as a large apple; externally green, with tuberculated, ſcale-like protuberances.

15. A. *Forſkahlii.* De Cand. n. 15. (A. glabra; Forſk. Ægypt.-Arab. 102. Ic. t. 15. A. aſiatica; Vahl Symb. v. 3. 73. "var. β; Dunal Monogr. 71. A. ſquamoſa; Delile Ægypt. 17.")—Leaves elliptic-oblong, ſmooth, dotted; glaucous beneath. Outer petals oblong, ſomewhat converging.—Gathered by Forſkahl and by Coquebert in Egypt. Scarcely, in De Candolle's opinion, diſtinct from *A. ſquamoſa,* but the *leaves* are thinner and leſs pointed, more diſtinctly dotted.

16. A. *cinerea.* "Dunal Monogr. 71. t. 8."—Leaves elliptic-oblong, almoſt lanceolate, dotted; downy beneath. Outer petals ſomewhat converging. Fruit ovate, nearly globular, ſcaly.—Gathered by Ledru in the iſland of St. Thomas, but perhaps not really wild. The young *branches, leaves, ſtalks,* and *flowers,* are clothed with greyiſh pubeſcence. *Flowers* ſtalked, two or three together. *Fruit* not unlike *A. ſquamoſa.*

17. A. *Cherimolia.* Mill. Dict. ed. 8. n. 5. Lamarck Dict. v. 2. 124. (A. tripetala; Ait. n. 2. See ANNONA n. 2. Guanabanus Perſeæ folio, flore intùs albo, &c.; Feuill. Peruv. v. 3. 24. t. 17. Trew Ehret, 16. t. 49.)—Leaves ovato-lanceolate, without dots; very finely downy and ſilky beneath. Outer petals ſlightly converging; externally downy. Fruit nearly globular, ſomewhat ſcaly.—Native of Peru, or rather perhaps of ſome warmer country; for Feuillée ſpeaks of this *tree* as cultivated there with great care, for the ſake of its fruit, which is very wholeſome, and much eſteemed, though, he adds, one of our pears or plums is certainly worth all the Cherimolias of Peru. The *tree* is twenty to twenty-four feet high, with pendulous *branches.* *Flowers* pale green, with a crimſon circle in the middle. *Fruit* heart-ſhaped, ſcaly and rough, the ſize of a ſmall apple, being drawn too ſmall in Ehret's figure. De Candolle ſays there are three inner *petals,* though very minute.

18. A. *reticulata.* (See ANNONA n. 4.) Linn. Sp. Pl. 757. Willd. n. 5; excluding the ſyn. of Rumphius and Plumier. Jacq. Obſ. faſc. 1. 14. t. 6. f. 2. (Anona-maram; Rheede Hort. Malab. v. 3. 23. t. 30, 31. Guanabanus fructu purpureo; Plum. Ic. 134. t. 143. f. 1; not 43. f. 2.)—Leaves oblong-lanceolate, acute, ſmooth, ſlightly dotted. Outer petals oblong, rather converging. Fruit ovate, nearly globular, teſſellated like net-work.—Native of the Weſt Indies, according to Browne and Sloane. Rheede ſpeaks of it as only cultivated, not wild, in Malabar. A larger *tree* than *A. ſquamoſa,* and with a more diſagreeable ſcent. *Petals* brown underneath; yellowiſh-white above, dotted with purple at the baſe. *Fruit* the ſize of a large orange, but more ovate, of a ſhining yellowiſh or reddiſh brown, eatable. Profeſſor De Candolle ſuſpects that ſeveral ſpecies may be here confounded; and Dunal diſtinguiſhes the plant of Jacquin, from that of Rheede, by the reticulations of the *fruit* being ſomewhat pentagonal in the former, more rounded in the latter. Plumier's ſeems ſtill more different from both, in having the interſtices very convex, each armed with a ſpine. Dombey appears to have gathered and preſerved under this name, in Peru, a ſpecies diſtinguiſhed by broader *leaves,* not marked with pellucid dots, but with more regular and prominent pinnate ribs. All theſe points can be cleared up by the acquiſition of authentic ſpecimens only, or by obſervations made on the ſpot. The hiſtory of the whole genus is as yet but a ſketch, nor have European botaniſts materials to fill up the outline.

19. A. *mucoſa.* (See ANNONA n. 19.) Jacq. Obſ.

faſc. 1. 16. Aubl. Guian. 618. (Manoa; Rumph. Amboin. v. 1. 136. t. 45.)—Leaves oblong-lanceolate, ſmooth. Outer petals ſpreading at the extremity. Fruit teſſellated, with gibbous interſtices.—Native of South America and ſome parts of the Weſt Indies. Cultivated in the Molucca iſlands. This is ſaid to differ from the laſt, in having the interſtices of the *fruit* tumid, (what then becomes of Plumier's t. 143. f. 1?) its pulp more ſlimy, and not agreeably flavoured. The *leaves* alſo are ſomewhat narrower.

Sect. 4. *Outer petals elliptic-oblong, obtuſe; inner ſmaller, lanceolate, bluntiſh. Calyx large, coriaceous, three-cleft, ſomewhat bell-ſhaped. Fruit conical, ſmooth?* Three ſpecies.

20. A. *glabra*. (See ANNONA n. 8.) Linn. Sp. Pl. 758. Willd. n. 10. ("A. maxima, foliis latis, fructu maximo, luteo, conoide, cortice glabro; Cateſb. Car. v. 2. t. 64.")—Leaves ovato-lanceolate, ſmooth. Stalks two-flowered, oppoſite to the leaves. Fruit conical, obtuſe, even.—Native of Carolina, according to Cateſby. Cultivated perhaps in the Weſt Indies. A *tree* ſixteen feet high, with ſmooth *leaves*, much reſembling thoſe of a lemon-tree. *Calyx* reddiſh externally, of three broad, very ſhort, often abrupt lobes. *Petals* ſix, nearly obovate, twice the length of the calyx.

21. A. *grandiflora*. Lamarck Dict. v. 2. 126. Willd. n. 17. "Dunal Monogr. 75. t. 6 and 6 a."—Leaves ovato-lanceolate, ſmooth, coriaceous; ſhining above. Stalks axillary, ſolitary. Fruit ovate, ſmooth, ſomewhat dotted.—Native of the Mauritius, and Madagaſcar. *Leaves* rather glaucous beneath. *Calyx*, and backs of the *petals*, finely downy. The inner *petals* are an inch long, being nearly equal to the outer. *Fruit* of a middling ſize, ſlightly rugged.

22. A. *amplexicaulis*. Lamarck Dict. v. 2. 127. Willd. n. 18. "Dunal Monogr. 76. t. 7."—Leaves oblong-heart-ſhaped, claſping the ſtem, acute, ſmooth. Stalks axillary, ſolitary, ſingle-flowered.—Found by Commerſon in the iſles of Mauritius and Madagaſcar. The *leaves* are ſeſſile; glaucous or purpliſh beneath, at leaſt when dry. Three inner *petals* rather the ſmalleſt.

Sect. 5. *Annonæ not ſufficiently known*. Five ſpecies.

23. A. *aſiatica*. (See ANNONA n. 9.)—Linn. Sp. Pl. 758. Willd. n. 12.—Leaves oblong, pointed, without dots; downy when young.—Native of Ceylon. *Linnæus*. A ſpecimen under this name is found in his herbarium, but there is no evidence of its being what he intended in his Fl. Zeyl. nor even in the firſt edition of Sp. Pl. There are neither *flowers* nor *fruit*, nor can we ſatisfy ourſelves of this ſpecimen being the ſame ſpecies as the botaniſts of Tranquebar ſend us for *A. aſiatica*, which latter agrees beſt with *ſquamoſa*, n. 14.

24. A. *ſenegalenſis*. "Perſ. Ench. v. 2. 95. Dunal Monogr. 75."—Leaves broadly ovate, ſomewhat heart-ſhaped, coriaceous, ſmooth; glaucous beneath. Footſtalks finely downy. Flower-ſtalks two or three together, lateral, between the leaves.—Native of Senegal and Guinea. *Flowers* ſmall. Three outer *petals* ovate, obtuſe, thick, thrice the length of the calyx.

25. A.? *uniflora*. "Dunal Monogr. 76."—Leaves oblong, pointed, ſmooth; glaucous beneath. Flower-ſtalks downy, hoary, oppoſite to the leaves.—Native of Para, in Braſil. Young *branches* downy and hoary. *Leaves* nearly ſeſſile. *Flowers* oppoſite to the uppermoſt leaf on each branch, with one or two orbicular leafy *bracteas*. *Calyx* in three large, deep, ovate, coriaceous ſegments, externally hoary. The unexpanded *petals* appear ſimilar thereto. A beautiful ſpecies, but the genus is doubtful. *De Cand.*

26. A.? *exſucca*. "Dunal Monogr. 77."—Leaves ovate-oblong, coriaceous, ſmooth, like the branches, on both ſides; poliſhed above. Flower-ſtalks ſimple or divided, nearly oppoſite to the leaves.—Gathered in the woods of Guiana, by Mr. Alexander Anderſon, whoſe ſpecimens were examined by profeſſor De Candolle in Mr. Lambert's herbarium. A handſome *tree*, with a ſmall, entirely dry, *fruit*. *Branches* ſmooth from the firſt. *Leaves* two and a half to four inches long. *Petals* three-lobed! This ſurely may well be deemed a doubtful *Annona*.

27. A. *africana*. (See ANNONA n. 10.) Linn. Sp. Pl. 758. Willd. n. 14; excluding the ſynonyms. (A. foliis lanceolatis pubeſcentibus; Linn. Hort. Cliff. 222.)—"Leaves lanceolate, downy."—This is recorded in the Hortus Cliffortianus to have ſprung up from African ſeeds. The "*habitat in Americâ*" is therefore a groſs and palpable ſlip of the pen, in the ſecond edition of Sp. Pl., (it is *Aethiopia* in the firſt,) which the editors of Linnæus's writings ſhould have corrected; for ſuch a contradiction of the ſpecific name, might have induced ſome inquiry. Nothing appears for this ſpecies in the Linnæan herbarium. In Hort. Cliff. the *branches* are ſaid to be rough with minute dots. *Leaves* ovate, but rather elongated; downy, and in a manner hoary, on both ſides, by no means poliſhed.

For other plants which have been referred to *Annona*, ſee ORCHIDOCARPUM, ASIMINA, and MONODORA.

ANOMALY, col. 4, l. 15, for 122,441 *r.* 1,222,441.

ANOMATHECA, in *Botany*, from ανομος, *out of rule*, and θηκη, *a caſe;* becauſe the capſule is diſtinguiſhed by its papillary roughneſs, from all the reſt of the plants of the ſame natural order, that have hitherto been examined.—Ker in Sims and Kon. Ann. of Bot. v. 1. 227. Dryandr. in Ait. Hort. Kew. v. 1. 90.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Irides*, Juſſ.

Gen. Ch. *Cal.* Sheath inferior, of two very ſmall, elliptical, concave, leafy, nearly equal valves. *Cor.* of one petal, ſuperior, ſalver-ſhaped; tube many times longer than the ſheath, ſtraight, nearly cylindrical, a little dilated at the mouth; limb not quite regular, in ſix, nearly equal, obovate, deep ſegments. *Stam.* Filaments three, inſerted into the tube, thread-ſhaped, erect, much ſhorter than the limb; anthers vertical, oblong, converging. *Piſt.* Germen roundiſh; ſtyle thread-ſhaped, about the length of the ſtamens; ſtigmas three, deeply divided, with linear, ſpreading ſegments. *Peric.* Capſule roundiſh-ovate, of three cells and three valves, its ſurface covered with ſmall, papillary tubercles. *Seeds* numerous, round.

Eſſ. Ch. Sheath of two valves. Corolla ſalver-ſhaped. Stigmas three, deeply divided. Capſule minutely tuberculated.

1. A. *juncea*. Cut-leaved Anomatheca. Ker n. 1. Ait. n. 1. (Lapeyrouſia juncea; Curt. Mag. t. 606. Gladiolus junceus; Linn. Suppl. 94. Thunb. Glad. n. 18. Cap. v. 1. 201, excluding the ſynonym of Jacquin! Redout. Liliac. t. 141. G. polyſtachius; Andr. Repoſ. t. 66.)—Found by Thunberg, in Lange Kloof, at the Cape of Good Hope, flowering from October to December. It flowers in May in our green-houſes, where it is not uncommon, being eaſily propagated by offsets and by ſeed. The *bulb* is ovate. *Leaves* radical, equitant, ſword-ſhaped, acute, dark-green, many-ribbed, with a deep ſloping notch at their inner edge, from the baſe about half way up. *Stalk* a foot high, being twice as tall as the leaves, round, rather ſlender, branched, ſmooth, bearing many ſolitary, unilateral, ſlightly zigzag, *ſpikes*, of elegant, roſe-coloured, ſcentleſs *flowers;* the irregularity of whoſe *corolla* is evinced by the three lower ſegments being each marked with a deep red ſpot, and the middle one being moreover white

white at the baſe. *Capſule* rough, with crowded, glandular, or papillary, protuberances. Mr. Ker conceives *Ixia exciſa*, Linn. Suppl. 92, or at leaſt one of its varieties, to be the ſame plant; but the ſpecimens in the Linnæan herbarium are ſurely different. They may indeed prove another ſpecies of *Anomatheca*, but this can only be aſcertained by their *capſule*, which is wanting in all of them. *A. juncea* is certainly *Gladiolus amabilis* of Mr. Saliſbury's Prodr. 41, (not 4,) as appears by a ſpecimen from himſelf. He was the firſt author who noticed the peculiar roughneſs of the *capſule*, which he compares to the *fruit* of a *Caucalis*. Few of the ſame natural order can be much more diſtinct than Jacquin's *G. floribundus*, Ic. Rar. t. 254, cited by Thunberg, with a faulty reference, in his *Fl. Capenſis*.

ANONACEÆ, the fourth natural order of the *Dicotyledoneæ*, or *Exogenæ*, of De Candolle; ſeparated by him from the *Coadunatæ* of Linnæus, and anſwering to the *Anonæ* of Juſſieu, being thus named after *Anona*, one of the chief genera. De Candolle thus defines the order.

Calyx of three lobes, very rarely of four. *Petals* ſix, in two rows, alternate with each other; the inner row ſometimes wanting. *Stamens* indeterminate, unconnected. *Germens* indeterminate; very rarely ſolitary. *Fruit* compound, either ſeparate or combined. *Seed* with internal proceſſes, ſeparating the portions of the albumen.

Fructification. *Calyx* inferior, ſhort, permanent, more or leſs deeply three-cleft, very rarely with four lobes. *Petals* ſix, inferior, in a double row, alternate with each other, moſtly coriaceous, and ſomewhat reſembling an inner calyx, imbricated in the bud, though each row is valvular in that ſtate; the inner one ſometimes larger, ſometimes ſmaller, rarely wanting. *Stamens* numerous, cloſe-preſſed, generally covering the hemiſpherical diſk (or receptacle of the flower); filaments very ſhort; anthers nearly ſeſſile, with glandular, quadrangular, occaſionally nectariferous points; their cells burſting longitudinally, externally, and downwards. *Germens* moſtly numerous, crowded cloſely together, in ſome inſtances aggregate or combined, in others, though very rarely, and poſſibly from abortion, ſolitary. *Styles* one to each germen, ſhort. *Fruits* as many as the germens, ſeſſile or ſtalked, ſometimes combined, either pulpy or capſular, with one or many *ſeeds*, which are ovate, or ovate-oblong, in one or two rows, inſerted into the inner corner of each fruit. Their *ſkin* is brittle, membranous or cruſtaceous, having internal, ſometimes plaited, proceſſes, either flat or awl-ſhaped, inſinuating themſelves into the chinks or perforations of the *albumen*. The latter is fleſhy, hard, ſhaped like the ſeed, very often bordered with a depreſſed furrow, accompanied by tranſverſe plaits, or contiguous perforations. *Embryo* minute, ſituated in the umbilical region of the albumen. *Cotyledons* ſhort. *Radicle* nearly cylindrical.

Habit. Trees or ſhrubs, with round, often ſlightly two-ranked, *branches*, whoſe *bark* is moſtly either reticulated, or warty; the young ones generally downy. *Leaves* alternate, connected with the ſtem by a joint, either ſeſſile or with ſhort footſtalks, ſimple, almoſt always entire, or ſcarcely toothed, with pinnate veins; folded, and often downy, when young. *Stipulas* none. *Flower-ſtalks* moſtly axillary, ſometimes lateral, or oppoſite to the leaves, ſolitary, generally furniſhed with ſmall *bracteas;* they are ſhorter than the leaves, bearing one or many *flowers*, and not uncommonly twiſted into a hook, ſome of the flowers being abortive.

Qualities. The roots, bark, leaves, and fruits, eſpecially ſuch as are capſular, are acrid, pungent, aromatic, and ſtimulating, often uſed for ſeaſoning. Thoſe fruits which are of a fleſhy nature are eatable, and eſteemed in tropical climates.

History. The *Anonaceæ*, being all ſtrangers to Europe, were unknown to the ancient botaniſts. Caſpar Bauhin has ſcarcely indicated two ſpecies, Linnæus thirteen, Willdenow thirty-ſix, Perſoon forty-four; but Dunal in a moſt excellent treatiſe, almoſt literally followed by De Candolle, defines one hundred and five. Of theſe, five are natives of the temperate zone in America; forty-ſeven of the tropical regions of the ſame quarter of the globe; eight of equinoxial Africa; three of the Mauritian iſles; twenty-ſix of India or its iſlands; ſix of China and Japan; two of New Holland; and there are ſix whoſe native country is uncertain.

Affinities. This order agrees with the *Magnoliaceæ* of the ſame learned author, in having the parts of the flower diſpoſed in a ternary order, anthers united to the filaments, numerous ſtamens and piſtils; but differs very eſſentially (according to him) in having no ſtipulas, and differently ſhaped anthers as well as ſeeds. Some few climbing ſpecies make an advance towards the *Meniſpermeæ;* but the indefinite ſtamens, and the ſtructure of the fruit, afford a diſtinction. The *Anonaceæ* differ from all other polypetalous orders, with a ſuperior germen, in the ternary ſtructure of their flowers, as well as in the very peculiar inſertion of the internal proceſſes of the ſeed into its albumen. Such a ſtructure was indeed found by Mr. Brown, in his *Eupomatia* (hereafter to be deſcribed in its proper place); a genus otherwiſe very different from the order before us.

The genera enumerated by De Candolle are, *Kadſura* of Juſſieu; *Anona* of Linnæus; *Monodora* of Dunal; *Aſimina* of Adanſon; *Porcelia* of Ruiz and Pavon; *Uvaria*, *Xylopia*, and *Unona* of Linnæus; and *Guatteria* of Ruiz and Pavon.

ANOPLOTHERIUM, in *Natural Hiſtory*, an animal of an extinct genus, whoſe remains are found in a foſſil ſtate in the vicinity of Paris. It is ſo called by Cuvier, to denote that it was without weapons, having no canine teeth. In the natural ſyſtem, this animal ſhould be placed between the horſe on one ſide, and the hippopotamus, the pig, and the camel on the other. The remains of five ſpecies of the anoplotherium have been diſcovered. The largeſt was the ſize of a ſmall horſe; the ſmalleſt not larger than a ſmall rabbit. See Strata *in the Vicinity of Paris*.

ANOPTERUS, in *Botany*, owes that appellation to Labillardiere, who meant to expreſs the ſituation of the wing, at the upper part of the ſeed, the word being formed from ανω, *upwards*, and πτερον, *a wing*.—Labill. Nov. Holl. v. 1. 85. Brown Prodr. Nov. Holl. v. 1. 457.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Gentianæ*, Juſſ. or perhaps *Ericæ*, according to Mr. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in ſix deep, acute, equal, ſpreading ſegments, permanent. *Cor.* of one petal, bell-ſhaped; tube very ſhort; limb in ſix deep, equal, concave, obtuſe, imbricated ſegments, much longer than the calyx. *Stam.* Filaments ſix, awl-ſhaped, ſmooth, equal, inſerted into the tube of the corolla, oppoſite to each ſegment, and about half as long; anthers incumbent, heart-ſhaped, obtuſe, two-lobed. *Piſt.* Germen ſuperior, ovate; ſtyle ſhort, cylindrical, erect; ſtigma in two acute lobes. *Peric.* Capſule elliptic-oblong, of one cell and two valves. *Seeds* numerous, inſerted into the margin of each valve, pendulous, imbricated, each crowned with an obovate, obtuſe, membranous wing, thrice its own length.

Eſſ. Ch. Calyx in ſix ſegments, inferior, permanent. Corolla in ſix ſegments, with a very ſhort tube. Stigma cloven. Capſule of one cell and two valves. Seeds imbricated, pendulous, winged.

1. A. *glanduloſa.* Glandular Anopterus. Labill. Nov. Holl. v. 1. 86. t. 112.—Native of Cape Van Diemen. An elegant ſlender *tree*, about thirty feet high, very ſmooth in every part. *Leaves* ſcattered, occaſionally oppoſite, obovate-oblong, ſerrated, ſingle-ribbed, coriaceous, about four inches long, rather bitter to the taſte ; tapering at the baſe ; a black prominent gland on the inner edge of each ſerrature. *Cluſters* terminal, ſimple, half the length of the leaves, either ſolitary, or as many as four together. *Corolla* about the ſize and ſhape of *Pyrola rotundifolia;* of its colour nothing is recorded, Labillardiere's deſcriptions having been drawn up from his dried ſpecimens after his return to Europe. Mr. Brown remarks, that the *embryo* is minute, nearly globoſe, encloſed in a fleſhy *albumen;* the *radicle* ſuperior.

ANREDERA, a name of which we find no explanation. Juſſ. Gen. 84. 448.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juſſ.

Eſſ. Ch. Calyx in two deep ſegments ; keeled at the back. Corolla none. Style divided. Stigmas two. Seed clothed with the compreſſed, membranous, two-winged calyx, emarginate at the top and bottom.

1. A. *ſcandens.* Climbing Anredera. (Fegopyrum ſcandens, ſeu Volubilis nigra major, flore et fructu membranaceis, ſubrotundis, compreſſis ; Sloane Jam. v. 1. 138. t. 90. f. 1.)—Native of Jamaica, growing among trees near the ruins of a monaſtery by the town. *Sloane.* The *ſtems* are twining, round, red, ſucculent, climbing to the height of ſeven or eight feet. *Leaves* alternate, heart-ſhaped, or ſomewhat deltoid, ſucculent, ſmooth, entire, two inches and a quarter long, on *footſtalks* half an inch in length. *Cluſters* numerous, alternate, many-flowered, axillary and terminal. *Flowers* orbicular, compreſſed, green, bordered with a thin white membrane formed of the keel of each *calyx-leaf.* As the *ſeed* ripens, they turn brown. Sloane compares them to parſnip-ſeed. Swartz ſeems not to have noticed this plant. Its habit is nearly that of *Baſella.*

ANTELOPE, col. 3, l. 7 from bottom, *r.* Bubalis or Cervine *Antelope.*

ANTHERYLIUM, in *Botany*, ſo named, either by Vahl or Von Rohr, apparently from ανθηρα, *an anther*, and υλη, *wood*, or *materials of any kind*, in alluſion to its numerous and conſpicuous anthers.—Vahl in Mem. of the Nat. Hiſt. Soc. of Copenhagen, v. 2. 211. Willd. Sp. Pl. v. 2. 980.—Claſs and order, *Icoſandria Monogynia.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth of one leaf, inferior, in four deep, lanceolate, ſpreading, permanent ſegments. *Cor.* Petals four, inſerted into the calyx between its ſegments, large, obovate, plaited and undulated, with ſhort linear claws. *Stam.* Filaments numerous, from about thirteen to ſixteen, capillary, inſerted into the calyx, longer than the corolla, permanent ; anthers incumbent, convoluted, furrowed. *Piſt.* Germen ſuperior, globoſe ; ſtyle thread-ſhaped, very long ; ſtigma capitate. *Peric.* Capſule globoſe, obſcurely triangular, of one cell, and three, occaſionally four, valves, burſting at the top and deciduous. *Recept.* globoſe, ſomewhat triangular, ſpongy, dotted with little hollows to receive the *Seeds*, which are numerous and minute.

Eſſ. Ch. Calyx inferior, in four deep permanent ſegments. Petals four, inſerted into the calyx. Capſule of one cell and three valves. Seeds numerous.

1. A. *Rohrii.* Flowery Antherylium. Vahl as above, 212. t. 8. Symb. v. 3. 66. Willd. n. 1.—Native of the Weſt Indian iſland of St. Thomas. *Von Rohr*, and *Weſt.* A *tree*, with round, grey, ſcattered, ſcarred branches ; leafy, and ſomewhat quadrangular, in their upper part. *Leaves* nearly oppoſite, ſtalked, ovate, acute, entire, two inches long, thin, very ſmooth, with one rib, and many tranſverſe veins. There is a pair of ſtipulaceous *prickles*, at the baſe of each *footſtalk*, which diſappear from the older branches. *Flower-ſtalks* axillary from the inſertion of the laſt year's leaves, from five to eight, fewer on one ſide of the branch than the other, hardly an inch long, ſimple, ſingle-flowered, naked, thread-ſhaped. *Capſule* downy, the ſize of a currant. Nothing is recorded of the colour of the *flowers*, nor of the qualities or uſe of any part. The habit of the tree is compared by Vahl to the *Legnotis* of Swartz, to which genus he ſuppoſes this to be allied. He ſuſpects alſo ſome affinity to Aublet's Crenæa. Sec that article.

ANTHOBOLUS, we preſume from ανθος, *a flower*, and βωλος, *a maſs*, or *lump*, the flowers forming little denſe tufts. —Brown Prodr. Nov. Holl. v. 1. 357.—Claſs and order, *Dioecia Triandria.* Nat. Ord. *Calycifloræ*, Linn. *Elæagni*, Juſſ. *Santalaceæ*, Brown.

Eſſ. Ch. Male, Calyx of three leaves. Corolla none. Stamina inſerted into the baſe of the calyx-leaves.

Female, Calyx of three deciduous leaves. Corolla none. Stigma ſeſſile, three-lobed. Drupa with one ſeed. Embryo inverted, in the axis of the fleſhy albumen.

Akin to Exocarpus and Osyris. (See thoſe articles.) The genus conſiſts of ſmooth ruſhy ſhrubs, copiouſly branched, in habit reſembling *Oſyris*, the principal as well as the ultimate *branches* jointed at their inſertion. *Leaves* ſcattered, ſeſſile, articulated with the branch, narrow, nearly thread-ſhaped, deſtitute of *ſtipulas*. *Flower-ſtalks* axillary ; the male ones bearing each an umbel of three or four flowers ; the female from one to three, jointed in the middle when ſimple, at the diviſion when branched, and furniſhed at the joint with two deciduous *bracteas*. *Flowers* ſmall, yellowiſh.

1. A. *filifolius.* Slender-leaved Anthobolus. — Leaves thread-ſhaped, lax, as well as the young branches.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. A. *triqueter.* Awl-leaved Anthobolus.—Leaves awl-ſhaped, ſemi-cylindrical, moderately ſpreading. Branches angular, ſtraight.—Found by ſir Joſeph Banks and Dr. Solander, in the ſame country. *Brown.*

ANTHOCERCIS, ſo named by Labillardiere, from ανθος, *a flower*, and κερκις, *a ray*, the narrow diviſions of the corolla ſpreading in a radiant manner, like the ſpokes of a wheel.—Labill. Nov. Holl. v. 2. 19. Brown Prodr. Nov. Holl. v. 1. 448. Ait. Hort. Kew. v. 4. 53.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Luridæ*, Linn. *Solaneæ*, Juſſ. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, cut half way down into five equal, erect, acute ſegments, permanent. *Cor.* of one petal, wheel-ſhaped ; tube bell-ſhaped, contracted at the baſe, twice as long as the calyx ; limb about as long as the tube, in five, ſometimes ſeven or eight, very deep, equal, linear-lanceolate, ſpreading ſegments. *Stam.* Filaments four, with the rudiment of a fifth, inſerted into the baſe of the tube, and not above half ſo long, awl-ſhaped, ſimple, ſmooth ; anthers roundiſh, incumbent. *Piſt.* Germen ſuperior, oblong ; ſtyle cylindrical, the length of the tube ; ſtigma capitate, notched. *Peric.* Capſule ovate-oblong, of two cells and two valves, with inflexed edges, meeting the parallel partition. *Seeds* numerous, ſmall, roundiſh, reticulated.

Eſſ. Ch. Calyx five-cleft. Corolla wheel-ſhaped, regular, with a bell-ſhaped tube. Stigma capitate. Capſule of two cells and two valves, with inflexed edges, and a parallel partition.

A ſhrubby ſmooth genus, whoſe habit announces an affinity to the *Solaneæ*, but whoſe regular, deep-cut, radiating corolla, is altogether ſtrange in the Linnæan claſs *Didynamia.* The *leaves* are alternate, tapering at the baſe, or ſomewhat ſtalked, articulated with the branch, thick, ſometimes dotted with glands. *Flowers* axillary, nearly ſolitary, their *ſtalks* minutely bracteated, and moſtly ſeparating eaſily at the joint. *Corolla* white or yellow, handſome; its tube internally ſtriated; limb in from five to eight ſegments.

1. A. *littorea.* Yellow Anthocercis. Labill. Nov. Holl. v. 2. 19. t. 158. Br. n. 1. Ait. n. 1.—Leaves obovate, without dots, ſmooth at the edges, as well as on both ſides. Young branches ſmooth. Segments of the corolla longer than the tube. Capſule oblong, twice the length of the calyx.—Diſcovered by Labillardiere in Lewin's land; and obſerved in the ſame neighbourhood by Mr. Brown, and Mr. Good. The latter ſent ſeeds to Kew in 1803. This is a greenhouſe plant, flowering during moſt part of the ſummer. Mr. Aiton favoured us with a ſpecimen in May 1811, when it firſt began to produce flowers. Theſe are an inch in diameter, inodorous, pale lemon-coloured; the radiant ſegments of the limb narrow, taper-pointed; the tube ſtriated internally with deep violet. *Leaves* about an inch long, abrupt or emarginate; nearly entire in our ſpecimens. Labillardiere ſays they are ſometimes toothed, or ſerrated.

2. A. *viſcoſa.* Glutinous Anthocercis. Br. n. 2.—"Leaves obovate, marked with glandular dots; roughiſh at the edges; when young finely downy, as well as the young branches. Capſule ovate, about the length of the calyx."—Native of the ſouthern coaſt of New Holland. *Brown.* We have ſeen no ſpecimen of this ſpecies, but from the above account, furniſhed by Mr. Brown, we preſume its *flowers* to be white, and their *limb* not longer than the *tube.*

ANTHODON, a name which ſeems to allude to the toothed *calyx* and *petals*, is applied in the Flora Peruviana, v. 1. 45. t. 74. f. *b*, to a plant referred by profeſſor Vahl to his TONSELLA; ſee that article, ſp. 4th.

ANTHOLOMA. Labill. Voy. Engl. ed. v. 2. 245. t. 41. Nov. Holl. v. 2. 121, is certainly the ſame genus as BASSIA. (See that article.) Whether Labillardiere's plant may be the *obovata* of Forſter, or a new ſpecies, we have no certain means of knowing.

ANTHOTIUM, from ανθος, *a flower*, and ωτιον, *a little ear*, expreſſive of the auricles accompanying the upper ſegments of the corolla.—Brown Prodr. Nov. Holl. v. 1. 582.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Campanaceæ*, Linn. *Campanulaceæ*, Juſſ. *Goodenoviæ*, Brown.

Gen. Ch. *Cal.* Perianth ſuperior, in five deep equal ſegments, permanent. *Cor.* of one petal, longer than the calyx, irregular; tube ſlit at the back from top to bottom, and eaſily ſeparable into five parts, with inflexed edges; limb two-lipped; upper lip in two, lower in three, deep ſegments, thoſe of the upper lip having an ear-like appendage at their inner margin. *Stam.* Filaments five, ſhorter than the tube; anthers cloſely united into a tubular form. *Piſt.* Germen inferior, oblong; ſtyle capillary, the length of the ſtamens; ſtigma large, obtuſe, enveloped in a bivalve beardleſs cover, contrary to the lips of the corolla. *Peric.* Capſule of two cells. *Seeds* ſeveral.

Eſſ. Ch. Corolla of one petal, ſlit longitudinally at the back; limb two-lipped, its upper ſegments auricled at their inner margin. Anthers combined. Stigma with a bivalve beardleſs integument. Capſule inferior, of two cells.

1. A. *humile.* Dwarf Anthotium. Br. n. 1.—Native of the ſouth coaſt of New Holland. A little ſmooth, ſtemleſs *herb.* *Leaves* radical, almoſt cylindrical, ſcarcely dilated at the baſe. *Stalks* ſeveral, ſpreading, undivided. *Flowers* collected in tufts, ſubtended by leafy *bracteas.* *Corolla* approaching to a violet colour. *Pollen* of ſimple grains. There are two varieties, one almoſt twice the ſize of the other, the parts of the *flower* ſomewhat differing alſo in their relative proportion. *Brown.*

ANTHRACITE. See MINERALOGY, *Addenda.*

ANTIARIS, in *Botany*, altered by Leſchenault from the name of the famous Poiſon-tree of Java, *Upas Antiar*, which that botaniſt calls *Antiaris toxicaria*, and which Mr. Brown conſiders as of the ſame genus with what we are about to deſcribe from his excellent General Remarks, Geographical and Syſtematical, on the Botany of Terra Auſtralis, p. 70; publiſhed at the end of the account of captain Flinders's Voyage, 1814.—Claſs and order, *Monoecia Tetrandria.* Nat. Ord. *Scabridæ*, Linn. *Urticæ*, or *Urticeæ*, Juſſ. Brown.

Gen. Ch. Male, *Cal.* Involucrum many-flowered; its margin in numerous, imbricated, lanceolate, acute, fringed, converging ſegments, at length expanded and reflexed; diſk flat, covered with crowded ſeſſile florets: perianth of four nearly ſpatulate, concave, equal, ſpreading leaves, converging at the extremity. *Cor.* none. *Stam.* Filaments ſcarcely any; anthers erect, converging, ovate, obtuſe, two-celled, with white pollen. No rudiments of a piſtil.

Female, *Cal.* Involucrum ſingle-flowered, ovate, ſmall, ſmooth, many-cleft at the ſummit, with lanceolate, fringed, converging, deciduous ſegments, ſome of them ſcattered over the body of the involucrum: perianth none. *Cor.* none. *Stam.* none. *Piſt.* Germen in the body of the involucrum, oblong, ſingle-ſeeded; ſtyle divided almoſt to the bottom, its ſegments thread-ſhaped, parallel, ſmooth, divaricated at the upper part; ſtigmas ſimple, acute. *Peric.* Drupa formed of the enlarged involucrum, oval, ſmooth, the ſize, of a ſmall plum, dark purple, internally fleſhy and yellowiſh, containing a white milk. *Seed.* Nut pendulous, ovate, with a ſmooth, brown, tenacious cruſt; kernel without a ſkin; albumen none; embryo white, of two large, ovate, fleſhy, almond-like cotyledons, flat on the inſide, rather convex externally; radicle ſuperior, very ſhort.

Eſſ. Ch. Male, Involucrum many-flowered, many-cleft. Perianth of four leaves.

Female, Involucrum ſingle-flowered, urceolate, many-cleft at the margin. Perianth none. Style deeply divided. Drupa from the enlarged involucrum. Seed without albumen. Radicle ſuperior.

1. A. *macrophylla.* Brown as above, t. 5.—Found by Mr. Brown, in barren ſtony places, on the ſhores of the Company's iſlands, adjacent to Arnhem's land, on the north coaſt of New Holland, in about 12° ſouth latitude, bearing flowers and ripe fruit in February 1803. A *ſhrub*, or very ſmall *tree*, about ſix feet high, much branched, ſmooth, milky. *Branches* round. *Leaves* alternate, ſtalked, elliptic-oblong with a ſharp point, entire, coriaceous, ſix inches long and three wide; unequal and ſlightly heart-ſhaped at the baſe; dark-green and ſhining above; more verdant beneath; with one rib, and many tranſverſe parallel veins. *Footſtalks* roundiſh, grey, half an inch long. *Stipulas* intrafoliaceous, lanceolate, pointed, folded, leafy. *Flower-ſtalks* axillary, ſolitary, racemoſe, ſcarcely longer than the footſtalks, each bearing ſix or eight alternate *flowers*, of which one or two of the loweſt are female, and earlier than the reſt, which are all male.

We preſume the *A. toxicaria* of Leſchenault, Annales du Muſ. v. 16. 478. t. 22, is another ſpecies of the ſame genus;

but we are not informed of the ſpecific characters of either. Of that celebrated Poiſon-tree the firſt ſatisfactory account, according to Mr. Brown, is there given, which differs from his deſcription above, merely in ſome particulars relative to the male *flowers*. He adds that *Antiaris* ſhould ſtand in the *Urticeæ*, between *Broſimum* of Swartz, and *Olmedia* of the Flora Peruviana, agreeing with the latter in the ſtructure of its *male flowers*, and more nearly reſembling the former in its *female flowers* and *fruit*.

ANTIMONY, in *Chemiſtry*. Several important additions have been lately made to our knowledge reſpecting this metal and its compounds, which we ſhall briefly notice here.

In deſcribing this metal, we ſtated that Haüy had been unable to aſcertain its primitive cryſtalline form. This indefatigable obſerver has at length, however, determined that the primitive form of its cryſtal is an octahedron, and that its integrant particles have the figure of tetrahedrons. The ſpecific gravity of antimony, according to Hatchett, is 6.712. It melts at a low red heat, or about 810° of Fahrenheit; and after this, if the heat be raiſed, the metal evaporates.

The oxyds of antimony have been lately inveſtigated with great care by Thenard, Prouſt, Bucholz, and Berzelius. According to Thenard, this metal forms no leſs than ſix oxyds; according to Prouſt and Bucholz, it forms only two; while according to Berzelius, it forms four. Theſe diſcordancies ariſe from the great difficulty of the inveſtigation. The protoxyd of Berzelius is obtained by expoſing antimony to the air, or to the action of a galvanic battery. It is a grey powder. When acted upon by muriatic acid, it is ſeparated into the protoxyd of Prouſt and metallic antimony. Hence Dr. Thomſon remarks it is only a mixture of the two. The two oxyds of Prouſt are eaſily obtained, and poſſeſs ſpecific characters. Berzelius has ſhewn that the ſecond of them poſſeſſes the properties of an acid. The peroxyd of Berzelius is alſo readily obtained, though it is difficult to free it from water. This likewiſe poſſeſſes the properties of an acid. Hence, ſays Dr. Thomſon, we know *three* oxyds of antimony. The *grey protoxyd*, the *white antimonious acid*, and the *ſtraw-yellow antimonic acid.*

The following is the compoſition of the *protoxyd* of antimony according to

	Prouſt.	Berzelius.	Thomſon.
Antimony	100	100	100
Oxygen	22.7	18.6	17.775

Antimonious acid is compoſed, according to the ſame chemiſts, of

Antimony	100	100	100
Oxygen	29.87	24.8	23.7

And *antimonic* acid of

Antimony	—	100	100
Oxygen	—	37.2	35.556

The above reſults of Berzelius and Thomſon are rather obtained by calculation than actual experiment, being founded on the ſuppoſed compoſition of ſulphuret of antimony, which, according to Berzelius, is compoſed of 100 antimony and 37 ſulphur, and according to Thomſon, of 100 antimony and only 35.572 ſulphur.

While ſuch diſcordancies exiſt reſpecting the compoſition of the oxyds of antimony, it is impoſſible to fix with certainty the weight of its atom. Dr. Thomſon, however, it may be proper to ſtate, conſiders it as 56.25.

The two oxyds of antimony, denominated above the *antimonious* and *antimonic* acids, are capable, according to Berzelius, of combining with different baſes and forming two ſets of ſalts, the firſt of which may be termed *antimonites*, the ſecond *antimoniates*.

The following is the method of preparing the *antimonium tartarizatum*, or tartrate of antimony and potaſh, according to the laſt edition of the London Pharmacopœia.

Take ſulphuret of antimony pounded, two ounces; nitrate of potaſh, one ounce; ſupertartrate of potaſh, two ounces; ſulphuric acid *by weight*, two ounces; diſtilled water, a pint and a half. Mix the acid with half a pint of water in a proper glaſs veſſel, and place it in a ſand-bath. When moderately heated add by degrees the ſulphuret and nitre previouſly well mixed together; and then apply heat till the whole of the water is driven off. Waſh the remainder with diſtilled water until it comes off taſteleſs, and while the maſs is yet moiſt mix it with the ſupertartrate of potaſh. To this mixture add a pint of diſtilled water. Boil the mixture, and when filtered put it aſide to cryſtallize.

ANTONIUS Liberalis, in *Biography*, a Greek writer of an uncertain age, known as the author of Μεταμορφωσεων Συναγωγη, or a Collection of Metamorphoſes, publiſhed at Baſil, in 8vo., by Xylander, in 1568; at Leyden, in 12mo., by Berkelius, in 1674; by Munkeras, at Amſterdam, in 1676; and by Gale, at Paris, 1675, 8vo. This writer is not the ſame with a Latin rhetorician, mentioned by Jerom. Fab. Bib. Græc.

ANYCHIA, in *Botany*, ſo called by Michaux, on account of its affinity to Paronychia. (See that article.) This plant therefore has as little concern with the *finger nail*, ονυξ, as the other has with a whitlow.—Michaux Boreal.-Amer. v. 1. 112. Purſh 176. St. Hilaire Paron. 98. (Queria; Gærtn. t. 128.)—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juſſ. *Paronychiæ*, Juſſ. Ann. du Muſ. St. Hilaire.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, oblong, in five deep, oblong ſegments, ſlightly hooded at the extremity, with a poſterior point. *Cor.* none. *Stam.* Filaments five, ſometimes fewer, ſhorter than the calyx, oppoſite to each ſegment and inſerted into its baſe, briſtle-ſhaped, erect, diſtinct, without any intermediate proceſſes; anthers nearly heart-ſhaped. *Peric.* Germen ſuperior, roundiſh; ſtyle one, very ſhort; ſtigmas two, oblong, recurved. *Peric.* Capſule roundiſh, membranous, of one cell and one valve, covered by the calyx, with an orbicular depreſſion at the ſummit, pointed, ſeparating at length irregularly at the lower part. *Seed* one, nearly kidney-ſhaped, ſmooth, attached by a lateral thread to the baſe of the pericarp.

Eſſ. Ch. Calyx inferior, in five deep, converging ſegments, hooded at the ſummit. Stigmas two. Capſule membranous, of one valve. Seed ſolitary.

This is a genus of diminutive herbs, with oppoſite *leaves*, attended by *ſtipulas*. *Flowers* minute, in leafy tufts, each of them ſeſſile, with *bracteas* like the ſtipulas. *Michaux.*

1. A. *dichotoma*. Forked Anychia. Michaux n. 1. Purſh n. 1. (Queria *canadenſis*; ſee that article, n. 2.)—Stem forked, much branched, ſpreading. Leaves elliptic-lanceolate, ſmooth, erect. Bracteas about as long as the ſmooth calyx.—On dry lime-ſtone hills, from New York to Kentucky, flowering from June to Auguſt. Perennial. *Flowers* exceedingly ſmall; very variable in the number of *ſtamens*, generally from two to five. *Purſh;* who quotes Ortega's Dec. t. 15. f. 2, a work not in our poſſeſſion. The *root* has all the appearance of being annual, as profeſſor Schrader found it in the garden of Gottingen.

2. A. *herniarioides*. Rupture-wort Anychia. Michaux n. 2. Purſh n. 2.—" Stem diffuſe, denſely branched, downy all over. Leaves elliptic-oblong, fringed, briſtle-pointed. Segments of the calyx awl-ſhaped, with briſtly ſpreading points."

points."—Found by Michaux, on the dry ſands of North Carolina. Perennial. Purſh did not meet with this ſpecies.

3. A. *argyrocoma*. Silvery-headed Anychia. Michaux n. 3. Purſh n. 3.—Procumbent, tufted. Stems minutely downy. Leaves linear, acute, rather hairy. Flowers in terminal tufted heads, with membranous bracteas. Segments of the calyx hairy, with long bearded points.—On rocks in Upper Carolina, and Virginia. Perennial, flowering in June and July. *Purſh.* Michaux compares the habit of this plant to that of *Illecebrum Paronychia*, doubtleſs on account of its large ſilvery *bracteas*.

AORTA, in *Surgery*. As profeſſor Scarpa obſerves, the whole body may be regarded as an anaſtomoſis of veſſels,—a vaſcular circle,—and the remark is ſo true, that even an obliteration of the aorta itſelf may happen, immediately below its arch, without the general circulation of the blood in the body being ſtopped. Meckel met with two caſes in which the aorta was thickened and conſiderably conſtricted juſt below its arch; yet in both ſubjects there was every reaſon to believe, that the abdominal viſcera and lower extremities had been duly ſupplied with blood. This fluid, which could only paſs from the heart with great difficulty, and in ſmall quantities, had, by regurgitating, lacerated the ſemi-lunar valves. (Mém. de l'Acad. Royale de Berlin, 1756, obſ. 17 and 18.) A like example is recorded by Stoerk. Ann. Med. vol. xi. p. 171.

We have a very intereſting caſe of obſtructed aorta related by Monſieur Paris, formerly diſſector for the Amphitheatre of the Hôtel-Dieu. He injected the body of a very lean old woman, about fifty years of age, whoſe arterial ſyſtem was found to be ſingularly deranged, and the circle of the blood altogether changed by a complete contraction of the aorta a little beyond the arch. The attention of M. Paris was particularly excited to the condition of this ſubject by the unaccountable enlargement of the ſmall arteries upon the forepart of the cheſt. The injection which was employed entered the mouth of the aorta ſo readily, that, ſo far was he from ſuſpecting any obliteration of this veſſel, he could have thrown in more injection than is uſually required for filling an adult body. The ſubject was ſo meagre, that, without diſſecting, M. Paris felt the thoracic arteries running down the ſides of the cheſt tortuous and remarkably enlarged. On diſſection, he found the aorta immediately beyond its arch contracted to the ſize of a writing quill; the coats of the artery were of their uſual thickneſs, and its cavity of courſe extremely ſmall; the arch of the aorta above this contraction was but very ſlightly dilated; the part below had loſt nothing of its natural ſize.

The carotids were in the natural ſtate; the arteria innominata and the left ſubclavian were enlarged to twice their natural diameter; all their ſmaller branches were increaſed in the ſame proportion, and had aſſumed a curled and zigzag courſe. The internal mammary and phrenic arteries were greatly enlarged, and very tortuous. The tranſverſe arteries of the neck were of twice their natural ſize; their poſterior branches were tortuous, extending to a great diſtance over the back, with long inoſculations, which were met from below by the branches of the upper intercoſtal arteries, which were alſo remarkably enlarged. The thoracic and ſcapular arteries which run along the ſide of the cheſt were twice their natural ſize.

Below the conſtricted part of the aorta the lower intercoſtals were much enlarged, even to three or four times their natural ſize. Each of them was dilated; but thoſe were moſt affected which were given off neareſt the contracted part; and the poſterior branch of each, which penetrates to the muſcles of the back, was more dilated than that which runs between the ribs. Indeed thoſe poſterior branches were ſo remarkably dilated with contortions ſo cloſely ſucceeding each other, that they reſembled a necklace of beads; and their inoſculations with the branches of the tranſverſalis cervicis were very remarkable. The lower phrenic artery was enlarged, forming conſiderable inoſculations with the ſuperior phrenic. The epigaſtric artery was dilated to the ſize of the enlarged mammary, and was joined with it by very numerous and conſpicuous inoſculations. Default's Pariſian Chir. Journ. tom. ii. p. 107, &c.

In the body of a male ſubject, two ſteatomatous tumours were found by Stenzel, ſituated in the ſubſtance of the membranes of the aorta immediately below its arch. Notwithſtanding theſe ſwellings rendered the veſſel nearly impervious, the man had the appearance of ſtrength, and of having been well nouriſhed. "Hæc corpora ferè cor magnitudine æquabant ut omnem propemodum exeunti è ſiniſtri cordis thalamo ſanguini ſpatium præcluderent." Diſſ. de Steatomatibus Aortæ.

Dr. Graham, of Glaſgow, has very recently publiſhed a ſtill more remarkable caſe, in which the circulation was carried on for a conſiderable time through the anaſtomoſes, notwithſtanding a complete obſtruction of a part of the aorta. The patient was a lad fourteen years old, who, in conſequence of expoſure to cold, was affected at firſt with a dry cough, followed by copious expectoration, pain, and difficulty of reſpiration. The diſeaſe was ſuppoſed to be pneumonia in an advanced ſtage. Dyſpnœa, palpitations, and pain of the left ſide, were alſo the moſt remarkable ſymptoms at a later period. The pulſe became weak, but was always regular to the very laſt. The boy at length died, after remaining in the Glaſgow Infirmary about five months. On diſſection, together with other morbid changes, the walls of the left ventricle of the heart were found about an inch in thickneſs; but no other derangement in the ſtructure of the heart, or its valves, was obſerved. The aorta was unuſually expanded near its origin, ſo as to form a kind of pouch; but, after having given off the branches to the head and ſuperior extremities, its diameter was preternaturally contracted. It continued of this diminiſhed ſize till after its union with the canalis arterioſus, when it became *completely impervious*. The coats were not thickened, nor in any way diſeaſed, except that about half an inch below the ſtricture there was a ſmooth elevation on the inner ſurface, leſs raiſed, but having nearly the diameter of a ſplit-pea. In other reſpects, the appearance was exactly ſuch as would reſult from tying a ligature round the artery.

The artery then received three trunks, about as large as crow-quills, and near them three ſmaller ones, when it reſumed its natural ſize along the vertebræ. The three trunks were evidently the uppermoſt of the inferior intercoſtals, the coats of which were remarkably thin, like thoſe of veins. A probe paſſed from the pulmonary artery along the canalis arterioſus to the obſtructed portion of the aorta; but from the thickened appearance of that canal, and the florid countenance of the boy during life, probably there had been little communication allowed by means of it between the aorta and pulmonary artery. Dr. Graham, it appears, did not inject the ſubject, ſo as to demonſtrate all the exact channels by which the circulation had been carried on; but he tells us, that the arteria innominata, the left ſubclavian, the ſuperior intercoſtals, and the mammary arteries, were much enlarged. The epigaſtric was reported to be of its natural ſize. "Theſe facts, and the aorta acquiring at leaſt very nearly its natural ſize immediately below the ſtricture, ſhew that the blood did not paſs to the inferior extremities in any material quantity, as might perhaps have been expected by the inoſculations of the mammary and epigaſtric arteries; but chiefly by the communications of the ſuperior intercoſtals and the mammary arteries with the three large branches entering the aorta below the ſtricture; and of the mammary and thoracic arteries with the diaphragmatic and other intercoſtals. See Medico-Chir. Tranſ. vol. v.

If the aorta were obliterated, or obſtructed in the abdomen, the blood would find adequate channels for its tranſmiſſion in the mammary and epigaſtric, the ſuperior and inferior meſenteric, and the lumbar arteries. Mr. A. Cooper informs us, that he has never met with any inſtance of the latter deſcription in the human ſubject. (Surgical Eſſays, part i. p. 113.) But he has ſeveral times applied ligatures to the aorta in dogs, and found that the blood was readily carried by anaſtomoſing veſſels to the poſterior extremities of the animal. (See Medico-Chir. Tranſ. vol. ii. p. 249, &c.) The inciſion was in each experiment made on the left ſide of the ſpine; the aorta was drawn to the ſurface of the ſkin by an aneuriſm needle, and being quite ſeparated from other parts was tied. The animals were then kept for a few weeks, and then killed. They were afterwards injected and diſſected, when it appeared that the lumbar arteries were conſiderably enlarged, ſo as to be the chief agents of the new circulation.

In thoſe diſeaſes cauſing obſtruction of the thoracic aorta a little beyond its arch, to which we have requeſted the reader's attention, no doubt the change was the reſult of a very gradual proceſs, and conſequently, the altered courſe of the blood through the collateral channels would alſo be eſtabliſhed, not all at once, but by degrees. The anaſtomoſing arteries would only enlarge, in proportion as the obſtruction in the great artery increaſed. But in the experiment of tying the aorta in animals things were very different; for the ſtoppage of the paſſage of the blood through the tied portion of that veſſel was not only effected inſtantaneouſly, but alſo completely, ſo that the whole office of tranſmitting the blood to parts beyond the obſtruction ſuddenly devolved altogether to the anaſtomoſes, which had had no time for any gradual and preparatory dilatation. Yet notwithſtanding this ſeeming diſadvantage, we find that the blood did paſs into the poſterior extremities.

The aorta of the human ſubject, however, has now been tied in the human ſubject by Mr. A. Cooper, and the following are a few of the particulars of the caſe. The patient, who was thirty-eight years of age, had on the left ſide an inguinal aneuriſm, which had actually burſt, and diſcharged a quantity of blood ſufficient to reduce the man to a ſtate of conſiderable weakneſs. Another hemorrhage would have carried him off. It was apprehended, that the tumour extended too high up to admit of a ligature being applied to the external iliac artery itſelf; yet in the hope of being able to diſpenſe with ſuch meaſures as would be neceſſary to tie the aorta near its bifurcation, Mr. A. Cooper reſolved to try whether it were poſſible to tie the aneuriſmal artery itſelf. He made, therefore, a ſmall inciſion into the aneuriſm, about two inches above Poupart's ligament; but he found only a chaos of broken coagula, and that the artery entered the ſac above and quitted it below without there being any intervening portion of veſſel. The operation was conſequently abandoned. "When I was about to withdraw my finger," ſays Mr. A. Cooper, "I directed two of the ſtudents to compreſs with their hands the aorta upon the ſpine, and they ſucceeded in ſtopping the pulſation in the artery of the right groin. As I withdrew my finger, I put a doſſil of lint by its ſide, and cloſed the opening which I had made into the ſac." Surgical Eſſays, part i. p. 118.

The only other chance of preſervation was what might reſult from tying the aorta itſelf; and it was determined to adopt the proceeding, bold and unprecedented as it was in reſpect to the human ſubject. A doubtful remedy is always better than none. This ancient maxim in ſurgery ſeems to gather ſtrength in proportion to its duration, and is a ſhort but an effectual anſwer to every attempt which has been made by the ignorant and malicious to throw blame on the diſtinguiſhed ſurgeon, whoſe ardent deſire to ſave the life of an individual was the main-ſpring of his conduct. Mr. A. Cooper, after enjoining the prudence of emptying the bowels previouſly to any other ſimilar operation, ſtates, that he made an inciſion three inches long into the linea alba, giving it a ſlight curve to the left ſide to avoid the umbilicus. One inch and a half of the cut was above and the remainder below the navel. He then made a ſmall aperture into the peritoneum, and introduced his finger into the abdomen. This opening was enlarged with a probe-pointed biſtoury to nearly the ſame extent as that of the external wound. During the progreſs of the operation, only one ſmall convolution of inteſtine projected beyond the wound. The operator next paſſed his finger between the inteſtines down to the ſpine, where he felt the aorta beating with exceſſive force. By means of his finger-nail, he ſcratched through the peritoneum on the left ſide of the aorta; and next gently and gradually paſſing the finger between that veſſel and the ſpine, again penetrated the peritoneum on the right ſide of the aorta. Guided by the ſame finger, he now conveyed a blunt aneuriſmal needle, armed with a ſingle ligature, behind the veſſel. After the ligature had been placed, much care was requiſite to exclude the inteſtine from it in drawing it into a nooſe. The operation being finiſhed, the wound was cloſed with a quill-ſuture and adheſive plaſter.

During the operation the fæces paſſed off involuntarily, and the pulſe, both immediately and for an hour after the operation, was 144 in a minute. An opiate was given, and the involuntary diſcharge of fæces ſoon ceaſed. When the right thigh was touched, the patient thought it was the foot, ſo that the ſenſibility of that extremity was very imperfect.

The operation had been performed about nine in the evening. At one o'clock the following morning, the lower extremities, which had become cold ſoon after the operation, were beginning to get warm again, but their ſenſibility continued yet indiſtinct. At eight o'clock, the right leg was warmer than the left, and the ſenſibility was returning. At noon, the temperature of the right limb was 94; that of the left, or aneuriſmal limb, 87½. At ſix o'clock in the evening, the temperature of the right was 96, that of the left 87½. At nine the ſame evening, the pulſe was 104 and feeble, with vomiting, reſtleſſneſs, and an involuntary diſcharge of fæces. At eleven, the pulſe was 100 and feeble, and the vomiting ſtill continued. At eight the next morning, the aneuriſmal limb appeared livid and felt cold, more particularly around the aneuriſm; but the right leg remained warm. At eleven the pulſe was 120, and the patient ſeemed to be ſinking. In fact, he died eighteen minutes after one in the afternoon, having ſurvived the operation forty hours. On diſſection, no appearance of peritoneal inflammation was found, except at the edges of the wound. The omentum and inteſtines were free from any unnatural colour. The ligature which had not included any portion of bowels was placed round the aorta about three-quarters of an inch above its bifurcation, and about an inch below the part where the duodenum lies acroſs it. In the aorta a coagulum more than an inch in extent was found to have ſealed the veſſel above the ligature. Below the bifurcation, other ſimilar coagula were found in the right and left iliac arteries. By the fall to which the patient had aſcribed the tumour, the neck of the thigh-bone had been broken within the capſule, and it was ſtill in a diſunited ſtate. Mr. A. Cooper imputes the man's death not to inflammation, but to the want of circulation in the aneuriſmal limb, occaſioned in a great meaſure by the immenſe ſize of the tumour, and the diſturbed ſtate of the coagula which it contained. He conceives, therefore, that, in any future caſe of this kind, the ligature ſhould be applied before the ſwelling has become very large. Surgical Eſſays, part i.

One thing ſeems proved by this memorable caſe, *viz.* that the circulation in the lower extremities may continue notwithſtanding a ſudden ligature on the aorta. Here it did ſo in the right leg, and probably would have done ſo in the left, had it not been for the obſtruction ariſing on that ſide from the magnitude of the tumour.

AOTUS, in *Botany*, ſo named by the writer of this article, from α, *without*, and ȣς, ὠτος, *an ear;* becauſe it is eſſentially diſtinguiſhed from PULTENÆA, (ſee that article,) by the want of the two ear-like appendages to its calyx, not to mention other marks hereafter indicated.—Sm. in Sims and Konig's Ann. of Bot. v. 1. 504. Brown in Ait. Hort. Kew. v. 3. 14.—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, two-lipped, without appendages; upper lip of two divaricated, acute ſegments; lower of three rather longer, more direct ones. *Cor.* papilionaceous, of five petals; ſtandard inverſely-heartſhaped, aſcending, with a linear claw of its own length; wings obovate-oblong, ſhorter than the ſtandard, each with an abrupt angle at the upper edge where it joins the claw; keel as long as the wings, obtuſe, of two obovate-oblong, aſcending petals, each with a ſimilar tooth. *Stam.* Filaments ten, ſeparate, awl-ſhaped, aſcending, nearly equal, ſmooth, deciduous; anthers oval, of two cells. *Piſt.* Germen roundiſh, with the rudiments of two ſeeds; ſtyle thread-ſhaped, parallel to the ſtamens, but rather longer, twiſted after impregnation, ſtigma ſimple, bluntiſh. *Peric.* Legume nearly orbicular, acute, of one cell and two concave firm valves. *Seeds* two, elliptical, inſerted into the middle of the upper margin of each valve, without any creſt or appendage.

Eſſ. Ch. Calyx ſimple, five-cleft, two-lipped. Corolla papilionaceous; wings ſhorter than the ſtandard. Stamens deciduous. Style thread-ſhaped. Stigma obtuſe. Legume of one cell, and two valves. Seeds two, without a creſt.

Aotus is very nearly allied to *Pultenæa*, and had previouſly been confounded therewith, but beſides the want of appendages to the *calyx*, and of a *ſtrophiolum*, or creſt, to the *ſeeds*, which laſt difference was firſt noted by Mr. Brown, the *ſtyle* is not awl-ſhaped, but almoſt capillary, variouſly twiſted as ſoon as the flower falls, rather ſwelling upwards, and the *ſtigma* is obtuſe. The habit of the plant is alſo very diſtinct, having nothing like the chaffy aſpect of a *Pultenæa;* there are neither *bracteas* nor *ſtipulas;* the *leaves* are partly oppoſite, and almoſt whorled. Mr. Brown, by giving a ſpecific character to this ſhrub in Hort. Kew. leads us to preſume that he has found other ſpecies of the ſame genus; for he is not one of thoſe botaniſts who make a *diſtinction* without a *difference.* We are however acquainted with the following only.

1. A. *villoſa.* Hairy Aotus. Sm. n. 1. Tr. of Linn. Soc. v. 9. 249. Ait. n. 1. Curt. Mag. t. 949. (A. ferruginea; Labill. Nov. Holl. v. 1. 104. t. 132. Pultenæa villoſa; Andr. Repoſ. t. 309, but not of Willd. Sp. Pl. v. 2. 507. P. ericoides; Venten. Malmaiſ. t. 35.)—Calyx ſilky, with cloſe hairs. Legume ſtalked. Seeds rough with minute dots. Leaves rough on the upper ſide. *Brown.* —Native of New Holland, and Van Diemen's iſland. Sent by ſir J. Banks, in 1790, to Kew garden, where it flowers in the green-houſe, from April to June. The *ſtem* is three feet high, with numerous, round, ſilky, leafy branches. *Leaves* ſcattered, or imperfectly whorled, on ſhort hairy ſtalks, ſpreading, linear, revolute, entire, a half or three-quarters of an inch long; channelled, and rough with minute points, above; ſilky beneath. *Flowers* bright-yellow, axillary, on ſhort, ſilky, ruſty ſtalks, two or three together, numerouſly crowded about the tops of the branches, ſo as to form leafy cluſters. *Legume* very hairy, two lines long. The *ſtandard* of each flower is marked with radiating crimſon lines, as in the *Dillwyniæ.*

APARGIA, Schreb. Gen. 527. Willd. Sp. Pl. v. 3. 1547. See THRINCIA, at the end of which is given the hiſtory of this genus.

APERTO, Ital., in *Muſic*, open, oppoſed to *chiuſo*, cloſed.

APHELANDRA, in *Botany*, a genus firſt propoſed by Mr. Brown, in a note to his Prodromus, to be ſeparated from JUSTICIA. (See that article.) The name he has given it is compoſed of αφελης, *ſimple*, and ανηρ, *a male*, expreſſing the ſimple ſtructure, or ſingle cell, of the anthers, one of the moſt diſtinguiſhing characters of this genus.—Brown Prodr. Nov. Holl. v. 1. 475, obſ. Ait. Hort. Kew. v. 4. 55.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ*, Linn. *Acanthi*, Juſſ. *Acanthaceæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, oblong, unequal, erect ſegments. *Cor.* of one petal, ringent; tube much longer than the calyx, incurved, angular, gradually ſwelling upwards; limb in two unequal acute lips; the upper erect, cloven; lower revolute, undivided. *Stam.* Filaments four, awl-ſhaped, ſimple, erect, inſerted into the tube of the corolla, and rather ſhorter than its upper lip, parallel, ſlightly curved, two of them a little the longeſt; anthers incumbent, attached by the back, oblong, acute at each end, hairy behind, of one cell. *Piſt.* Germen ſuperior, ovate; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma ſimple. *Peric.* Capſule oblong, tapering at the baſe, of two cells and two elaſtic compreſſed valves, the partition contrary to, and fixed in the middle of, each. *Seeds* two in each cell, roundiſh, each ſubtended by a ſpinous proceſs.

Eſſ. Ch. Calyx in five deep unequal ſegments. Corolla ringent; lower lip undivided. Anthers ſingle-celled. Capſule of two elaſtic valves and two cells; with contrary partitions. Seeds ſubtended by ſpines.

1. A. *criſtata.* Denſe-ſpiked Aphelandra. Brown in Ait. n. 1. (Juſticia criſtata; Jacq. Hort. Schoenbr. v. 3. 38. t. 320. J. tetragona; Vahl Symb. v. 3. 5. Enum. v. 1. 118. Willd. Sp. Pl. v. 1. 85. Ruellia criſtata; Andr. Repoſ. t. 506.)—Leaves elliptic-oblong, pointed, ſmooth on both ſides, with hairy veins beneath. Bracteas ovate, entire. Corolla ſmooth.—Native of Cayenne and the Caraccas, flowering in the ſtove throughout Auguſt and September. It appears to have been firſt brought to England by the late earl of Seaforth, and flowered at Mr. Lambert's in Wiltſhire. The *ſtem* is ſhrubby, three feet high, or more, with oppoſite, round, ſmooth branches. *Leaves* oppoſite, ſtalked, broadly elliptical, acute at each end, ſomewhat wavy, dark green, pliant, five or ſix inches long, and three broad; ſmooth above, with a reddiſh mid-rib, and many fine veins; the rib and veins only, according to Jacquin, downy beneath. *Flowers* ſcarlet, large, ſplendid, and extremely numerous, forming denſe quadrangular *ſpikes*, about a ſpan long, branched at the baſe, with cloſe, ovate, green, or browniſh, fringed, ſingle-flowered *bracteas.* The *corolla*

corolla is full two inches in length. This plant is ſo very nearly allied in habit, foliage, colour of the flowers, and their general appearance, to the magnificent *Juſticia coccinea*, Sm. Ic. Pict. t. 8, that one would think they muſt belong to one and the ſame genus. But on examination, the three-lobed *lower lip*, two-lobed *anthers*, and leafy *bracteas* of the latter, indicate a technical, as well as natural, diſtinction.

2. A. *pulcherrima.* Downy-leaved Aphelandra. (Juſticia pulcherrima; Jacq. Amer. 6. t. 2. f. 4. Coll. v. 3. (not v. 5.) 252. Ic. Rar. t. 204. Linn. Suppl. 84, *Herb. Linn.* Willd. Sp. Pl. v. 1. 86. Vahl Symb. v. 2. 14. Enum. v. 1. 119. J. arborea; Mill. Dict. ed. 8. n. 7. J. putata; Loefl. It. 244.)—Leaves elliptic-oblong, pointed; ſmooth above; finely downy beneath. Bracteas ovate, entire. Corolla ſmooth.—Native of South America, flowering in February. *Loefling.* Houſtoun appears to have ſent ſeeds to Miller, who cultivated this ſpecies before the year 1733. Mutis communicated a ſpecimen to Linnæus, which we ſee no reaſon to diſtinguiſh from Jacquin's plant, notwithſtanding what is recorded in the *Supplementum*, of the *ſtamens* being two only; for we find four in the flower we have examined, bearing the proper ſimple *anthers* of an *Aphelandra.* How far the complete hoary downineſs of the backs of the *leaves*, and the ſmaller *ſpikes*, with leſs copious *flowers*, may prove the preſent ſpecies diſtinct from the foregoing, we greatly doubt. Mr. Brown in Hort. Kew. unites them, without marking this as even a variety of *criſtata.*

3. A. *ſcabra.* Rough-leaved Aphelandra. (Juſticia ſcabra; Vahl Enum. v. 1. 120.)—"Leaves elliptic-oblong, acute; rough on the upper ſide. Bracteas oblong, acute, hairy."—Native of South America. *Leaves* three inches long, acute at each end; rough above with prominent points; veins ſomewhat downy beneath. Vahl ſpeaks of this as very nearly related to the laſt; but as Mr. Brown, who had doubtleſs examined ſpecimens, enumerates it in his *Prodromus* as diſtinct, and does not ſubſequently unite more than the two firſt together, we preſume it muſt be different, and that the *corolla* is not ſmooth, nor the *bracteas* entire, both which characters he makes diſcriminative of the *criſtata*, and they certainly exiſt likewiſe in the *pulcherrima.*

APHELIA, apparently ſo called from αφελης, *ſimple*, in alluſion to the great ſimplicity of parts and ſtructure in the flower.—Brown Prodr. Nov. Holl. v. 1. 251.—Claſs and order, *Monandria Monogynia.* Nat. Ord. *Reſtiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of ſeveral imbricated, two-ranked, ſingle-flowered, pointed, hiſpid ſcales; the lower ones ſometimes barren, and longer than the reſt. *Cor.* of one membranous valve, at the inner ſide of each flower. *Stam.* Filament one, capillary; anther ſimple. *Piſt.* Germen ſuperior, ſingle-ſeeded; ſtyle one, thread-ſhaped; ſtigma ſolitary, undivided. *Peric.* Capſule membranous, of one valve, and one cell, burſting longitudinally at one ſide. *Seed* ſolitary.

Eſſ. Ch. Scales two-ranked, ſingle-flowered. Corolla of one valve, interior. Anther ſimple. Stigma one. Capſule burſting longitudinally, at one ſide. Seed ſolitary.

Obſ. This genus is cloſely allied to Devauxia of Mr. Brown, which will be deſcribed in its proper place hereafter, and from which *Aphelia* differs in having a ſimple *piſtil*, two-ranked *ſpike*, and only one valve to the *corolla*, ſituated at the inner ſide of the flower. The only known ſpecies is

1. A. *cyperoides.* Cyperus-ſpiked Aphelia.—Diſcovered by Mr. Brown, in the ſouthern part of New Holland. A ſmall, tufted, graſſy herb, reſembling ſome of the leſſer kinds of *Scirpus* and *Cyperus.* *Root* fibrous. *Leaves* radical, thread-ſhaped, ſheathing at the baſe. *Stalks* leafleſs, thread-ſhaped, undivided. *Spike* terminal, ſolitary.

APHRITE. See Schaum *Earth.*

APPARITION. Subjoin at the cloſe of the article,

In the year 1805, Dr. Alderſon of Hull read to the literary ſociety of that place, and publiſhed in 1811, "An Eſſay on Apparitions," deſigned to prove, that the immediate cauſe of theſe ſpectral viſitations lies not in the perturbed ſpirits of the departed, but in the diſeaſed organization of the living. In 1813 Dr. Ferrier of Mancheſter publiſhed, on a more extended ſcale, "An Eſſay towards a Theory of Apparitions," ſimilar in reſult to the anterior production of Dr. Alderſon. Both admit the reality and univerſality of ſpectral impreſſions, and both attribute them to partial affections of the brain, independent of any ſenſible and external agency. Theſe and other ſuch writers, who conſider the appearances of ghoſts, &c. as the *immediate* effect of certain partial but morbid affections of the brain, confine themſelves to phyſical phenomena, profeſſedly diſcarding the conſideration of any higher efficiency in the ſeries of cauſation, than what appears to be the reſult of diſeaſed organization; ſo that their diſcovery, though completely overturning the common ſuperſtition as to the return of the departed ſpirit, or the inviſible interference of angelic agency, is yet, ſays Dr. Drake, in the learned volume of his "Shakſpeare and his Times," very reconcileable with the pneumatology of biſhop Horſley, who conceives that the Deity often acts immediately through his agents on the human ſenſory, as a part of the material univerſe, thereby producing diſeaſe and morbid impreſſions. (See Horſley's Nine Sermons on the Nature of the Evidence by which the Fact of our Lord's Reſurrection is eſtabliſhed.) Our Lord, according to the biſhop, after his reſurrection, was no longer in a ſtate to be naturally viſible to any man. His body indeed was riſen, but it was become that body which St. Paul deſcribes in the 15th chapter of his 1ſt Epiſtle to the Corinthians; which, having no ſympathy with the groſs bodies of this earthly ſphere, nor any place among them, muſt be indiſcernible to human organs, till they ſhall have undergone the ſimilar refinement. Accordingly it is alleged, that we are told by St. John, that the body of our Saviour, after his reſurrection, could only be ſeen through the operation of a miracle. "Him God raiſed up the third day," and "gave him to be viſible." "Et dedit eum manifeſtum fieri." Vulgate.

APPRECIATION, l. 2. from bottom, *r.* abbé Feytou for Feyter.

APRILE Guiseppe, in *Biography.* See Tenducci.

AQUILEGIA, in *Botany*, (ſee our former article). The hiſtory of this elegant genus is greatly enriched by profeſſor De Candolle, who reckons up thirteen ſpecies. The following references require to be added.—Willd. Sp. Pl. v. 2. 1245. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 3. 325. Sm. Fl. Brit. 578. Prodr. Fl. Græc. Sibth. v. 1. 372. Purſh 372. De Cand. Syſt. v. 1. 333. Tourn. t. 242. Lamarck Dict. v. 1. 149. Illuſtr. t. 488.

Eſſ. Ch. Calyx none. Petals five, deciduous. Nectaries five, gaping and two-lipped at the ſummit; outer lip large and flat; inner minute; each extended downwards into a hollow ſpur, callous at the point, projecting between the petals. Stamens numerous, diſpoſed in five or ten parcels, the inner ones abortive, their filaments dilated, membranous, and oblong, deſtitute of anthers. Germens five. Capſules as many, erect, many-ſeeded, beaked with the ſtyles. *De Candolle.*

We here, of courſe, alter the phraſeology of our author, with reſpect to the parts of the flower, as in Aconitum.

Theſe are perennial herbs, with fibrous *roots*. *Radical*, or lower *ſtem-leaves*, on long three-cleft *footſtalks*, divided in a twice-ternate manner; their *leaflets* three-cleft, toothed, moſtly obtuſe: *upper leaves* cut, or deeply divided, into linear lobes. *Flowers* terminal, blue, white, roſe-coloured, or purple, very rarely of a dirty yellow. To which we may add that the *flowers* are pendulous, *fruit* erect.

The *herbage* is ſlightly bitter, tonic or ſomewhat aſtringent, ſcarcely acrid. *Seeds* acrid, recommended in eruptive diſorders.

The various ſpecies inhabit mountainous thickets and paſtures of the northern hemiſphere; one is found in America, four in different parts of Europe, ſeven in Siberia.

Obſ. The ſcales, originating in the dilatation of the innermoſt *filaments*, and the abortion of their *anthers*, often ſurround the *germens* like *bracteas*, after the *flower* is paſt. They are delineated in ſeveral of Barrelier's plates. Mr. Brown has remarked ſomething analogous in the petal-like ſcales of his EUPOMATIA; ſee that article hereafter. The flowers in *Aquilegia* become double in four different ways. 1. Thoſe termed *corniculati* have acceſſory *nectaries*, originating from changed *ſtamens*, all ſpurred and pointing downwards. 2. *Inverſi* have their *ſpurs* turned upwards, in conſequence of a twiſt in the claws of thoſe parts. 3. *Stellati* have acceſſory *nectaries* proceeding from enlarged *filaments* deprived of *anthers;* ſuch being all flat, and without *ſpurs*. 4. *Degeneres* have all their *ſtamens*, *piſtils*, and *nectaries* obliterated, nothing remaining but multiplied *petals* (*ſepala* of De Candolle) of a greeniſh hue.

We ſhall follow our author, in a compendious review of the ſpecies, with ſome neceſſary alterations. They are not ſeparated into ſections.

1. A. *vulgaris*. (See AQUILEGIA, n. 2.) Common Columbine. Linn. Sp. Pl. 752. Willd. n. 2. Fl. Brit. n. 1. Engl. Bot. t. 297. Fl. Dan. t. 695. (Aquilegia; Trag. Hiſt. 137. Fuchſ. Hiſt. 102. A. cærulea; Ger. Em. 1093, with figures likewiſe of the ſeveral varieties above-mentioned. Aquilina; Matth. Valgr. v. 1. 577. Camer. Epit. 404. varieties, 405. Iſopyrum Dioſcoridis; Column. Phytob. 1. t. 1.)—Nectaries incurved. Capſules hairy. Stem leafy, many-flowered. Leaves nearly ſmooth. Styles not overtopping the ſtamens.—Native of rather moiſt meadows, woods and thickets, throughout Europe, from Sweden to Greece, flowering in July. Thunberg alſo found this plant in Japan. Baron Marſchall von Bieberſtein mentions it as occurring, though rarely, in the Iberian tract of Caucaſus. Nothing is more common, or more hardy, in gardens; its fanciful varieties being tolerably conſtant from ſeed, as far as they produce any. The *root* is rather tuberous. *Herb* ſmooth, two or three feet high. *Leaves* glaucous beneath. *Flowers* ſomewhat panicled, pale violet in a natural ſtate, occaſionally pink or white, larger and handſomer than in any of their garden deformities. The *alpina* of Hudſon, different from the real one, is a rather ſmaller, more ſlender, mountain variety, with tapering, leſs incurved, *nectaries*. We have gathered it at Matlock, Derbyſhire.

2. A. *viſcoſa*. (See AQUILEGIA, n. 1.) Linn. Mant. 77. Willd. n. 1. Ait. n. 1. Gouan Illuſtr. 33. t. 19. "De Cand. Fr. ed. 3. v. 4. 912. v. 5. 640. (A. hirſuta, flore viſcoſo; Magn. Monſp. 26. Hort. 21. A. montana, flore parvo, thalictri folio; Bauh. Pin. 144. Prodr. 75. Lachenal Act. Helvet. v. 8. 146. t. 5. Bauh. Hiſt. v. 3. 484. Moriſ. ſect. 12. t. 1. f. 5, bad.)—Nectaries incurved. Capſules hairy. Stem with very few flowers, almoſt naked, downy and viſcid as well as the leaves and flowers. Styles not overtopping the ſtamens.—Native of Switzerland, the ſouth of France, and all along the rocky hills of the Mediterranean. De Candolle concurs with Villars in opinion, that this plant is only a variety of the foregoing. We have never compared them in a living ſtate, but the ſingular viſcous moiſture which covers the whole herb, eſpecially the *flowers*, and is viſible even in dried ſpecimens, ſeems to indicate an eſſential difference. The *flowers* too are larger, while the plant is ſmaller, ſometimes ſingle-flowered, and the *leaflets*, with their ſegments, are more wedge-ſhaped. Linnæus however declares, Syſt. Veg. ed. 13. 420, that ſeeds of the *viſcoſa*, from Gouan himſelf, produced the *vulgaris*.

3. A. *ſpecioſa*. Handſome-flowered Columbine. De Cand. n. 3, excluding the ſynonyms. (A. vulgaris, daurica; Willd. n. 2, ϑ?)—Nectaries incurved; ſpur the length of the border. Capſules hairy. Stem leafy, many-flowered. Flower-ſtalks, footſtalks, and backs of the leaves, downy. Styles taller than the ſtamens."—Native...... Seen in a cultivated ſtate by De Candolle, flowering in May and June. He doubts whether his plant were diſtinct from *A. vulgaris*, as it differed only in the ſpur and limb of each *nectary* being of equal length, the former generally yellow at the extremity, and the *ſtyles* riſing above the *ſtamens* during the flowering. Fiſcher and Perſoon, it ſeems, have mentioned a variety, in which the *ſpurs* are of the ſame colour as the limb. Whatever their plant may be, we are ſatisfied that the ſynonyms of Aiton and Ehrhart belong to the following.

4. A. *ſibirica*. Siberian Party-coloured Columbine. Lamarck n. 4. De Cand. n. 4. (A. vulgaris, ſpecioſa; Ait. n. 2, δ. Willd. n. 2, η. A. bicolor; Ehrh. Beitr. v. 7. 146. A. hybrida; Sims in Curt. Mag. t. 1221? De Cand. n. 11?)—Nectaries incurved. Germens and capſules perfectly ſmooth. Styles taller than the ſtamens.—Native of Siberia. Linnæus cultivated this plant, and found it did not alter. We received it in 1796, from the garden of Meſſrs. Lee and Kennedy, at Hammerſmith, who had the ſeeds from that country. Specimens of the ſame, in the Linnæan herbarium, are marked as having been gathered near Irkutſk. M. De Candolle juſtly deſcribes "the radical *leaves* on long ſtalks, ſmooth, except perhaps ſome downineſs on the *footſtalks;* their ſegments obtuſe, broadly notched. *Stem* hardly a foot high, moſtly ſingle-flowered, and entirely naked; ſometimes bearing two or three *flowers*, with one or two leafy *bracteas*. *Sepala* (*petals*) blue, oval, obtuſe. *Nectaries* white, half as long, very blunt. *Capſules* quite ſmooth, by which character this ſpecies is readily diſtinguiſhed from all the foregoing, and perhaps from all the reſt." *De Cand.* Our wild ſpecimens have three or four *flowers* on each ſtem, and the garden ones are ſtill more luxuriant. The *flowers* in both are purpliſh-blue, the lips of the *nectaries* cream-coloured, as expreſſed in Ehrhart's name, and Dr. Sims's figure. We ſhould have no heſitation about his ſynonym, were it not for the ſlight downineſs which he attributes to the herbage. The proportion of his *ſtyles* is right, but he does not ſay any thing of the *germens*. We cannot but ſuſpect the gardeners mixed ſeeds of the Siberian ſpecies with the Canada one, or poſſibly that pollen of the latter might have had ſome effect on the flowers of the former, of which the rather leſs curved *nectaries* of the offſpring ſeem an indication; the pale hue of their limb is exactly that of our *ſibirica*. The downy *leaves* do not accord with either. If we are right, De Candolle's *hybrida*, n. 11, muſt be expunged. Reſpecting Gmelin's *A.* n. 16, Fl. Sib. v. 4. 185, we ſuppoſe by its laſt ſynonym, alluding to the party-coloured *nectaries*,

nectaries, it muſt have been what we have juſt deſcribed, taken by him for the Linnæan *alpina*, though not without ſome doubt.

5. A. *alpina*. (See Aquilegia, n. 3.) Alpine Columbine. Linn. Sp. Pl. 752. Willd. n. 3. Ait. n. 3. Ehrh. Beitr. v. 7. 146. Sm. Tour. ed. 2. v. 3. 137. Allion. Pedem. v. 2. 64. t. 66. (A. n. 1196; Hall. Hiſt. v. 2. 89. A. montana, magno flore; Bauh. Pin. 144. Prodr. 75. Bauh. Hiſt. v. 3. 484.)—Lips of the nectaries half as long as the elliptic-lanceolate pointed petals; ſpurs curved at the extremity. Stem two or three-flowered, leafy. Leaflets with many deep, linear-wedgeſhaped, ſegments. Capſules downy, corrugated.—Native of buſhy alpine ſituations in Switzerland, Savoy, Mount Cenis, &c. flowering in July or Auguſt; but not, we believe, of Siberia, the variety β of De Candolle appearing to belong to the laſt ſpecies. The real *A. alpina* is the moſt magnificent of its genus, diſtinguiſhed by fine blue *flowers*, ſpreading two and a half or three inches, and well repreſented in Allioni's plate. The herbage is ſmooth. *Stem* often above two feet high, bearing ſeveral flowers. The *germens* are denſely downy. *Capſules* near an inch long, finely hairy, tranſverſely wrinkled, with copious, prominent, parallel, confluent veins. *Seeds* black and ſhining, numerous. Miller might have cultivated this noble plant at Chelſea, but it had long been loſt, and was reſtored by ſeeds from Mount Cenis, in 1787, being now probably again extinct in England.

6. A. *pyrenaica*. Pyrenean Columbine. "De Cand. Fr. ed. 3. v. 5. 640." (A. alpina; Lamarck n. 3.)—"Spurs of the nectaries quite ſtraight, ſcarcely ſhorter than the limb. Stem nearly naked, moſtly ſingle-flowered. Leaflets with numerous, deep, linear lobes."—Found in elevated rocky paſtures, among the Pyrenees and Apennines. Akin to the laſt, but in all its parts but half as large. *Leaves* on longer ſtalks, their outline nearly circular. *Flowers* one or two, middle-ſized, blue. *Petals* (*ſepala*, De C.) oval, tapering at each end. *Spurs* ſlender, perfectly ſtraight to the very point. *Stem* and *footſtalks* either quite ſmooth, or ſlightly hairy. Some ſynonyms of *A. viſcoſa* are repeated under this ſpecies by De Candolle, at leaſt thoſe of the Bauhins and their followers. We have ſeen no ſpecimen, and can form no opinion. There ſeems ſome confuſion in our able friend De Candolle's ſpecific characters of this and the laſt. The *ſpur* in *A. alpina* is half the length of its real *petals*, as Linnæus ſays; De Candolle ſays half the length of the limb of his *petals*, our *nectaries*, which is not the caſe, thoſe parts being of equal length, as is nearly the caſe with *A. pyrenaica*. But in this latter perhaps the *petals*, his *ſepala*, are no longer. This point is material.

5. A. *canadenſis*. (See Aquilegia, n. 4.) Canadian Columbine. Linn. Sp. Pl. 752. Willd. n. 4. Ait. n. 4. Curt. Mag. t. 246. Purſh n. 1. Bigelow Boſt. 133. (A. pumila præcox canadenſis; Cornut. Canad. 59. t. 60. Mill. Ic. t. 47. A. canadenſis, flore externè rubicundo, medio luteo; Moriſ. ſect. 12. t. 2. f. 4.)—Spurs ſtraight. Styles and ſtamens prominent. Petals acute, rather longer than the limb of the nectaries. Leaflets deeply three-lobed, bluntiſh, notched.—In the crevices of rocks, from Canada to Carolina, flowering in April and May. *Purſh*. A hardy perennial in our gardens, diſtinguiſhed by the beauty of its ſcarlet *flowers*, variegated with yellow, remarkable for their long, ſtraight, erect *ſpurs*. The *germens* are downy, with very long and ſlender *ſtyles*.

8. A. *viridiflora*. (See Aquilegia, n. 5.) Green-flowered Columbine. "Pallas Act. Petrop. for 1779. 260. t. 11." Willd. n. 5. Ait. n. 5. Jacq. Ic. Rar. t. 102.—Spurs ſtraight, longer than the limb of each nectary. Stamens the length of the nectaries. Styles much longer. Petals elliptic-oblong, ſhorter than the nectaries.—Found in Siberia by Pallas, who ſent ſeeds to Kew in 1780. The green *flowers*, and long *ſpurs*, mark this ſpecies. *Germens* downy, encompaſſed by membranous abortive *ſtamens*, after the perfect ones are gone.

9. A. *daourica*. Daourian Columbine. De Cand. n. 9.—Spurs ſtraight, ſhorter than the limb of each nectary, ſtamens ſcarcely prominent. Styles much longer. Petals acute, ſhorter than the nectaries.—On the Daourian mountains, flowering in June. This reſembles the preceding and the following ſpecies, differing from the former in having dark purple *flowers*, the ſpur of whoſe *nectaries* is ſhorter than their limb, and their *ſtamens* a little prominent; from the latter in having very prominent *ſtyles*, and *petals* ſhorter than the limb of the nectaries. *De Cand.*

10. A. *atro-purpurea*. Dark Violet Columbine. Willd. Enum. 577. De Cand. n. 10. (A. viridiflora β; Willd. n. 5.)—Spurs ſtraight, the length of the limb. Styles and ſtamens ſcarcely equal to the petals, which are the length of the limb of the nectaries.—Native of Siberia, according to Willdenow, from whom this ſpecies is entirely adopted. The *flowers* are deſcribed as dark purple, or blueiſh-violet; the limb of each *nectary* greeniſh-blue; ſpur blueiſh-violet. Profeſſor De Candolle ſuſpects this may be the ſame plant as Dr. Sims's *hybrida*, (ſee *ſibirica*, n. 4.) which is not at all improbable, and if ſo, we loſe another out of his thirteen ſpecies. The only difficulty is to conceive, that Willdenow could, at any time, reckon this *hybrida* a variety of *viridiflora*, to which his *atro-purpurea* was reduced in his Sp. Pl.

11. A. *parviflora*. Small-flowered Columbine. De Cand. n. 12. (A. ſylvarum humilis; Gmel. Sib. v. 4. 186. n. 17. t. 74.)—Spurs ſtraight, ſhort, nearly as long as the obtuſe limb of each nectary. Stamens and piſtils recurved, the length of the petals. Stem ſmooth, as well as the leaves.—Very frequent in woods about the river Lena. *Gmelin*. *Herb* entirely ſmooth, except the briſtly *germens*. *Stem* a foot, or rather more, in height, bearing from two to ſeven *flowers*. *Leaflets* ovate-wedgeſhaped, with three broad obtuſe teeth at the end. *Bracteas* in linear ſegments. *Flowers* blue or violet, much ſmaller than thoſe of *A. canadenſis*; their *ſpurs*, (according to De Candolle, who had examined dried ſpecimens,) ſtraight, very ſhort; Gmelin terms them "ſpiral." *Petals* ovate, acute, tapering at the baſe, longer than the blunt limb of the *nectaries*. *Stamens*, as well as *ſtyles*, curved downwards; barren *filaments* oblong-linear, much criſped at the edges.

12. A. *anemonoides*. Anemone Columbine. "Willd. Geſſ. Naturf. Berl. Mag. for 1811. 401. t. 9. f. 6." De Cand. n. 13.—Spurs ſtraight, very ſhort, as long as the limb, which is one-third the length of the petals. Stalks radical, ſingle-flowered, nearly naked.—Native of the Altaian region of Siberia. *Root* perennial. *Herb* three inches high, ſmooth, reſembling *Anemone triternata*. *Leaves* radical, divided in a thrice-ternate manner, with oblong ſegments, either entire, or two or three-lobed. *Stalk* ſcarcely longer than the leaves, accompanied by two linear-lanceolate *bracteas*. *Petals* ovate, obtuſe. *Nectaries* five, hooded; their *ſpurs* gibbous at the baſe. *Willd.*

ARACÆI, l. 10, *r.* Baanah.

ARACCA, l. 5, *r.* Erach.

ARALIÆ, in *Botany*, ſo named from its principal genus, a natural order of plants, the 59th in Juſſieu's ſeries, the 1ſt of his 12th claſs. We have given the character of that claſs under the article Umbellatæ. The *Araliæ* are thus defined.

Calyx either entire or toothed at the margin. *Petals* and *ſtamens* definite. *Styles* and *ſtigmas* ſeveral. *Fruit* pulpy, or rarely capſular, of as many cells as there are ſtyles, with a ſolitary *ſeed* in each. *Stem* either arboreous, or ſhrubby, or herbaceous. *Leaves* alternate, often compound, their footſtalk ſheathing in its lower part. *Flowers* umbellate, either with an *involucrum*, or, more rarely, naked.

The genera are, *Gaſtonia* of Commerſon; *Polyſcias* of Forſter nearly related thereto; *Aralia* of all authors; *Cuſſonia* of Linnæus in his Supplementum; and *Panax*.

The *Araliæ* are naturally allied to the *Umbellatæ*, but differ in having their ſeeds in a pericarp, inſtead of being naked. They are akin to *Cornus* and *Hedera*, but diſtinguiſhed by having more than one ſtyle. *Juſſ.*

ARANEA, col. 2, l. 10, *dele* which ſee reſpectively, and inſert, See SPIDER.

ARAQUI, in *Geography*, a river of Georgia, next in importance to the Cyrus, or Kur, which, riſing near the gates of Caucaſus, flows to the ſouth, and after dividing into two equal parts, the ſouthern range of mount Caucaſus, falls into the Kur, at the town of Tſgette, 25 miles above Teflis.

ARASCHA, a rapid river of Mingrelia, which has its ſource near the village of Kemme, and unites, on the borders of the Iberian lordſhip of Sa Schilio, with the Hippus, which riſes in the higheſt mountains of the Soani, not far from the ſource of the Phaſis, flows through Letſghumi, divides Mingrelia from Iberia, and enters the Phaſis, near the Tredia.

ARATUM, *r.* ARATRUM.

ARAUCARIA, in *Botany*, a barbarous name, given by Juſſieu to the Chili Pine, which Lamarck, Schreber, and Lambert, have called DOMBEYA. (See that article.) Willdenow has unfortunately retained the above name, becauſe he had already ignorantly followed Cavanilles in calling a genus *Dombeya*, which is not generically diſtinct from *Pentapetes*. Hence *Araucaria* has found its way into Mr. Aiton's Hortus Kewenſis, where Willdenow is taken as the leading authority, and DOMBEY's ill fortune ſtill purſues him. (See our biographical account of that eminent man, which we truſt will be our ſufficient juſtification in always maintaining the genus which he introduced, and which properly belongs to him: nor have we any doubt that our learned countrymen will concur in ſupporting his well-earned fame, when they properly conſider the ſubject.) We have further to obſerve, that the *Dombeya* of Lamarck, or that of Cavanilles, has, neither of them, any preference as to date, both having, we believe, been firſt announced in Juſſieu's Gen. Pl. in 1789, a year before the date of publication of each of thoſe authors' works. We are alſo ready to allow that our illuſtrious friend Juſſieu, in the choice he made, was far from concurring in the baſe perſecution of Dombey, originally raiſed by the Spaniards. He was however evidently aware that the *Dombeya* he adopted could hardly be maintained, or at leaſt that it was not diſtinct from *Pentapetes phœnicea*, now received as PENTAPETES. (See that article.) *Araucaria* is not, as has been reported, the denomination of the Chili Pine, in any part of the world, but a perverſion of that of its native country, the Araucanian mountains, and to ſuch generic names there are many objections.

ARAUJIA, ſo named by profeſſor Brotero, in honour of a Portugueſe nobleman, Don Antonio de Araujo, an eminent patron of botanical ſcience.—Brot. Tr. of Linn. Soc. v. 12. 62.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, ovate, permanent ſegments. *Cor.* of one petal, bell-ſhaped; tube rather longer than the calyx, inflated at the baſe, with five protuberances; limb in five deep, ovate, acute ſegments, ſhorter than the tube, ſlightly ſpreading, their points ſomewhat recurved and twiſted. Nectaries five cells in the baſe of the tube, oppoſite to the ſegments of the limb. *Stam.* Filaments five, inſerted into the baſe of the tube, between the nectaries, ſhort, thick, flattened; anthers arrow-ſhaped, each ſurmounted by a ſmall auricle, converging towards the piſtil; pollen of two obovate maſſes, projected upon five angles of the ſtigma. *Piſt.* Germens two, ſuperior, ovate-oblong; ſtyles two, very ſhort; ſtigma common to both, large, thick, roundiſh-ovate, ſmooth, with two acute points at the top, and five glandular lateral tubercles to receive the pollen. *Peric.* Follicles two, divaricated, large, oblong-oval, coriaceous, ſmooth, abrupt, with a ſmall point, one of them often abortive; partition longitudinal, unconnected when ripe, except at top and bottom, the diſk covered on both ſides with numerous elevated, parallel, ſharply toothed ridges. *Seeds* very numerous, inſerted into the teeth of the receptacle, imbricated downwards, ovate, clothed with papillary pubeſcence, and each crowned with a tuft of long ſilky hairs.

Eſſ. Ch. Corolla bell-ſhaped; tube with five nectariferous cells at the baſe. Anthers crowned with a membrane. Stigma with two horns. Follicles ſmooth. Seeds comoſe.

1. A. *ſericofera.* Silky Araujia.—Native of Peru. Cultivated in the green-houſe at Liſbon, where it flowers in autumn, and ripens ſeed in ſpring. The whole plant abounds with acrid milk, but every part is inodorous. The *root* is creeping. *Stem* ſhrubby, weak, twining, three or four feet high, round, ſmooth, branched, leafy; the young branches rather downy. *Leaves* oppoſite, ſtalked, lanceolate, acute, entire, nearly ſmooth, an inch and a half to three inches long; heart-ſhaped at the baſe, and marked with two glands on the upper ſide, a little above the inſertion of each footſtalk. *Flowers* three or four, or more, together, in ſhort, lateral, drooping, ſmooth, ſomewhat corymboſe *cluſters*, about half the length of the leaves, and inſerted between the baſes of the footſtalks. *Corolla* yellowiſh-white, marked with purple lines; downy about the mouth. *Follicles* three or four inches long.

ARBELA, l. 13, after Arbelitis, add — This place, once the capital of the province of Adiabene, has wholly declined from its former importance, and dwindled into a wretched mud town, with a population not exceeding 3000 ſouls. Part of this town is built on a hill of a conical form, on which probably ſtood the old caſtle, and the remainder of the town encircles the baſe of the hill. The country ſurrounding Erbille, its preſent name, lying in lat. 36° 11′, and between that place and Moſul, is fruitful but hilly, and very deficient in wood, there being hardly a tree or even ſhrub to be ſeen.

ARBITRATION *of Exchange*. See EXCHANGE.

ARCH, l. 4, *fig.* 43; l. 23, *fig.* 43.

ARC *of a Circle*, l. 11, *fig.* 45.

ARCHER, in *Geography*, a townſhip of Ohio, in the county of Jefferſon, containing 60 inhabitants.

ARCHIPELAGO, col. 2, l. 2, *r.* 2100.

ARCTOMYS, in *Zoology*. See MARMOT.

ARCTOTHECA, in *Botany*, a name revived from Vaillant, and originally ſynonymous with ARCTOTIS, (ſee that article,) from which the genus we are about to deſcribe has recently been ſeparated, chiefly by the want of a ſeed-crown; for in habit there is no diſtinction.—"Wendland Hort. Herrenhuſ. 8." Willd. Sp. Pl. v. 3. 2365. Brown in Ait. Hort. Kew. v. 5. 141.—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* roundiſh, imbricated; its ſcales elliptic-oblong, woolly; the innermoſt with a dilated, membranous termination. *Cor.* compound, radiated; florets of the diſk numerous, funnel-ſhaped, five-cleft, equal, all perfect; thoſe of the radius about twelve, ligulate, elliptic-lanceolate, longer than the diameter of the diſk, with four ribs, and about three unequal teeth, neuter. *Stam.* in the florets of the diſk only, filaments five, capillary, ſhort; anthers united into a tube, nearly as long as the corolla. *Piſt.* Germen in all the florets, oblong; ſtyle in thoſe of the diſk only, thread-ſhaped; ſtigma prominent, cylindrical, erect. *Peric.* none, except the permanent, dry, curled calyx. *Seeds* in the diſk only, obovate, without wing or down. *Recept.* flattiſh, cellular.

Eſſ. Ch. Receptacle cellular. Seed-down none. Calyx imbricated, partly membranous.

1. A. *repens.* Creeping Arctotheca. Willd. n. 1. Ait. n. 1. (Arctotis repens; Jacq. Hort. Schoenbr. v. 3. 31. t. 306. A. ſcapigera; Thunb. Prodr. 165.)—This, the only known ſpecies, is a native of the Cape of Good Hope. Seeds were ſent by the celebrated Scopoli to the writer of this article, and the plants raiſed from thence flowered in the open ground in Chelſea garden, in the ſummer of 1790, but it was found neceſſary to ſhelter them in winter. The *roots* are perennial, creeping extenſively. *Stems* herbaceous, proſtrate, branched, clothed like the backs of the lyrate pinnatifid *leaves*, with fine white cottony down. *Flower-ſtalks* radical, ſeveral together, ſimple, erect, naked, about ſix inches high, being rather longer than the leaves. *Flowers* ſolitary, an inch and a half broad, lemon-coloured, with purple ribs beneath.

ARCYRIA, a curious genus of the Fungus tribe, thus named, originally by ſir John Hill, from αρκυς, *a net*, and ὑριον, *a honeycomb*, the fine net-work of its ripe head having that appearance.—Perſ. Diſp. Meth. Fung. 10. Syn. Fung. 182.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eſſ. Ch. Upper half of the head deciduous. Filaments compoſing a denſe denudated net-work, reſting on the cup-like receptacle.

1. A.? *leucocephala.* White-headed Arcyria. Perſ. n. 1. Hoffm. Germ. v. 2. t. 6. f. 1. Trichia cinerea; Trentepohl in Roth Catal. v. 1. 227.)—Aggregate. Head funnel-ſhaped below, reddiſh-brown. Net-work globoſe, mealy, ſnow-white.—Found on dead leaves or ſticks in autumn. Alſo on moſſes, or fragments of leaves, in rainy weather, very copiouſly, in June and July, according to Albertini and Schweiniz, *Fung. Niſkiens.* 100, who, like Perſoon himſelf heſitate whether to refer this elegant little ſpecies to this genus or to Physarum. See that article.

2. A. *flava.* Yellow Arcyria. Perſ. n. 2. Obſ. Mycol. 1. 58. Diſp. Meth. 10. Albert. and Schw. Niſk. n. 279. (Trichia nutans; Bulliard Fung. v. 1. 122. t. 502. f. 3. Sowerb. Fung. t. 260. Stemonitis amœna; Trentep. in Roth Cat. v. 1. 222.)—Aggregate, yellow. Net-work cylindrical, elongated, drooping.—Found on rotten wood in ſummer, conſiſting of little tufts, of a pale or ochraceous yellow, each plant on a ſhort ſtalk; the *receptacle* hemiſpherical; the cylindrical, rather tapering, *net-work* from half an inch to an inch long, reclining, abundant in powdery *ſeeds.*

3. A. *cinerea.* Aſh-coloured Arcyria. Perſ. n. 1. Albert. and Schw. Niſk. n. 280. (A. albida; Perſ. Diſp. Meth. 10. t. 1. f. 2. Trichia cinerea; Bull. Fung. v. 1. 120. t. 477. f. 3. Stemonitis glauca; Trentep. in Roth Cat. v. 1. 221.)—Aggregate, greyiſh-white. Net-work cylindric-ovate, erect. Receptacle crenate.—Found in ſummer, in woods, on dead branches, ſtalks, &c. Smaller and ſhorter, as well as more obtuſe, but with a longer *ſtalk,* in proportion, than the laſt, from which alſo it is diſtinguiſhed by its dirty-white colour. We are puzzled, as well as the learned authors of the *Fungi Niſkienſes,* by Perſoon's aſſertion of the reſemblance of this ſpecies to the fifth, hereafter deſcribed.

4. A. *incarnata.* Fleſh-coloured Arcyria. Perſ. n. 4. Obſ. Mycol. 1. 58. (not 38.) t. 5. f. 4, 5. Albert. and Schw. Niſk. n. 281. (Stemonitis globoſa, et S. carnea; Trentep. in Roth Cat. v. 1. 222.)—Somewhat ſcattered, dull fleſh-coloured. Net-work pyramidal, obtuſe, curved, ſoon deciduous. Empty receptacle ſalver-ſhaped.—Said to be very common in Germany, on oak or fir wood in decay, at all ſeaſons. The empty *receptacles* reſemble little reddiſh *Pezizæ,* and are marked with radiating ſtreaks. The *net-work* appears to abound in farinaceous *ſeeds* of the ſame hue.

5. A. *punicea.* Scarlet Arcyria. Perſ. n. 5. Diſp. Meth. 10. Albert. and Schw. n. 282. (Clathrus denudatus; Linn. Sp. Pl. 1649. Jacq. Miſc. Auſtr. v. 1. 136. t. 6. Trichia cinnabarina; Bull. Fung. v. 1. 121. t. 502. f. 1. T. denudata; Sowerb. Fung. t. 49. T. n. 2164; Hall. Hiſt. v. 3. 115. t. 48. f. 6, as Jacquin has it, rather than t. 4, as cited by Haller himſelf. Stemonitis crocata; Trentep. in Roth Cat. v. 1. 220.)—Crowded, ovate, orange-coloured.—Frequent throughout Europe on rotten wood, in ſummer and autumn. When young it is white and ſoft, but advancing in ſize, it aſſumes a conſpicuous orange-colour, with the dry rather firm texture of its genus. This fine colour chiefly reſides in the copious ſeminal *powder,* for the net-work itſelf is browniſh. The edge of the remaining baſe of the *receptacle* is often irregularly torn, and various in breadth. Bolton's v. 3. t. 93. f. 2, if really taken from this ſpecies, is not a happy repreſentation.

ARDELAN, in *Geography,* a province of the Perſian empire, forming the eaſtern diviſion of Kurdiſtan, is in length 200 miles, from the little river Sharook to the Turkiſh diſtrict of Zohaub, and nearly 160 in breadth. It is ſeparated from the plain of Hamadan by a ſmall range of hills, and its weſtern boundary is 100 miles beyond Senna, the capital, ſituated in N. lat. 35° 12′, and E. long. 40°. The territories of Ardelan extend as far as Kella Shah Khanee, and are peopled by a tribe denominated Gheſhkee, who are recorded by the Kurds as the moſt expert and daring robbers of their nation; nor will torture induce them to betray their accomplices, being habituated to pain and ſevere chaſtiſement from their earlieſt infancy. They are, however, ſlaves to the moſt abject ſuperſtition.

ARGOLASIA, in *Botany,* Juſſ. Gen. 60, a good name, conſtructed by Juſſieu, from αργος, *white,* and λασιος, *hairy,* or *ſhaggy,* alluding to the white woolly clothing of the herb. But this name is ſuperſeded by one of ſimilar meaning, Lanaria, (ſee that article,) given to the ſame plant by Dr. Solander, and publiſhed in Ait. Hort. Kew. v. 1. 462, in 1789. This latter has been adopted by Schreber, and is now eſtabliſhed.

ARGUNNA, in *Geography,* a town of Armenia, in the pachalic of Diarbekir, diſtant 48¾ miles from Diarbekir; ſituated on the ſide of a lofty mountain, from which torrents of water are diſcharged in courſes through the ſtreets ſo as to render them impaſſable. The town is populous, but wretchedly built, and is remarkable for the quantity of wine and brandy made in its vicinity.

ARJONA, in *Botany,* ſo named by the late abbé Cavanilles,

nilles, in honour of Mr. Francis Arjona, a celebrated lecturer on botany at Cadiz.—Cavan. Ic. v. 4. 57.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Lyſimachiis*, Juſſ. affine ?

Gen. Ch. *Cal.* Perianth inferior, of two ſmall, concave, permanent leaves, each with three terminal teeth. *Cor.* of one petal, funnel-ſhaped; tube thrice the length of the calyx, ſlightly dilated upward; limb in five deep, ovate, acute, equal ſegments. *Stam.* Filaments five, capillary, very ſhort, inſerted into the throat of the tube; anthers oblong, within the tube. *Piſt.* Germen ſuperior, ovate, crowned with five minute permanent ſcales; ſtyle ſimple, thread-ſhaped, the length of the tube; ſtigmas two, flat. *Peric.* Berry globoſe, crowned with the ſcales, of two cells. *Seeds* . . . . .

Eſſ. Ch. Corolla funnel-ſhaped, equal. Berry ſuperior, of two cells, crowned with five ſcales.

1. A. *tuberoſa*. Tuberous Arjona. Cavan. as above, t. 383.—Native of South America, in dry barren ground, near Port Deſire, flowering in December. We have a ſpecimen from the lamented author, gathered by Louis Née. The long fibres of the *root* are furniſhed, here and there, with oval knobs, well ſuited to its arid ſituation. *Stem* ſolitary, a ſpan high, with numerous branches from the bottom; nearly ſimple above; leafy throughout. *Leaves* very numerous, imbricated, ſheathing, awl-ſhaped, ſpinous-pointed, channelled, entire, rather ſpreading, clothed with ſoft woolly hairs. *Flowers* in a ſolitary, terminal, denſe, corymboſe head. *Corolla* about an inch long; externally yellowiſh and very downy; internally ſmooth, yellowiſh-white. *Style* reddiſh, with ſometimes three *ſtigmas*. *Berry* ſmall, ſmooth. *Seeds* not obſerved.

There is ſomething in the characters and hue of this plant, that approaches the natural order of *Vepreculæ*, or *Thymelææ*, eſpecially in the form and aſpect of its *corolla*. Poſſibly the *fruit* may not really be of two cells. The two cotyledons of a ſingle *drupa* might, in an early ſtate, miſlead the author, who ſays he did not ſee the *ſeeds*. The *bark*, however, does not appear to have thoſe ſilky fibres, which are the ſtrong indication of the *Daphne* family.

ARISTEA, (ſee our former article,) a name left unexplained by profeſſor Martyn, is rightly derived by De Theis from *ariſta*, an awn, but does not apply as he ſays to the point of the leaf. Solander, the author of this name, appears rather to have alluded to the copious bearded fringe of the ſheaths, ſo remarkable in the original ſpecies.—Ker in Ann. of Bot. v. 1. 236. Dryand. in Ait. Hort. Kew. ed. 2. v. 1. 108. Vahl Enum. v. 2. 123.

Eſſ. Ch. Corolla ſuperior, in ſix deep regular ſegments, ſpirally twiſted together after flowering, permanent. Capſule of three cells, with many ſeeds.

Four ſpecies having been added to this genus by Mr. Ker, it is neceſſary to review the whole.

1. A. *cyanea*. Graſs-leaved Ariſtea. Ait. n. 1. Andr. Repoſ. t. 10.—Flowers in terminal heads. Sheaths and bracteas in many fine capillary marginal ſegments.—Native of the Cape of Good Hope, as well as all the following. See ARISTEA, n. 1.

2. A. *capitata*. Talleſt Ariſtea. Ait. n. 2. Ker in Curt. Mag. t. 605. (A. major; Andr. Repoſ. t. 160. A. cærulea; Vahl n. 3. Gladiolus capitatus; Linn. Sp. Pl. 53. Moræa cærulea; Thunb. Mor. n. 15. t. 2. f. 2. Prodr. 11. Fl. Cap. v. 1. 277. Willd. Sp. Pl. v. 1. 243.)—Tufts of flowers alternate, racemoſe. Sheaths ovate, entire.—Native of mountains in the road to Hautniquas and Lange Kloof, as well as of hills about Cape Town, flowering in October and November, or in the latter ſituation, two months earlier. This ſpecies is two feet high, with broadiſh ſword-ſhaped *leaves*, and large handſome *flowers*, of a fine blue, compoſing a long faſciculated *cluſter*.

3. A. *ſpiralis*. White Ariſtea. Ait. n. 3. Ker in Ann. of Bot. n. 3. (Moræa ſpiralis; Linn. Suppl. 99. Willd. Sp. Pl. v. 1. 240. Curt. Mag. t. 520. Thunb. Mor. n. 2. Prodr. 10. Fl. Cap. v. 1. 263.)—Flowers ſpiked, in alternate pairs. Segments of the corolla of equal breadth. Sheaths linear-lanceolate, entire.—Native of the Cape, flowering in Auguſt. *Stalk* about a foot high. *Leaves* linear-ſwordſhaped. *Flowers* large, two inches broad, white with a purple ſtar in the centre; the three outermoſt ſegments brown at the back.

4. A. *melaleuca*. Mourning Ariſtea. Ait. n. 4. Ker in Curt. Mag. t. 1277. (Moræa melaleuca; Thunb. Mor. n. 1. t. 1. f. 3. Prodr. 10. Fl. Cap. v. 1. 261. Willd. Sp. Pl. v. 1. 240. Vahl Enum. v. 2. 153. M. lugens; Linn. Suppl. 99.)—Flowers alternate, ſolitary or in pairs. Three ſegments of the corolla not half the ſize of the reſt. Leaves linear.—Found in ſeveral ſandy buſhy places, at the Cape of Good Hope, flowering in September and October. The *root* is fibrous. *Leaves* numerous, two-ranked, four to ſix inches long, and not a quarter of an inch broad. *Flowers* few, ſomewhat racemoſe, larger than the laſt, and very handſome, having three concave, almoſt orbicular, ſegments, of a ſky-blue, an inch and a half long, with three alternate, obovate, black ones, about half as long, and much narrower.

5. A. *puſilla*. Dwarf Ariſtea. Ker in Ann. of Bot. n. 5. (Moræa puſilla; Thunb. Mor. n. 4. Prodr. 11. Fl. Cap. v. 1. 265. Willd. Sp. Pl. v. 1. 241. Vahl Enum. v. 2. 154.)—Flower nearly ſolitary. Three ſegments of the corolla narrower than the reſt. Stalk two-edged. Leaves ſomewhat falcate. Thunberg ſeems to have forgotten the particular ſtations of this ſpecies at the Cape. Its *root* is fibrous. *Stalk* three inches high. *Leaves* two-ranked, linear-lanceolate. *Sheaths* entire. *Corolla* blue.

ARISTOLOCHIÆ, ſo named from the leading genus, is the twenty-third natural order in Juſſieu's ſyſtem, being the only one in his fifth claſs. That claſs is defined as follows. *Cotyledons* two. *Petals* none. *Stamens* inſerted into the piſtil. The *Calyx* is ſuperior, of one leaf. *Stamens* definite. *Germen* inferior; *ſtyle* either wanting, or ſingle, or definitely multiplied; *ſtigma* ſimple or divided. *Fruit* of one or many cells.

The order is thus characterized. *Calyx* ſuperior, of one leaf, entire or divided. *Stamens* definite. *Germen* inferior; ſtyle one, or nearly wanting; ſtigma divided. *Fruit* of many cells, with numerous *ſeeds*.

The only genera are, *Ariſtolochia*, *Aſarum*, and *Cytinus*. Linnæus arranged them with his SARMENTACEÆ, but was ſubſequently inclined to refer them to his RHOEADEÆ. (See thoſe articles.) We have already obſerved that they do not belong to the latter, nor have they any relationſhip to the *Sarmentaceæ*, except ſomething in the habit and foliage of *Ariſtolochia*.

ARKANSAS, in *Geography*, a river of Louiſiana, which, next to the Miſſouri, is the moſt conſiderable tributary of the Miſſiſſippi. Its length is nearly 2500 miles, and at proper ſeaſons it is navigable nearly through the whole diſtance. In many places, however, its channel is broad and ſhallow, at leaſt above the rapids, ſo as to render navigation almoſt impracticable. Until 800 or 900 miles from its mouth it receives no conſiderable ſtreams, on account of the vicinity of the waters of the Miſſouri, of the Kanſas, &c. on the one ſide, and thoſe of Red river on the other. The chief rivers which fall into it are, the Verdigris, the Negracka, Canadian river, Grand river, &c. Several are remarkable for being ſtrongly impregnated with ſalt; the Arkanſas itſelf, at certain ſeaſons, is ſaid to be brackiſh. The lands on this river for 600 or 800 miles upwards are deſcribed as very fine, and capable of affording ſettlements, though principally untimbered. The Arkanſas is a place ſituated 60 miles up the river, and contains 450 inhabitants. It has a few ſtores, and ſeems to be improving. There is a conſiderable trade with the Oſages up the Arkanſas, and with the Indians, who live in the White river country. This is alſo a French eſtabliſhment, and has the ſame proportion of Americans as the other towns. The territory of the Miſſouri contains about 874 Arkanſas, whoſe ſettlements are principally in the neighbourhood of the Arkanſas poſt, or extend up the river; and they are the leaſt conſiderable of the territory. Brackenridge's Views of Louiſiana.

ARMENIA, col. 3, l. 49, add—And the ſouthern, which are poſſeſſed by numerous independent chiefs. At the cloſe of the article Armenia add—The Turkiſh pachalics of Armenia are, Erzeroom, Akiſka, Khars, Bayazid, Mooſh, and Diarbekr. Theſe pachalics are ſubdivided into diſtricts, governed by Vairodes.

ARMENIA, a province of Georgia, which has the Kur to the N.E., the Moſſain or Siſſian hills to the S., and thoſe of the Karagatich to the W. This province has been long celebrated for its mines of gold, ſilver, lead, iron, and copper, as well as for its quarries of marble and jaſper; the principal of which are thoſe of Quoeſch and Tamblutt. It is the beſt peopled and moſt flouriſhing of the provinces of Georgia, and contains many towns. Kinnair's Perſia.

ARNOPOGON, in *Botany*. See TRAGOPOGON at the end.

AROIDEÆ, a very natural order of plants, the ſeventh in Juſſieu's method; being the firſt of his ſecond claſs, of which we have detailed the characters under TYPHÆ.

The *Aroideæ* are thus deſcribed. *Spadix* ſimple, many-flowered, either naked, or involved in a *Spatha*, or Sheath. *Calyx* none, or ſimple. *Stamens* either definite or indefinite, inſerted into the ſpadix. *Germens* originating from the ſame ſpadix, either naked, or encompaſſed with a calyx, in ſome inſtances mixed with the ſtamens, in others ſeparated from them; ſtyles one to each germen, or none at all; ſtigmas as many. *Fruits* as many, of one cell, with one or many *ſeeds*. *Corculum* in the centre of a fleſhy albumen. *Leaves* ſheathing, alternate, for the moſt part all radical. *Spadix* often ſolitary, ſeated either on the top of the ſtem, or more frequently on a radical ſtalk. The *plants* are rarely cauleſcent; ſome of them remarkably irregular in the diſpoſition of their organs of fecundation.

Sect. 1. *Spadix enfolded in a ſpatha.*

Ambroſinia, *Zoſtera*, *Arum*, *Calla*, *Dracontium*, and *Pothos*, all Linnæan genera, with *Houttuynia* of Thunberg.

Sect. 2. *Spadix naked, deſtitute of a ſpatha.*

Orontium and *Acorus*.

It muſt be obſerved, on the authority of Juſſieu himſelf, that the plants of this order are only preſumed to be monocotyledonous, their germination not having been properly examined. The conjecture however is ſupported by Gærtner's figures, the habit of the plants, and the ternary diſpoſition of the parts of fructification in ſome of the genera.

This order is nearly analogous to the *Piperitæ* of Linnæus, except that *Piper* and *Saururus* are included in the latter; a meaſure to which Juſſieu himſelf ſeems inclined.

AROSIS. Add—See TAB.

ARROBA, in *Commerce*, a weight in Portugal and Spain. At Oporto 1 arroba, or arrove, = 32 arratees, and 4 arrobas, or 128 lbs. = 1 quintal. The quintal at the India-houſe is 112 arratees. (See QUINTAL.) In Spain the arroba is alſo a liquid meaſure. A moyo of wine contains 16 arrobas, an arroba = 8 azumbres = 2 quartillos. The arroba of wine, or great arroba, is the ſame all over Spain, regulated by the ſtandard meaſure of Toledo, which contains 34 lbs. of river water (Caſtilian weight), and meaſures $1237\frac{1}{3}$ Spaniſh or 981 Engliſh cubic inches; ſo that 4 ſuch arrobas are = 17 Engliſh wine gallons. The arroba of oil, or leſſer arroba, regulated by the ſame ſtandard meaſure, which weighs 25 lbs. of oil, or 26 lbs. 9 oz. of river water (Caſtilian weight), and meaſures $966\frac{2}{3}$ Spaniſh or 771 Engliſh cubic inches. Hence 3 ſuch arrobas anſwer to 10 Engliſh gallons. The arroba is divided into 4 quartillos, or 100 quarterones or panillas. A Spaniſh botta contains 30 arrobas of wine, or $38\frac{1}{2}$ of oil; a pipe is 27 arrobas of wine, or $34\frac{1}{2}$ of oil; ſo that the botta is = $127\frac{1}{2}$ Engliſh gallons, and the pipe $114\frac{3}{4}$. Kelly's Cambiſt.

ARSKEEN, or AREKIN, a long meaſure in Ruſſia. See VERSHOCK.

VOL. III.

ARTERIES, *Diſeaſes of.* Arteries being compoſed of blood-veſſels, nerves, and abſorbents, are liable to the ſame morbid alterations, and endowed with the ſame powers of reparation, as ſoft parts in general; their coats inflame, and paſs through the different ſtages of adheſion, ſuppuration, or gangrene, in the ſame manner as the ſkin, a gland, or a muſcle.

The internal coat of an artery, Mr. Hodgſon obſerves, bears a ſtriking analogy to ſerous membranes in its tendency to the adheſive inflammation; and this property is in the blood-veſſels, as in all organs, the firſt agent of reparation in injuries from accident or diſeaſe. The inflammation which is excited by the wound or diviſion of an artery produces an effuſion of lymph, which ſeals the extremity of the veſſel, and affecting alſo the external coat becomes the baſis of adheſion and final obliteration. A punctured artery is united by the ſame adheſive proceſs which repairs wounds in general; and if irritation be excited in the coats of an artery by preſſure, adheſive inflammation is the conſequence, lymph is effuſed into the cavity, and into the cellular ſubſtance, connecting the coats of the veſſel; its ſides coaleſce; and it is rendered impervious. The ſame adheſive proceſs frequently prevents hemorrhage, where abſceſſes, or extenſive ulcerations, exiſt in the neighbourhood of large veſſels, the inflammation which precedes the ſuppuration having produced an effuſion of lymph between the coats, and into the cavity of the arteries, whereby it is obliterated. But the moſt perfect demonſtration of the effects of acute inflammation upon the internal coat of an artery, Mr. Hodgſon thinks, is to be met with in the caſes where the diſeaſe appears to have extended to the veſſel from the contiguous parts. Thus, in a fatal inſtance of violent pneumonia, beſides the uſual appearances on diſſection, the inflammation was found to have extended to the aorta, the internal coat of which was of a deep red colour, and a conſiderable effuſion of lymph had taken place into its cavity. The effuſed lymph was very intimately connected with the internal coat of the veſſel, and a plug of it had extended into the left ſubclavian artery, and nearly obliterated the cavity of that veſſel. (Treatiſe on the Diſeaſes of Arteries and Veins, p. 5.) Mr. Hodgſon has obſerved a ſimilar ſtate of the great blood-veſſels in a leſs degree from carditis, pneumonia, and bronchitis. The granulations, or fungous growths, which are not unfrequently met with at the origin of the aorta upon the ſemi-lunar valves, or in the cavities of the heart, are ſaid ſometimes to originate in the lymph thus effuſed upon the internal membrane. Mr. Hodgſon alſo aſſures us, that the inflammation excited in an artery of the extremities by the application of a ligature has been known to extend along the internal coat of the veſſel to the heart itſelf, as we know is often the caſe with reſpect to the veins.

According to the ſame well-informed writer, chronic inflammation may generally be remarked in thickened and calcareous arteries, particularly in aneuriſmal ſubjects. The internal coat of the veſſel is ſoft, thickened, of a deep red colour, which is not uniform, but irregularly diſpoſed in the vicinity of ulcerations, thickenings, or calcareous depoſitions. P. 9.

Ulceration of an artery may commence in the veſſel itſelf, or extend to it from the ſurrounding parts. In the firſt circumſtance, it is always found firſt on the internal coat, and is generally preceded by ſome other morbid change of the veſſel. Thus, it is not unfrequently met with around the circumference of calcareous depoſitions, or upon the ſurface of atheromatous thickenings; and aneuriſm is, without doubt, occaſionally a conſequence of ſuch ulceration, the coats of the veſſels being completely deſtroyed by it, and the blood eſcaping into the ſurrounding cellular ſubſtance, which becomes gradually expanded into a ſac. Hemorrhage is often cauſed by ulceration extending from ſurrounding parts to the coats of arteries, as in cancerous and phagedenic ulcers; and Mr. Hodgſon even thinks that many paſſive hemorrhages are produced by ulceration beginning on the inner ſurface of theſe veſſels.

Sphacelation of arteries in conſequence of inflammation of their internal coat has not hitherto been obſerved. Arteries, however, are often included in extenſive ſloughing of parts, in which caſe the blood generally coagulates in the veſſels to a conſiderable extent above the line of ſphacelation; an occurrence which ſeems deſtined to prevent hemorrhage on the ſeparation of the ſlough. The coagulum is afterwards abſorbed, and the veſſel obliterated.

From conſidering the inflammation of arteries and its effects, our author proceeds to ſpeak of various morbid appearances to which the coats of arteries are liable, in conſequence of their peculiar ſtructure and functions.

1. The internal coat of arteries is ſometimes thickened and converted into a ſubſtance reſembling cartilage, or the thickened peritoneum of an old hernial ſac. This diſeaſe is confined to the internal coat, which having loſt its elaſticity ſometimes cracks, and forms ſcales that hang into the cavity of the veſſel. Calcareous depoſitions often accompany this alteration of ſtructure, and the ſurrounding parts of the membrane generally exhibit ſigns of chronic inflammation. The ſemi-lunar valves of the aorta are not unfrequently changed into a denſe fibrous ſtructure, reſembling ligament, or tendon; ſometimes they are converted into cartilage, and are manifeſtly incompetent to their office as valves. In ſeveral inſtances, Mr. Hodgſon has found them ruptured, forming cartilaginous eminences on the ſides of the veſſel.

2. The internal ſurface of arteries exhibits frequently a thickened and pulpy ſtructure, ſometimes with the appearance of ſmall flattened tubercles, and, in other examples, with an irregular and ſomewhat fleſhy appearance over the whole ſurface. This diſeaſe is confined to the internal coat, and is often found in aneuriſmal ſubjects.

3. A depoſition of atheromatous or purulent matter in the cellular membrane, which connects the internal and middle coats of the veſſel. The diſeaſed part is of an opaque yellow colour, ſometimes extenſive, and conſiderably elevated above the ſurrounding ſurface, and on other occaſions circumſcribed, and having a puſtular or tuberculated appearance. If punctured, matter may be preſſed from underneath the internal coat, varying in conſiſtency from that of cheeſe to that of common pus. Mr. Hodgſon has ſeen the emulgent and femoral arteries in the ſame ſubject quite obſtructed by the accumulation of this curdy matter.

4. Certain fungous or wart-like excreſcences have been obſerved upon the ſemi-lunar valves of the aorta and pulmonary artery, and alſo upon the mitral and bicuſpid valves. They are of rare occurrence. Corviſart's opinion reſpecting the ſyphilitic nature of their cauſe is not intitled to any degree of credit; and Mr. Hodgſon relates a caſe, where the abſence of that diſeaſe throughout the whole of life made it impoſſible that they could have had ſuch an origin. The femoral artery and commencement of the profunda were in this inſtance completely obſtructed by a fungous growth, ſimilar to what was found upon the ſemilunar valves of the aorta.

5. The next diſeaſe to be noticed is a depoſition or calcareous matter in the coats of arteries. In old age this happens ſo frequently, that Bichat was induced to regard it as a natural phenomenon rather than a diſeaſe. The incruſtation ſeems to commence in the ſubſtance of the internal coat, a delicate pellicle covering the calcareous matter, and ſeparating it from the blood paſſing through the cavity of the veſſel. Sometimes this pellicle is deficient, or hangs into the cavity of the veſſel, and the blood is in contact with the incruſtation itſelf. Sometimes all the coats of the veſſel are involved in the diſeaſe, and are converted into a long cylinder, in which no remnants of the original ſtructure can be traced. (Hodgſon, p. 21.) The formation of theſe depoſitions bears no reſemblance to that of bone; they are ſeldom, if ever, preceded by the exiſtence of cartilage; and no regular arrangement is diſcernible in them, correſponding to the fibrous ſtructure of bone. According to Mr. Brande's analyſis of them, they contain 65.5 phoſphate of lime, and 31.5 animal matter, without any carbonate of lime.

Calcareous matter is frequently depoſited in the ſubſtance of the ſemi-lunar valves of the aorta, and produces more ſerious conſequences, than when it takes place in any other part of the arterial ſyſtem. The valves becoming rigid and fixed diminiſh the ſize of the opening into the aorta. Whilſt the pulſe at the wriſt is feeble, the heart is acting violently to compenſate for the diminution in the quantity of blood which ſhould paſs through the aorta; and this comparative difference between the pulſe at the wriſt and that at the heart will, Mr. Hodgſon conceives, in advanced caſes, be ſufficient to enable us to aſcertain the exiſtence of this incurable diſeaſe. A ſimilar diſproportion between the pulſe at the heart and at the wriſt exiſts alſo when the opening between the left auricle and ventricle is contracted; but a double pulſation of the heart has been obſerved in this caſe, and is ſaid to diſtinguiſh it from contraction of the orifice of the aorta by oſſification of its valves.

Mr. Hodgſon has given ſome intereſting caſes of oſſification of the coronary arteries. In one, the heart was unuſually ſmall; its parietes ſoft and flaccid, and upon the ventricles not the eighth of an inch thick; whilſt the coronary arteries and many of their ramifications were converted into calcareous tubes, and ſome of them nearly rendered impervious. This morbid appearance does not exiſt in every caſe which is attended with the train of ſymptoms, to which we apply the term angina pectoris. Violent pain in the ſituation of the heart, extending down the anus, and terminating in a ſenſation of numbneſs, palpitation, and irregularity in its action, with frequent ſyncope and difficult reſpiration, accompany almoſt all the organic diſeaſes of that organ. (Hodgſon, p. 36.) The depoſition of calcareous matter is ſeldom found in the upper extremities; and although ſo frequent in the aorta, it has rarely or never been met with in the pulmonary artery, or its valves. See Hodgſon on the Diſeaſes of Arteries and Veins, 8vo. London, 1815.

Aneuriſm, which conſtitutes the moſt important diſeaſe of arteries, has been treated of in a ſeparate article, to which we have already annexed ſome additional particulars under the head of SURGERY. A few other obſervations, relative to the ſame ſubject, will be found at the words ANEURISM and AORTA in this *Addenda*.

ARTHONIA, in *Botany*, a genus of the Lichen tribe, thus named by its learned author profeſſor Acharius, in Schrad. Neues Journal, v. 1. faſc. 3. 1. t. 4. "Lichenogr. Univ. 25. t. 1. f. 3, 4." Syn. 4. Sm. Engl. Bot. v. 29. 2079.—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Receptacles in an uninterrupted cruſt, ſhapeleſs, without a border, ſmooth, in which the ſeeds are imbedded.

In habit, the generality of the ſpecies which conſtitute this genus are akin to SPILOMA and OPEGRAPHA. (See thoſe articles.) But Acharius originally included herein the *Lichen croceus*, and *L. ſaccatus* of Linnæus, which are now ſeparated on account of their totally different habit, and leafy fronds, by the name of *Solorina*, Lichenogr. Univ. 27. t. 1. f. 5, 6; ſo that *Arthonia* is rendered much more natural. In the *Synopſis* of this writer, his lateſt publication, twelve ſpecies are defined.

Among them are,

A. *Swartziana*, n. 5. Engl. Bot. t. 2079.—Cruſt thin, membranous, ſcaly, cream-coloured. Receptacles ſeſſile, black, depreſſed, roundiſh, wavy, rather uneven, confluent.—Found on the ſmooth bark of trees.

A. *aſtroidea*, n. 7. (Opegrapha aſtroidea; Ach. Meth. 25. Engl. Bot. t. 1847.)—Cruſt limited, membranous, ſmooth, greeniſh-white, ſomewhat ſhining. Receptacles depreſſed, flat, angular, irregularly ſtarry, black.—Frequent on young trees. We cannot conſider this otherwiſe than as an *Opegrapha*.

A. *obſcura*, n. 8. Engl. Bot. t. 1752.—Cruſt membranous, olive-brown. Receptacles minute, flattiſh, thin, elliptical or kidney-ſhaped, ſunk, ſlightly uneven, black.—On the barks of trees, not common, nor very eaſily to be obſerved. The *cruſt* riſes into irregular ſwellings, and the copious *receptacles* are ſunk very deep into its ſubſtance. The genus of this plant is indeed obſcure, nor can we offer any better determination reſpecting it than that of Acharius.

A. *lyncea*, n. 11. (Lichen lynceus; Engl. Bot. t. 809.)—Cruſt white, thin, even, ſomewhat tartareous. Receptacles numerous but diſtinct, flat, rather ſunk, oblong, blunt, often curved, black, with a glaucous tinge.—Found by Mr. Sowerby, nearly covering the rugged barks of old oaks. The *receptacles* reſemble a leopard's or lynx's ſkin, and are not crowded nor confluent, though curved and approaching each other in every direction, the margin of each black. We ſhould rather refer this ſpecies to *Opegrapha*.

A. *pruinoſa*, n. 12. (Lichen impolitus; Ehrh. Crypt. Achar. Prodr. 56. Engl. Bot. t. 981.)—Cruſt whitiſh, thin, ſomewhat tartareous, unequal, ſmooth. Receptacles flat, ſunk, roundiſh or angular, confluent, dull orange-brown, with a glaucous tinge.—On the trunks of trees, eſpecially oaks. We cannot but think the original ſpecific name peculiarly happy, and for that reaſon, if no other, it ought not to have been changed, eſpecially as *pruinoſa* is equally ſuitable to the laſt ſpecies. The preſent looks of an uniform dirty white, till touched by ſome hardiſh body, when the brown *receptacles*, tinged with yellow, become ſtrikingly apparent, and are contraſted with the unaltered *cruſt*. The figure in *Engl. Bot.* printed in red, is altogether erroneous.

ARTHROPODIUM, named in alluſion to the joint in each flower-ſtalk, by Mr. Brown, from *αρθρον*, *a joint*, and *πους*, *a foot*, or *ſupport*.—Brown Prodr. Nov. Holl. v. 1. 276. Ait. Hort. Kew. v. 2. 271.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Aſphodeli*, Juſſ. *Aſphodeleæ*, Brown.

Gen. Ch. *Cal.* none. *Cor.* of one petal, inferior, in ſix deep, regular, ſpreading, deciduous ſegments; the three innermoſt waved or fringed at the margin. *Stam.* Filaments ſix, tapering, denſely bearded; anthers roundiſh, attached by the notch at their baſe. *Piſt.* Germen ſuperior, roundiſh, with three furrows; ſtyle ſolitary, erect, cylindrical; ſtigma capitate, hairy. *Peric.* Capſule nearly globular, with three furrows, three cells, and three valves; the partitions from the centre of each valve. *Seeds* few in each cell, ſomewhat angular, with a naked ſcar.

Eſſ. Ch. Corolla in ſix deep equal ſegments; three innermoſt waved or fringed at the margin. Filaments bearded. Capſule nearly globular.

This genus is allowed by its author to come very near *Anthericum*, to which ſome of the ſpecies have been referred by other writers. Indeed we can diſcover no difference, (three of the *filaments* in *Anthericum*, if not all of them, being bearded,) except the wavy or fringed inner ſegments of the *corolla*. *Anthericum* being a very extenſive genus, whoſe limits are not well defined, it is highly deſirable to leſſen the number of ſpecies, by eſtabliſhing new genera from among them, by any certain, however apparently ſlight, criterion; and it muſt always be recollected that, in the natural order to which theſe plants belong, very natural genera are diſcriminated by apparently rather trivial marks.

Arthropodium is obſerved by Mr. Brown to conſiſt of ſmooth herbaceous plants, with faſciculated *roots*, compoſed either of *bulbs*, occaſionally ſtalked, or of thick fleſhy fibres. *Leaves* linear, flaccid. *Cluſters* lax. *Flower-ſtalks* either aggregate or ſolitary, each with a joint in the middle. *Flowers* pendulous, either purpliſh or white. *Corolla* cloſing after flowering, and long before the fruit ripens, falling off, leaving its permanent cup-like withered baſe behind. The *anthers* are purple, or whitiſh. THYSANOTUS of our learned friend, already deſcribed in our thirty-fifth volume, comes nearer to *Arthropodium* and *Anthericum* than to the *Aſparagus* tribe, to which it has been referred; the beautifully fringed inner ſegments of the *corolla* eſpecially reſembling the preſent genus. But *Thyſanotus* has ſmooth *filaments*, unequal *anthers*, and a declining *ſtyle*, with a ſmaller *ſtigma*. The *ſeeds* moreover differ very eſſentially.

1. A. *paniculatum*. Panicled Arthropodium. Br. n. 1. Ait. n. 1. (Anthericum paniculatum; Andr. Repoſ. t. 395. A. milleflorum; Redout. Liliac. t. 58.)—Cluſter divided; flower-ſtalks aggregate. Inner ſegments of the corolla

finely crenate. Capſule pendulous. Bulbs ſtalked.—Native of the neighbourhood of Port Jackſon, New South Wales, from whence we received ſpecimens, near thirty years ago, through the hands of Dr. White. Seeds were communicated by Mr. Geo. Caley to ſir J. Banks, for Kew garden, in 1800, and this elegant ſpecies is now to be ſeen in many green-houſes, flowering in various ſummer months. The *root* is perennial. *Stem* erect, round, three or four feet high; ſlightly leafy in the lower part; much branched and panicled above. *Leaves* linear, pointed, channelled; ſheathing at the baſe, a foot or more in length, chiefly radical. Branches of the *panicle* uſually in pairs, ſpreading, racemoſe. *Flowers* drooping, three or four together, on undivided partial ſtalks. *Corolla* reflexed, half an inch in diameter, white variegated with lilac; three outer ſegments ſmall, acute; three inner ovate, elegantly criſped at the margin. Beard of the *ſtamens* denſe, yellow. *Anthers* and *ſtigma* purple.

2. A. *ſtrictum*. Upright Arthropodium. Br. n. 2.—"Cluſter almoſt ſimple, many-flowered; flower-ſtalks ſolitary. Capſules erect."—Gathered by Mr. Brown, in Van Diemen's iſland, but after the flowers were paſt.

3. A. *minus*. Leſſer Arthropodium. Br. n. 3.—"Cluſter ſimple, with few flowers; flower-ſtalks ſolitary. Bulbs ſeſſile."—Found by Mr. Brown, near Port Jackſon.

4. A. *fimbriatum*. Fringed Arthropodium. Br. n. 4.—"Cluſter ſimple; lower flower-ſtalks in pairs. Filaments naked in their lower part; tumid and ſpongy at the top. Anthers linear. Inner ſegments of the corolla fringed."—Native of the neighbourhood of Port Jackſon, where it was noticed by Mr. Brown, who obſerves that the ſtructure of the *ſtamens* is ſo different from the reſt, as to make him heſitate whether this ſpecies ought not to form a genus by itſelf. We are not ſure whether we are poſſeſſed of any ſpecimens.

ARTHROSTYLIS, from αρθρον, *a joint*, and ϛυλος, *the ſtyle*, becauſe of the articulation by which that part is joined to the germen.—Brown Prodr. Nov. Holl. v. 1. 229.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Brown.

Eſſ. Ch. Spikelet ſingle-flowered. Glumes chaffy, imbricated; the lower ones empty. No briſtles around the germen. Style awl-ſhaped, triangular, articulated with the germen, deciduous. Stigmas three. Nut triangular.

1. A. *aphylla*. Leafleſs Arthroſtylis. Br. n. 1.—Found by ſir Joſeph Banks, in that part of New Holland which lies within the tropic. The *ſtems* are ſlender, unbranched, without joints or knots; ſheathed at the baſe; naked in the upper part. *Head* terminal, ſimple, turbinate, longer than its three or four-leaved, awl-ſhaped *involucrum*. This genus differs from Abildgardia in its habit, and ſingle-flowered *ſpikelet*; from Rhyncospora in having a deciduous *ſtyle*, and no briſtles ſurrounding the baſe of the *germen*; ſee thoſe articles. *Brown.*

ARTUSI, l. 4, inſert, he.

ARVE, for Rhine *r.* Rhone.

ARUNDINARIA, in *Botany*, inadmiſſible as a generic name, being formed by an alteration of *Arundo*, already received, is applied by Michaux, Fl. Boreal.-Amer. v. 1. 73, to a genus now called *Miegia*, in Perſ. Ench. v. 1. 102, according to Purſh, 59. This cannot, we preſume, anſwer to Schreber's Miegia, (ſee that article,) as the florets in Michaux's plant are numerous; ſo that here is ſome confuſion which we muſt leave the writers in queſtion to ſettle.

AS, in *Commerce*, a ſmall Dutch weight, uſed alſo at Hamburgh, and in Sweden. At Amſterdam, 640 aſes are = an ounce, and 8 ounces = a mark troy. (See Mark.) In Sweden the ſmalleſt denomination of weight is the as, which is the ſame as the as of Amſterdam. The mark for weighing gold and ſilver, called "ſilſver-marck," is 4384 aſes, or 3252 grains Engliſh troy weight. Hence 40 ſuch marks are = 271 ounces troy. In apothecaries' weight, the pound is 7416 aſes, or 5400 grains troy; and hence 16 ſuch pounds = 15 pounds Engliſh troy, or apothecaries' weight.

As, l. 16. 23. 27, for Tullius *r.* Tullus.

ASAM, l. 2, after Bengal, inſert—bordering on the country of the Grand Lama, or Bootan;—after Hindoſtan, or ſeparated from Decca, the N.E. quarter of Bengal, by a range of hills, interſected by the Garrows;—after Meckley, or Ava and Arracan.

L. 16, after journey, add—It is underſtood to be about 700 miles in length, and its mean breadth above 70, though in ſome places, where the mountains recede, it greatly exceeds that proportion. Dr. Wade thinks 60,000 ſquare miles a very moderate calculation of its ſuperficial extent, ſo that it conſiderably exceeds England and Wales. The whole country is a valley of great fertility, not only divided by the great ſtream of Burhampooter, but every where interſected by numerous rivers.

ASAPH, St. l. 12, for Shipley *r.* Bagot.

ASCHRAFF. Add—This place is ſeated on the ſhore of a bay, which is the only good harbour on the ſouthern ſide of the Caſpian ſea.

ASCOBOLUS, in *Botany*, from ασκος, *a ſkin, or caſe*, and βολος, *a caſt, or throw*, becauſe the ſeeds are thrown out with elaſticity, ſeveral together, in oblong caſes.—Perſ. Syn. Fung. 676. Obſ. Mycol. faſc. 1. 33.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Receptacle hemiſpherical, fleſhy. Seed-caſes prominent, oblong, diſcharged elaſtically. Seeds about eight, lodged in moiſture.

1. A. *furfuraceus*. Powdery Aſcobolus. Perſ. Obſ. Mycol. faſc. 1. 33. t. 4. f. 3, *a*, and 4, 5, 6. (Peziza ſtercoraria; Bull. Fung. v. 1. 256. t. 376. Sowerb. Fung. t. 18.)—Crowded, rather concave, olive-brown, externally ſcurfy.—Common on cow-dung late in autumn. Variable in colour. Bulliard has what he conceives a variety, t. 438. f. 4, in which the diſk is pale purple, the outſide white.

2. A. *carneus*. Fleſh-coloured Aſcobolus.—Smooth, fleſh-coloured.—Found rarely on dung, in woods. All over of a very pale red.

3. A. *glaber*. Smooth Brown Aſcobolus. Perſ. Obſ. Mycol. faſc. 1. 34. t. 4. f. 3, *b*, and f. 7, *a*, *b*, *c*.—Minute, crowded, ſmooth, rather convex, of a ſhining brown.—Common on cow-dung, in autumn. Variable in ſhape according to its age.

4. A. *immerſus*. Sunk Aſcobolus. Ibid. 35. t. 4. f. 7, *d*, *e*.—Scattered, immerſed, irregular, ſomewhat conical, rather ſcurfy externally.—In the ſame ſituations, almoſt entirely ſunk in the dung, ſo that the *ſeed-caſes* only are prominent, containing black *ſeeds*, floating in an evident fluid. *Perſoon.*

ASCOPHORA, from ασκος, *a ſkin, or bladder*, and φερω, *to bear*. The name originated with Tode, Fung. Mecklenb. faſc. 1. 13, who extended his genus to ſeveral ſpecies. Perſoon reſtricts it to a ſolitary ſpecies. Perſ. Syn. Fung. 685.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Thread-ſhaped, terminating in an empty, ſlightly inflated, *head*.

1. A. *perennis*. Perennial Bladder-mould. (A. ovalis; Tode Fung. Mecklenb. faſc. 1. 15. Aſcidium ovatum;

Tode in Schrift. der Berl. Geſellſch. Naturf. Fr. v. 3. 247. t. 4. f. 4—6.)—Found in autumn, either at the extremities of the branches, or on the trunks, of trees, ſuch as Willows, &c. It may be preſerved a long time without decaying, or even ſhrinking. Tode deſcribes the *head* as at firſt like a drop of water, but ſoon aſſuming an oval figure, ſhining like ſilver, and ſubſequently beſprinkled with ſnow-white powder, probably the *ſeeds*. This betrays ſome affinity to Stilbum ; ſee that article.

ASCIDIA, l. *ult.*, *dele* which ſee reſpectively, and inſert, See Vermes.

ASCONIUS, l. 1, *r.* Pedianus ; l. 3, 4, *dele* Quinctilian and.

ASH, in *Geography*, a county of North Carolina, containing 6394 inhabitants, 147 being ſlaves.

ASHARIANS. See Ascharians.

ASHBURNHAM, l. 4, *r.* 1036.

ASHBY, l. 3, *r.* 1103.

ASHFIELD, l. 4, *r.* 1809.

ASHFORD, a townſhip of America, &c. add—The number of inhabitants by the cenſus in 1810 is 2532.

Ashford, *New*, &c. for 460 *r.* 411.

ASHTABELU, a townſhip of the county of Georgia, in the diſtrict of Ohio, having 221 inhabitants.

ASHTON, a townſhip of Pennſylvania, in the county of Delaware, having 765 inhabitants.

ASIA, col. 24, l. 31, after height, inſert—but by late diſcoveries and meaſurements, their altitude has been found to be much more conſiderable than geographers formerly apprehended and ſtated. See Mountains.

ASILUS, l. 16, *dele* which ſee reſpectively.

ASIMINA, in *Botany*, a barbarous name, employed by Adanſon, and, according to him, of Canadian origin. De Candolle, by his adoption, *Syſt. v.* 1. 478, might poſſibly render it claſſical, there being no objection on the ſcore of euphony, nor any meaning contrary to reaſon or ſenſe, as in many other caſes of a ſimilar kind. As far as we know, the word is deſtitute of all meaning whatever ; in which reſpect Michaux's ſynonym, *Orchidocarpum*, would be preferable, were the idea it conveys unexceptionable, and the word not compounded of another generic name. All things conſidered, we prefer Porcelia (ſee that article hereafter) as entirely free from objection ; for we cannot follow our diſtinguiſhed friend, De Candolle, in ſeparating this laſt-named genus from his *Aſimina*. Our preceding articles Orchidocarpum and Porcelia are now ſuperſeded, in conſequence of more accurate information, chiefly furniſhed by De Candolle.

ASPARAGI, the 12th natural order in Juſſieu's ſyſtem, the ſecond of his third claſs ; for the full characters of which claſs, ſee Palmæ.

Juſſieu thus defines the *Aſparagi*, which are nearly equivalent, as we have already obſerved, to the Linnæan Sarmentaceæ. See that article.

Calyx in ſix diviſions, regular, uſually deeply divided and inferior, rarely ſuperior. *Stamens* ſix, inſerted into the lower part, rarely into the middle, of the calyx. *Germen* ſimple, moſtly ſuperior ; ſtyles either three, with as many ſtigmas, or the ſtyle is ſimple, with a ſimple or three-cleft ſtigma. *Fruit* pulpy, rarely capſular, ſuperior, rarely inferior, of three cells, with one, two, or not many more ſeeds in each. *Corculum* at the ſcar of the horny albumen.

The *ſtem* is frequently herbaceous, in ſome caſes ſhrubby. *Leaves* moſtly alternate, ſeldom oppoſite or whorled, for the moſt part not ſheathing, but merely claſping the ſtem. *Flowers* each with a ſeparate ſheath ; in ſome inſtances, perhaps from abortion, dioecious. A third part of the fructification is ſometimes, in a few inſtances, ſuppreſſed, or a fourth is added.

Sect. 1. *Flowers perfect. Germen ſuperior.*

Dracæna of Linnæus ; *Dianella* of Lamarck ; *Ripogonum* of Forſter ; *Flagellaria* and *Aſparagus* of Linnæus ; *Callixene* and *Phileſia* of Commerſon ; *Medeola*, *Trillium*, *Paris*, and *Convallaria* of Linnæus and others, conſtitute this ſection.

Sect. 2. *Flowers dioecious. Germen ſuperior.*

Ruſcus, *Smilax*, and *Dioſcorea.*

Sect. 3. *Flowers dioecious. Germen inferior.*

Tamus of Linnæus, (which Juſſieu, following Tournefort, calls *Tamnus*,) and *Rajania.*

Mr. Brown, Prodr. Nov. Holl. v. 1, has greatly curtailed this order, referring ſome of its genera to the *Aſphodeli* or *Aſphodeleæ*, and eſtabliſhing out of it a new order, termed *Smilaceæ*, compoſed of *Trillium*, *Paris*, *Medeola*, (except its Cape ſpecies,) *Convallaria*, and *Streptopus*, with his own *Drymophila*, *Ripogonum* of Forſter, and *Smilax*. The ſame author has alſo founded on the genera of *Dioſcorea* and *Rajania* another order called *Dioſcoreæ* ; but ſurely *Tamus*, by his own account, connects this with the *Smilaceæ*.

ASPE, for Berne *r.* Bearn ; and for Switzerland *r.* France.

ASPER, in *Commerce.* Subjoin—See Piastre.

ASPERGILLUS, in *Botany*, a name firſt applied by Micheli, Nov. Gen. 212. t. 91, to a tribe of minute *Fungi*, and expreſſive of their reſemblance to the form of a ſprinkling-bruſh, uſed for holy water in Catholic countries. This tribe is now become a ſection of Perſoon's Monilia. See that article.

ASPERIFOLIÆ, the forty-firſt of the natural orders of Linnæus, is one of the moſt natural of theſe aſſemblages. It was firſt pointed out by Cæſalpinus, but obtained the above name from Ray, in alluſion to the roughneſs of the foliage. To this character one or two ſpecies of *Cynogloſſum* and of *Pulmonaria* alone afford exceptions ; which indeed are but partial, for even in theſe ſome briſtly roughneſs is almoſt always to be diſcovered, either on the ſurface or margin. This order is analogous to Juſſieu's *Borragineæ*, and is ſo well defined that Linnæus has, contrary to his uſual practice, given its characters at ſome length, as follows.

Root fibrous. *Cotyledons* two. *Stem* with alternate round branches. *Leaves* alternate, ſimple, for the moſt part nearly entire, rough with ſcattered briſtly hairs, or callous warts ; convolute before they expand. *Stipulas* wanting, as well as all other appendages in general. *Flowers* unilateral ; their common ſtalks, generally in pairs, revolute in a ſpiral manner, and gradually unrolled as the flowers are ready to open. *Calyx* in five more or leſs deep diviſions. *Corolla* monopetalous, inferior, five-cleft, regular except in *Echium ;* its mouth either cloſed with vaulted valves, or crowned with teeth, or naked and pervious. *Stamens* five, equal, except in *Echium*. *Fruit* ſuperior. *Germens* four, except in ſome ſpecies of *Cynogloſſum*, *Tournefortia*, and *Nolana*, to which *Cerinthe* ſhould be added ; but *Nolana* was properly removed by Linnæus afterwards to his *Luridæ ;* theſe are inſerted into the receptacle by their baſe ; hence the lower part of each *ſeed* becomes tapering, as if finiſhed artificially. *Piſtil* one ; ſtyle not an elongation of the germens, but ſunk between them in the centre, often divided into two equal parts. *Seeds* four, rarely combined into two.

The genera ſtand thus :

Sect. 1. *Symphytum*, *Onoſma*, *Cerinthe*, *Borago*, *Echium*, *Lycopſis*,

Lycopſis, *Aſperugo*, *Pulmonaria*, *Lithoſpermum*, *Cynogloſſum*, *Anchuſa*, *Myoſotis*, and *Heliotropium*.

Sect. 2. *Tournefortia*, *Varronia*, *Ehretia*, *Cordia*, and *Patagonula*.

Sect. 3. *Nolana*, here placed by itſelf, is now removed.

In the Linnæan manuſcript, *Meſſerſchmidia* is introduced between *Echium* and *Lycopſis*; *Coldenia* after *Heliotropium*; *Hydrophyllum* and *Elliſia* after *Tournefortia*; and *Ehretia* is removed to the end of all.

In the generic diſtinctions of this order, the valves or teeth of the *corolla*, and the more or leſs deep diviſions of the *calyx*, take the lead. Linnæus has been thought by ſome to have multiplied the genera beyond neceſſity; yet it is hard to ſay how they could naturally be abridged. The plants love a dry hilly ſituation, and become ſmoother as they approach nearer to water.

The numerical anomaly in the fructification of the *Aſperifoliæ*, of the four-cleft fruit, with a five-cleft flower, is one of their ſtriking characters, in which they indeed agree with the Linnæan *Verticillatæ*, Juſſieu's *Labiatæ*; but the irregular *corolla*, unequally-divided ſtyle, oppoſite *leaves*, and ſquare *ſtems*, of the latter, and eſpecially their four *ſtamens*, two longer and two ſhorter, clearly diſtinguiſh them. Their qualities alſo greatly differ, being aromatic, not mucilaginous and ſcentleſs. Their *flowers* are generally red or purple; thoſe of the *Aſperifoliæ* of a beautiful blue, though moſtly of as beautiful a red before expanſion.

ASPHODELI, the ſixteenth natural order in Juſſieu's method, the ſixth of his third claſs, thus denominated after *Aſphodelus*, one of its well-known genera. Mr. Brown, who has greatly enriched this order with new genera, as well as with removals from the ASPARAGI (ſee that article), gives it the appellation of *Aſphodeleæ*, Prodr. Nov. Holl. v. 1. 274. The characters of Juſſieu's third claſs are detailed under PALMÆ. He thus defines the *Aſphodeli*.

Calyx inferior, coloured, often in ſix deep equal ſegments; rarely tubular, with ſix leſs deep diviſions. *Stamens* ſix, inſerted into the bottom or the middle of the calyx. *Germen* ſuperior, ſimple; ſtyle ſingle; ſtigma either ſimple or three-cleft. *Capſule* of three cells and three valves, with many *ſeeds*.

The *root* in a great portion of theſe plants is bulbous, ſending up a leafleſs *ſtalk*, and producing capillary fibres from its baſe downwards; in the reſt it is fibrous, bearing a *ſtem*, for the moſt part herbaceous. *Leaves* ſheathing, alternate, all generally radical. *Spike* often ſimple, terminating the ſtalk; ſometimes branched, with ſcaly ſheaths under each branch. *Flowers* each accompanied by a ſheath, or *ſpatha*, ſpiked, (in *Allium* umbellate,) terminal, or rarely axillary.

Sect. 1. *Flowers ſpiked. Root fibrous. Calyx tubular.*

Aletris and *Aloe* compoſe this ſection.

Sect. 2. *Flowers ſpiked. Root fibrous. Calyx in ſix deep ſegments, bearing the ſtamens at its baſe.*

Anthericum of Linnæus, comprehended under *Aſphodelus* by Tournefort; *Phalangium* of Tournefort, partly comprehended by Linnæus under *Anthericum* (and very improperly named, as *Phalangium* is an eſtabliſhed genus of inſects); with *Aſphodelus*, of Tournefort and Linnæus, conſtitute this ſection.

Sect. 3. *Flowers ſpiked. Root bulbous. Calyx tubular at the baſe.*

Baſilæa of Juſſieu, now univerſally called *Eucomis*; *Hyacinthus* of Tournefort and Linnæus, including *Muſcari* of the former; *Phormium* of Forſter; and *Maſſonia* of Thunberg. *Lachenalia* of Jacquin ought alſo, as Juſſieu ſuſpects, to be placed here, being very diſtinct from *Phormium*, though once confounded with it.

Sect. 4. *Flowers ſpiked. Root bulbous. Calyx in ſix deep ſegments, bearing the ſtamens at their baſe.*

Cyanella, *Albuca*, *Scilla*, and *Ornithogalum*.

Sect. 5. *Flowers umbellate. Root bulbous. Calyx in ſix deep equal ſegments.*

Allium is here the only genus.

Mr. Brown declares, that he has in vain ſought to eſtabliſh a clear definition of this order, though a truly natural aſſemblage, whether conſidered as an order by itſelf, or as a ſection of the *Liliaceæ*. (See LILIA.) He has not been able to detect any character common to all the plants, which is not found in ſeveral of their near allies, except the black, cruſtaceous, brittle ſkin of the *ſeed*, eaſily ſeparable from its very thin proper membranous integument. Hence Mr. Brown has been led to place at the end of this family *Hypoxis* and *Curculigo*, as having a ſimilar ſkin, though their *germen* is inferior: and for the ſame reaſon he removes *Blandfordia* from hence, not only on account of the hairy integument of its *ſeed*, but alſo becauſe there is a difference in the burſting of its *capſule*, to ſay nothing of other particulars. The ſame author notices a joint at the middle or ſummit of the flower-ſtalks, frequent in this family, and ſcarcely obſervable in the neighbouring orders, except in *Sanſeviera*, and ſome of the *Commelina* tribe. He is decided againſt ſeparating the pulpy-fruited genera from the reſt, either in this order, or the true *Liliaceæ*. It is needleſs to point out, that what Juſſieu and Brown term *calyx* in all theſe plants, is with Linnæus and his ſchool a *corolla*, and bears the latter appellation in Hort. Kew. The New Holland *Aſphodeleæ* are thus arranged by Mr. Brown. *Anthericum*; *Arthropodium*, Br.; *Chlorophytum*, Ker in Curt. Mag.; *Cæſia*, *Tricoryne*, and *Stypandra*, of Brown; *Dianella*, Lamarck; *Cordyline*, Commerſon; *Aſparagus*; *Euſtrephus*, Br.; *Luzuriaga*, Ruiz et Pavon Fl. Peruv.; *Thyſanotus*, Br.; *Sowerbæa*, Sm.; *Laxmannia*, Br.; *Borya*, Labill. Nov. Holl.; *Johnſonia*, Br.; and *Xanthorrhæa*, Sm. To which are ſubjoined genera intermediate between the *Aſphodeleæ* and *Amaryllideæ*; *Hypoxis*; *Curculigo*, Gærtn.; and *Campynema*, Labill. With *Aſtelia*, intermediate between *Aſphodeleæ* and *Junceæ*.

ASPIDIUM, a genus of FILICES (ſee that article), ſeparated from the Linnæan *Polypodium*, on account of its being furniſhed with an *involucrum*, to each round dot, or maſs, of *capſules*, ασπιδιον meaning *a ſmall ſhield*, which is very deſcriptive of the ſhape of this involucrum. The propriety of ſubdividing the original *Polypodium* was doubtfully hinted by the writer of this article, in his Eſſay on the Genera of Dorſiferous Ferns, and Dr. Swartz adopted this meaſure. Mr. Brown has carried it ſtill further, by founding his genus NEPHRODIUM; ſee that article and POLYPODIUM. We need not here repeat our obſervations, already made in thoſe places. We ſhall give a general view of *Aſpidium*, according to our ideas of this genus.—Swartz in Schrad. Journ. for 1800. v. 2. 29. Syn. Fil. 42. Sm. Fl. Brit. 1118. Willd. Sp. Pl. v. 5. 211. Ait. Hort. Kew. v. 5. 507. Brown Prodr. Nov. Holl. v. 1. 147. Purſh 660. (Nephrodium; Michaux Boreal.-Amer. v. 2. 266. Brown Prodr. Nov. Holl. v. 1. 148.)—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*.

Gen. Ch. *Capſules* annulated, numerouſly aſſembled in roundiſh maſſes, ſcattered over the back of the frond. *Involucrum* roundiſh or kidney-ſhaped, with a lateral ſinus, by which it is attached to the frond, at length becoming umbilicated, and more or leſs orbicular.

Eſſ. Ch. Fructification in roundiſh, ſcattered, not marginal, dots. Involucrum umbilicated, ſeparating almoſt all round.

Sect. 1. *Frond ſimple.* Two ſpecies in Swartz; three in Willdenow.

A. *nodoſum.* Knotty Shield-fern. Willd. n. 1. (A. articulatum; "Schkuhr Crypt. 28. t. 27, copied from Plumier." Lingua cervina lucida, pediculis articulatis; Plum. Fil. 118. t. 136. Petiv. Fil. t. 10. f. 3.)—Fronds ſimple, oblong, wavy, bordered; acute at each end. Dots in interrupted lines. Stalks jointed, ſmooth. Root creeping, chaffy and hairy.—Found by Plumier on trees in the foreſts of Martinico, no other botaniſt having, as far as we know, ever met with this ſpecies. Willdenow ſeparates it from the following, which he had examined, chiefly on account of the *ſori* being diſpoſed in chain-like rows, and the *frond* having a thickened margin. Petiver's figure is copied from Plumier, as uſual with the Ferns of that author.

A. *articulatum.* Jointed Shield-fern. Swartz n. 1. Willd. n. 2. (Polypodium articulatum; Lamarck Dict. v. 5. 514.)—Fronds ſimple, oblong-lanceolate, finely crenate and wavy, pointed. Dots ſcattered, ſolitary. Stalks jointed, ſcaly. Root creeping, chaffy and hairy.—Native of the Mauritius, on trunks of trees. We have one of Commerſon's ſpecimens. The *fronds* are a foot long, not thickened at the edges, but very unequally and minutely wavy, as if crenate; the *ſtalk* of each not one inch in length, inſtead of two, or more, as in the foregoing. *Sori* in a ſimple, ſlightly undulating row, on each ſide the mid-rib, not half way between it and the margin, rather ſmall. *Involucrum* perfectly peltate, but more or leſs notched at one ſide, dark brown; pale and undulated at the circumference. *Capſules* light brown, minute.

Sect. 2. *Frond ternate.* One ſpecies in Swartz; four in Willdenow.

A. *trifoliatum.* Three-leaved Variable Shield-fern. Sw. n. 3. Willd. n. 5. Ait. n. 1. "Schkuhr Crypt. t. 28." (Polypodium trifoliatum; Linn. Sp. Pl. 1547. Jacq. Coll. v. 3. 185. Ic. Rar. t. 638. Petiv. Fil. n. 18. t. 7. f. 3. Hemionitis maxima trifolia; Plum. Amer. 22. t. 32. Fil. 127. t. 148. Hemionitidi affinis filix major, trifida, auriculata, pinnis latiſſimis ſinuatis; Sloane Jam. v. 1. 85. t. 42.)

β. Polypodium Pica; Linn. fil. Suppl. 446.

Frond ſmooth-edged; either ſimple, heart-ſhaped at the baſe, and three-lobed; or ternate, partly pinnatifid: the middle lobe or leaflet largeſt: lateral ones auricled at the baſe.—Native of groves and ſhady places in the Weſt Indies. A rather large, very variable ſpecies, of a fine graſs-green, thin and pliant; either ſimple, in three deep taper-pointed lobes, laterally lobed or auricled, in which ſtate it is, as Swartz rightly judged, *Polypodium Pica* of the younger Linnæus; or perfectly and ſimply ternate, like Plumier's figure, copied by Petiver, and Pluk. Phyt. t. 291. f. 3; or the leaflets are three-lobed, ſinuated, occaſionally pinnatifid, as in the plates of Jacquin and Sloane. The *ſori* are numerous and ſcattered. *Involucrum* perfectly peltate, ſeparating equally all round, without any ſinus, or notch. The margins of all the ſegments or leaflets are ſometimes only undulated, but more frequently toothed, in a blunt irregular manner.

A. *cicutarium.* Hemlock Shield-fern. Swartz n. 46. Willd. n. 7. Purſh n. 1. (Polypodium cicutarium; Linn. Sp. Pl. 1549, excluding both the ſynonyms of Plukenet, and inſerting the following. Filix jamaicenſis, ſive Polypodium Cicutariæ latifoliæ foetidiſſimæ foliis quodammodò conveniens, &c.; Pluk. Almag. 153. t. 289. f. 4.)—Frond ternate: leaflets pinnatifid, pointed, with rounded, obtuſe, entire ſegments; the lowermoſt ſegments greatly elongated and ſubdivided.—Native of mountains in Jamaica and Virginia. The Linnæan ſpecimens came from Dr. Patrick Browne, and anſwer well to Plukenet's t. 289. f. 4, whatever his t. 296. f. 2, cited by authors, may be. The *fronds* are a ſpan high, thin, delicate and ſmooth, with fine interbranching angular veins. We have ſeen no fructification. Neither Willdenow nor Purſh appear to have examined any ſpecimens.

Sect. 3. *Frond pinnate.* Forty-four ſpecies in Swartz; ſeventy-four in Willdenow.

A. *falcatum.* Sickle-leaved Japaneſe Shield-fern. Swartz n. 7. Willd. n. 13. (Polypodium falcatum; Thunb. Jap. 336. t. 36, not 35. Linn. Suppl. 446. Filix cheuſanica, latiori lonchitidis ſerrato folio, averſâ parte ferrugineis punctulis refertiſſimo; Pluk. Amalth. 93. t. 405. f. 1.)—Frond pinnate: leaflets ovate, coriaceous, bluntly ſerrated, pointed, curved upwards; oblique and unequal at the baſe; ſtrongly veined beneath; the odd one ſomewhat three-lobed. Stalk ſcaly.—Gathered in Japan by Thunberg, from whom we have a ſpecimen. Twelve or fifteen inches high, rigid; rather glaucous beneath. *Involucrum* perfectly peltate and orbicular, with a central boſs. The upper ſide of each *leaf* is quite ſmooth and even; the under very curiouſly reticulated, with ſtout, prominent, chain-like veins, meeting, but not ſtrictly interbranching with, each other.

A. *punctulatum.* Dotted-bordered Shield-fern. Swartz n. 21. Willd. n. 17. (Lingua cervina dentata, punctulis nigris notata; Plum. Fil. 98. t. 112.)—Frond pinnate: leaflets uniform, linear-lanceolate, pointed, ſerrated; with a marginal row of minute impreſſions on the upper ſide; downy beneath.—Gathered by Plumier in Martinico. We have it from Jamaica. Willdenow moreover mentions Guinea, as the native country of this ſpecies. Each *frond* is five or ſix feet high. *Common ſtalk* round at the back, furrowed in front, light brown, not ſmooth, but clothed with fine, ſoft, narrow, ruſty ſcales. *Leaflets* very numerous, alternate, four or five inches long and nearly one broad, ſlightly ſtalked, bright green, rather thin and pliant, unequally, and ſometimes doubly, ſerrated; finely downy at the back; broadly wedge-ſhaped, and occaſionally ſlightly auricled at the baſe; their upper ſide ſmooth, each vein terminating near the margin in a blueiſh, withered, minute ſpot, the ſeat, as it appears, of the *flowers;* for a ſimilar mark is found over every maſs of *capſules;* but theſe being ſituated in a ſimple row, at ſome diſtance from the margin, the ſpots which mark their inſertion are much further from the edge than the abortive ſpots. Plumier repreſents a row of ſuch ſpots on the *under* ſide, at every ſerrature. He is ſo ſupremely accurate, that we have ſometimes doubted our plant being the ſame as his, of which there is otherwiſe no appearance. Every thing which may lead to the diſcovery of the *flowers* of ferns is ſo intereſting, that we are here tempted to be more particular than uſual. The maſſes of *capſules* are large, prominent, of a bright tawny-brown, each with an almoſt perfectly circular and umbilicated *involucrum.* It ſeems to us a curious queſtion, how the ſpots above-mentioned which are attended by fertile *capſules,* in large convex *ſori,* come to be arreſted at a conſiderable diſtance from the edge of the leaf, while, without any difference in their ſize or appearance, the abortive ones are advanced almoſt to the baſe, or even the diſk of each ſerrature.

A. *Louchitis*. Rough Alpine Shield-fern. Swartz n. 5. Willd. n. 25. Fl. Brit. n. 1. Engl. Bot. t. 797. (Polypodium Lonchitis; Linn. Sp. Pl. 1548. Fl. Dan. t. 497. Lonchitis aſpera major; Ger. Em. 1140. Matth. Valgr. v. 2. 273. Camer. Epit. 664.)—Frond pinnate, chaffy: leaflets ſickle-ſhaped, declining, acute, with fringe-like ſerratures; auricled at the upper angle of their baſe; wedge-like at the lower.—Native of the crevices of dry rocks in alpine or ſubalpine ſituations, throughout Europe. It has been found in Scotland and Wales, but ſcarcely we believe in England, though ſtarved plants of *A. aculeatum* are occaſionally taken for this ſpecies. The *fronds* are a ſpan high, more or leſs, growing in tufts, erect, lanceolate, rather narrow, or linear. *Leaflets* numerous, crowded, dark greyiſh-green, about an inch long, the upper ones, about one-third of the whole, copiouſly fructifying; the reſt barren; ſeveral of the lowermoſt gradually ſhortened, but not contracted in breadth. *Sori* in a ſimple row on each ſide of the rib, rather nearer to it than to the margin, pale; the *involucrum* of each peltate and umbilicated, without any notch, completely orbicular.

A. *acroſtichoides*. Crowded Shield-fern. Swartz n. 11. Willd. n. 26. Purſh n. 2. ("A. auriculatum; Schkuhr Crypt. 31. t. 30, excluding the ſynonyms." *Willd.* Nephrodium acroſtichoides; Michaux Boreal.-Amer. v. 2. 267. Polypodium fronde pinnatâ lanceolatâ, foliolis lunulatis, &c.; Gron. Virg. ed. 2. 167, excluding all the ſynonyms, except Clayton's.)—Frond pinnate, chaffy: leaflets ſickle-ſhaped, acute, with fringe-like ſerratures; auricled at the upper angle of their baſe: uppermoſt diminiſhed, covered with confluent maſſes of capſules.—Native of rocks, in ſhady low places, from New England to Carolina, bearing capſules in the ſummer. *Purſh.* This fern has long been cultivated in the more curious gardens of England, having been introduced, if we recollect aright, by Robert Barclay, eſq., at Clapham. A taller plant than the laſt, and of a lighter green. The auricle of the lowermoſt *leaflets* ſometimes becomes quite diſtinct and ſeparate. The *ſori* are found upon half, or one-third, of the upper leaflets, in a ſingle or double row, at each ſide of the mid-rib, and are particularly crowded on the auricles. They become tumid as the *capſules* ripen, and run into one maſs, ſtudded, as it were, with the pale-brown *involucrums*, which are circular and peltate, though cloven at one ſide, the edges of the ſinus folding over each other. Linnæus confounded this with *Aſplenium ebeneum*, as well as with his own *Polypodium auriculatum*, an Eaſt Indian ſpecies, hereafter deſcribed.

A. *auriculatum*. Auricled Shield-fern. Swartz n. 10. Willd. n. 30. Ait. n. 3? (Polypodium auriculatum; Linn. Sp. Pl. ed. 1. 1088. ed. 2. 1548. Filix zeylanica, lonchitidis facie; Burm. Zeyl. 98. t. 44. f. 2.)—Frond pinnate: leaflets lanceolate, falcate, ſerrated, ſtriated; auricled at the upper angle of their baſe. Maſſes of capſules diſtinct, in ſimple rows.—Native of the rocky ſummits of mountains in Ceylon. *Kœnig.* Brought to Kew garden, in 1793, by admiral Bligh. *Aiton.* This ſpecies has no affinity or reſemblance to the laſt, with which Linnæus, and after him Swartz, confounded its ſynonyms and character. Even Willdenow, who corrected theſe errors, is miſtaken in ſaying the *ſtalk* is ſmooth. The *frond* is from ſix to twelve inches high. *Stalk* ſcaly in front; roughiſh with minute points behind. *Leaflets* numerous, narrow, an inch and a quarter or an inch and a half long, tapering but not pointed, coriaceous, ſmooth, with fine, blunt, notched, not fringed, ſerratures; even above, ſtriated with tranſverſe veins beneath; dilated at the baſe; the auricle broad, ſhort, and bluntiſh. *Sori* ſmall, diſtinct, in an even row on each ſide the mid-ribs of the *leaflet* and its auricle. We have not ſeen the *involucrum*. The ripe *capſules* are inſerted by fine capillary ſtalks into a convex knob. Linnæus ſays in Fl. Zeyl. n. 383, where he originally defined his *Polypodium auriculatum*, that the plant is entirely ſmooth. The ſhaggineſs and ſlight roughneſs of the *ſtalk* may therefore be variable. He there cites Plukenet, t. 30. f. 4; which is in no reſpect diſcordant with Kœnig's ſpecimens. Mr. Menzies gathered on the weſt coaſt of North America a fern very like this, except that the ſerratures are briſtly, and the leaflets leſs ſtriated. Its ſtalk is very ſcaly all the way up.

A. *exaltatum*. Lofty Shield-fern. Swartz n. 14. Willd. n. 34; excluding the ſynonym of Linnæus. Ait. n. 4. "Schkuhr Crypt. 33. t. 32, b." (Lonchitis glabra minor; Plum. Amer. 19. t. 28. Fil. 48. t. 63. L. altiſſima, pinnis utrinque, ſeu ex utroque latere, auriculatis; Sloane Jam. v. 1. 77. t. 31.)—Frond pinnate: leaflets lanceolate, ſerrated; with a row of minute white impreſſions on the upper ſide, towards the margin; unequally haſtate at the baſe. Maſſes of capſules in a ſimple row, towards the margin. Stalk even, ſlightly ſcaly.—Native of Jamaica, and other parts of the Weſt Indies. Brought to the ſtoves at Kew, by admiral Bligh, in 1793. The *fronds* are uſually three or four feet high, erect, ſtraight, narrow, with a poliſhed, pale-brown ſtalk and mid-rib, occaſionally ſomewhat ſhaggy. *Leaflets* numerous, parallel, cloſe, nearly ſtraight, two inches long at moſt, very ſmooth; rather rounded at the point, their ſhallow, blunt, unfringed ſerratures moſt abundant in their upper half; the baſe dilated into two ſhort broad *auricles*, deſtitute of fructification, of which the lower one is ſhorteſt, and moſt rounded. *Sori* numerous, diſtinct, rather large. *Involucrum* not perfectly orbicular, nor ſtrictly peltate, having a deep ſinus at the ſide towards the baſe of the leaflet, ſo as to reſemble a horſe-ſhoe. This fern is very diſtinct from our *Davallia falcata*, though Dr. Swartz ſuſpected the contrary. Linnæus confounded its ſynonyms with the following. The row of minute withered ſpecks, as far as we can ſee, only accompany the *ſori*, there being, in our ſpecimens, no barren ones as in *A. punctulatum*.

A. *blechnoides*. Long-leaved Shield-fern. (Polypodium exaltatum; Linn. Syſt. Nat. ed. 10. v. 2. 1326. Sp. Pl. ed. 2. 1549; excluding the ſynonyms, and ſubſtituting the following. Filix minor, in pinnas tantùm diviſa, crebras non crenatas, inferiore latere auriculatas, et rotundis pulverulentis areolas averſâ parte notatas; Sloane Jam. v. 1. 86. t. 44. f. 1.) — Frond pinnate: leaflets linear-lanceolate, elongated, entire, with a rounded incurved auricle at the baſe on the lower ſide, and a ſlight dilatation on the upper. Maſſes of capſules in a double row.—Native of Jamaica, on the ſides of hills. Linnæus received his ſpecimen in Browne's herbarium, with an erroneous reference to Sloane's t. 31, which belongs to our laſt-deſcribed. Hence there has always been a confuſion reſpecting theſe two ferns, which even Dr. Swartz could not reconcile; ſee his Syn. Filicum, 65, where he cites Sloane's t. 44, but ought to have added *fig.* 1; as fig. 2. is *Blechnum occidentale*. The ſpecific name of *Polypodium exaltatum*, being taken from Plumier's and Sloane's accounts of the foregoing, and that being univerſally received as *Aſpidium exaltatum*, we have not changed its denomination. That name is not at all applicable to the ſpecies before us, which is more expreſſively called *blechnoides*. Its height is only eighteen or twenty inches. *Leaflets* from four to ſix inches long, taper-pointed; the lower auricle of each overlapping the main ſtalk, and hooked or curved in a curious manner, not well expreſſed in Sloane's plate. *Sori* in double rows cloſe to the mid-rib at each ſide. *Involucrum* perfectly peltate, orbicular, and *entire*.

Sect. 4. erroneouſly marked 3 by Willdenow, as is often the caſe in other parts of his work. *Frond pinnate; leaflets pinnatifid. Involucrum rounded, or kidney-ſhaped.* Thirty-ſeven ſpecies in Willdenow. Swartz does not ſeparate this ſection from the following.

A. *Hippocrepis*. Horſe-ſhoe Shield-fern. Swartz n. 45. Willd. n. 46. (Polypodium Hippocrepis; Jacq. Col. v. 3. 186. Ic. Rar. t. 641. Hemionitis laciniis criſpis inciſa; Plum. Fil. 129. t. 150. Petiv. Fil. t. 7. f. 7.)—Frond pinnate: leaflets oblong, ſinuated; the upper ones confluent and decurrent; lowermoſt ſtalked, pinnatifid; ſegments obtuſe, ſomewhat crenate; veins downy. Involucrum creſcent-ſhaped.—Native of South America, and of Hiſpaniola, from whence our ſpecimen was brought by M. Thierry de Menonville. Jacquin had living plants of this rare fern from Venezuela, and cultivated it at Vienna. The *fronds* are eighteen inches or two feet high, tufted, of a fine green, more or leſs downy, eſpecially about the ribs and veins: their *leaflets* ſinuated in the manner of ſome ſpecies of oak; the ſegments alſo ſinuated, wavy, or criſped. *Sori* chiefly ranged on each ſide of the mid-ribs of the ſegments, but not being uniformly perfected, they appear irregularly ſcattered. *Involucrum* like a horſe-ſhoe, to which the ſpecific name applies.

A. *unitum*. United Shield-fern. Swartz n. 47. Willd. n. 57. Ait. n. 5. Schkuhr Crypt. 34. t. 33, b. (Polypodium unitum; Linn. Sp. Pl. 1548; omitting the ſynonyms of Sloane and Plukenet. Filix pyramidalis madraſpatana elegans, pinnulis ſerratis; Pet. Muſ. 10. n. 55. t. 1. F. zeylanica denticulata, non ramoſa; Burm. Zeyl. 98. t. 44. f. 1.)—Frond pinnate: leaflets linear, pinnatifid; their very numerous ſegments ovate, acute, combined, hairy beneath. Stalk downy in the leafy part. Involucrum nearly circular, with a deep notch.—Native of Tranquebar and Ceylon. *Frond* two feet, or more, in height: ſmooth and nearly naked in its lower half, except a few diſtant ſmall leaflets: finely downy and ruſty in the upper half, and crowded with ſeſſile, narrow, acute, linear *leaflets* from three to five inches long. Theſe are compoſed of innumerable little convex ſegments, a quarter of an inch in length; ſmooth and veiny above; ribbed and downy beneath; appearing as if deeply ſeparated, but their edges are firmly united for one-half or three-quarters of their length. Near the margins of theſe ſegments are ſimple rows of ſmooth horſe-ſhoe like *involucrums*, covering numerous *capſules* with glittering brown rings.

A. *obtuſatum*. Blunted Shield-fern. Swartz n. 30. deſcr. 248. Willd. n. 58. (Pteris interrupta; Willd. Phytogr. 13. t. 10. f. 1.)—Frond pinnate: leaflets linear, pointed, ſlightly pinnatifid; ſegments obtuſe, downy beneath. Stalk ſmooth. Fructification near the margin.—Native of the Eaſt Indies. Very like the laſt, but the *leaflets* are more pointed, rather crenate than pinnatifid, and the rows of *ſori* ſo near the margin that Willdenow actually took the plant for a *Pteris!*

A. *Oreopteris*. Heath Shield-fern. Swartz n. 39. Willd. n. 70. Fl. Brit. n. 3. Engl. Bot. t. 1019. "Schkuhr Crypt. 37. t. 35, 36." (Polypodium Oreopteris; Ehrh. Crypt. n. 22. Dickſ. Tr. of Linn. Soc. v. 1. 181. Fl. Dan. t. 1121. P. Thelypteris; Hudſ. 457. Bolt. Fil. 40. t. 22. f. 1, 2. Hedw. Theor. 44. t. 6.)—Frond pinnate: leaflets lanceolate, pinnatifid, entire, beſprinkled with reſinous glands beneath. Fructification near the margin, confluent.—Mountainous heathy ground, and dry woods, in various parts of Europe, from Denmark to Italy, produce this fern, bearing capſules in July. Our Britiſh botaniſts long overlooked it, as a variety of the common *Filix mas*, whilſt others miſtook it for *Thelypteris*. The reſinous dots at the back of the *frond* exhale a fragrant ſmell, more or leſs perceptible at different times; which induces a ſuſpicion that this ſpecies may have been taken by Mr. Hudſon for *Polypodium fragrans* of Linnæus, never found in our iſland. In ſize the preſent ſpecies vies with *A. Filix mas*, hereafter to be deſcribed, but the whole *frond* is rather narrower. The ſegments of the *leaflets* uſually quite entire, are occaſionally ſomewhat crenate about their rounded obtuſe points. *Sori* crowded, in a ſimple row near the margin, at length confluent, forming a beaded line. *Involucrum* ſmall and thin, umbilicated, with a deep lateral ſinus, and ſoon vaniſhing. *Root* large, ſcaly, tufted, not creeping.

A. *Thelypteris*. Marſh Shield-fern. Swartz n. 39. Willd. n. 74. Fl. Brit. n. 2. Engl. Bot. t. 1018. Purſh n. 4. "Schkuhr Crypt. 51. t. 52." (Polypodium Thelypteris; Linn. Mant. 505. Fl. Dan. t. 760. Acroſtichum Thelypteris; Linn. Sp. Pl. 1528. Bolt. Fil. 78. t. 43, 44. Thelipteris non ramoſa; Schmidel Ic. t. 11. Filix tenuiſſimè et profundè denticulata Montbelgardica; Bauh. Hiſt. v. 3. 731, good. F. paluſtris repens, pinnulis non dentatis; Moriſ. ſect. 14. t. 4. f. 17, 1.)—Frond pinnate: leaflets lanceolate, pinnatifid, ſomewhat crenate; diſtinct, but croſſing each other, at the baſe. Fructification ſcattered, confluent. Root thread-ſhaped, creeping.—Native of rotten bogs, and turfy marſhes on a ſandy ſoil, in various parts of the north of Europe, as well as in North America. Mr. Purſh ſays the fructification is very rare in the latter country: with us it is but ſparingly produced, the plant increaſing moſt by the *roots*, which are long, ſlender, and creeping. The *fronds* are not half the ſize of the laſt, and much more delicate; their height about a foot, their colour bright graſs-green. *Leaflets* generally ſmooth; ſometimes a little hairy; the loweſt lobe of each extended, ſo as to fold over the oppoſite one. *Fructification*, if preſent, abundant, confluent, blackiſh.

A. *criſtatum*. Leſſer Creſted Shield-fern. Swartz n. 49. Willd. n. 79. Sm. Compend. Fl. Brit. 157. Engl. Bot. t. 2125, not 1949. Purſh n. 5. "Schkuhr Crypt. 39. t. 37." (Polypodium criſtatum; Linn. Sp. Pl. 1551. Afzel. in Stockh. Tranſ. for 1787. 248. t. 9. P. Callipteris; Ehrh. Crypt. n. 53.)—Frond pinnate, nearly bipinnate: ſegments ovate, obtuſe, crenate or pinnatifid, with ſharp little terminal teeth. Stalk ſcaly at the baſe. Involucrum nearly orbicular, with a deep notch.—Native of Sweden, Germany, and England, as well as North America, in low boggy woods and thickets. Found by the Rev. R. B. Francis, on the heath between Holt and Hempſtead, Norfolk. The *root* is tufted, as in *A. Oreopteris*, not creeping like that of *Thelypteris*, and the whole habit and texture of the fern more reſembles the firſt of theſe two ſpecies. *Fronds* pale green, from one to two feet high; the fertile ones remarkably erect; their barren *leaflets* ſhorter and rather more diſtant, than thoſe which bear fructification, the latter compoſing the upper half of the frond; all are very deeply pinnatifid, ſometimes to the very rib, their ſegments, or partial leaflets, cloſe, broad, obtuſe, with ſharp, ſcarcely ſpinous, teeth. *Ribs* ſomewhat zigzag. *Capſules* blackiſh when freſh, with a white circular *involucrum* to each aſſemblage, having a deep ſinus at the lower ſide; but the dried *ſori* are tawny. *Common ſtalk* of the *frond* chiefly ſcaly at the bottom. Mr. Purſh conſiders Willdenow's *lancaſtrienſe*, n. 97, as a variety of this.

A. *fragrans.* Fragrant Shield-fern. Swartz n. 42. Willd. n. 80. (Polypodium fragrans; Linn. Sp. Pl. 1550. Dryopteris rubum idæum ſpirans; Amman. Ruth. 174. n. 251.)—Frond pinnate: leaflets lanceolate, crowded, deeply pinnatifid; ſegments elliptic-oblong, bluntly and deeply toothed; ſtalks and mid-ribs ſcaly. Fructification crowded. Involucrum nearly orbicular, with a deep notch.—Native of hilly ſituations in Siberia, near the rivers Angara and Selenga. The inhabitants are ſaid to boil this fern with their beer, in order to give that liquor the taſte and ſmell of Raſpberries, which is ſo powerful in the plant, that even in a dried ſtate its odour fills the room where it is kept. The *root* is tufted, very ſcaly. *Fronds* ſeveral, a ſpan high, lanceolate, tapering at each end, the lower *leaflets* being gradually much ſhortened. *Stalk* ſhort, bearing large, rounded, lax ſcales; thoſe on the leafy part, as well as on the mid-rib of each leaflet, being lanceolate and acute. The upper ſide of the *leaflets* is perfectly ſmooth; their lobes and indentations peculiarly elegant, without any terminal briſtles. *Sori* ſo crowded about the lower half of each leaflet, that their expanded *involucrums* ſometimes touch, or fold over each other, being moreover intermixed with ruſty membranous ſcales.

Sect. 5, marked 4 by Willdenow. *Frond doubly or triply pinnate. Involucrum rounded or kidney-ſhaped.* Forty ſpecies in Willdenow. The involucrum in this, as well as the preceding ſection, though, for the moſt part, laterally inſerted, is often nearly or completely orbicular, and it is even ſtrictly peltate in *A. aculeatum* and *lobatum.* Some of profeſſor Willdenow's ſpecies, adopted from Plumier's plates only, appear to us ſcarcely certain in genus,—ſuch are *A. nemoroſum*, Willd. n. 83, *velleum*, n. 84, and *ſquamatum*, n. 87.

A. *aculeatum.* Common Prickly Shield-fern. Swartz n. 53. Willd. n. 92. Fl. Brit. n. 5. Engl. Bot. t. 1562. Purſh n. 7. "Schkuhr Crypt. 41. t. 39." (Polypodium aculeatum; Linn. Sp. Pl. 1552. Mill. Illuſtr. t. 101. Bolt. Fil. 48. t. 26.)—Frond doubly pinnate: leaflets ovate, ſomewhat falcate, ſtalked, with prickly ſerratures; hairy beneath. Common ſtalks and ribs ſcaly. Involucrum peltate, entire.—Found in ſhady woods and hollows, throughout Europe, as well as in Africa, and North America, bearing ſeed in ſummer and autumn. The *root* is large and tufted, producing numerous dark-green *fronds*, uſually two or three feet high, ſpreading in a circular manner, varying much in ſize; paler beneath; their general and partial *ſtalks* remarkably ſcaly. *Partial leaflets* about a quarter of an inch long, rigid or coriaceous, each tapering down into a ſmall ſhort footſtalk; their points and ſerratures each tipped with a little ſpinous briſtle; their upper edge at the baſe dilated, more or leſs, in a broadiſh auricle. *Sori* plentiful on the upper part of the frond, but in ſingle rows, and diſtinct, brown. *Involucrums* pale brown, orbicular, peltate, at length deeply umbilicated, quite entire all round, as in *A. Lonchitis*, to which this ſpecies and the following are cloſely allied, though all three are very diſtinct.

The late Mr. Rob. Teeſdale, (ſee TEESDALIA,) found in many parts of England, a variety of this, which he ſuſpected might prove a diſtinct ſpecies. It is ſofter, and more delicate in texture, than the common kind, with ſmaller, more copious, *partial leaflets*, which are more remarkably ſtalked, and their auricles are larger, broader, and different in aſpect. This lay in Mr. Roſe's herbarium for *A. lobatum*, which it certainly is not, the *partial leaflets* being even leſs decurrent than in our common *aculeatum.* It may probably be the variety β of *Fl. Brit.* figured in Plukenet, t. 180. f. 1, which figure repreſents well enough the general appearance of the *frond*, and ſhape of the *leaflets;* but their partial ſtalks are much more conſiderable and evident than they appear in that plate. *A. aculeatum*, if tranſplanted into a dry open ſituation, ſoon diminiſhes greatly in ſize, ſo as to reſemble *A. Lonchitis*, for which we once received it; but theſe ſpecies are nevertheleſs eſſentially different, as any careful inveſtigator will find.

A. *lobatum.* Cloſe-leaved Prickly Shield-fern. Swartz n. 54. Willd. n. 95. Fl. Brit. n. 6. Engl. Bot. t. 1563. (Polypodium lobatum; Hudſ. 459. Filix aculeata major, pinnulis auriculatis crebrioribus, foliis integris anguſtioribus; Raii Syn. 121. F. aculeata, Lonchitidis æmula noſtras; Pluk. Phyt. t. 180. f. 3.)—Frond doubly pinnate: leaflets elliptical, ſomewhat falcate, decurrent, with prickly ſerratures; hairy beneath: the foremoſt of the loweſt pair very large. Common ſtalks and ribs ſcaly. Involucrum peltate, entire.—Found in ſhady places, under hedges, in England; not unfrequent in the county of Eſſex, where Ray firſt noticed this ſpecies, and from whence Mr. Edward Forſter has ſent us ſpecimens. The Rev. Mr. Francis has met with it at Edgefield, near Holt, Norfolk. There is no record of this fern being found out of Britain. The *fronds* are always of a narrower, more linear, form than the laſt, and generally altogether ſmaller, as well as more rigid, of a paler more ſhining green. *Leaflets* rather elliptical than ovate, and Mr. Dawſon Turner has well obſerved that they are decurrent, not ſtalked, which is perhaps one of the moſt certain means of diſtinguiſhing this ſpecies from *A. aculeatum.* The moſt ſtriking character, indicated by the ſpecific name, conſiſts in the great ſize, and angular-lobed figure, of the loweſt *partial leaflet*, on the upper ſide of each general leaflet or *pinna*, cloſe to the main ſtalk, often extending beyond the *pinna* above it. The upper half of the *frond*, principally, is covered with *fructification.* The *involucrum* is perfectly peltate, entire; finally umbilicated.

A. *marginale.* Marginal-flowering Shield-fern. Swartz n. 41. Willd. n. 93. Ait. n. 11. Purſh n. 8. "Schkuhr Crypt. 195. t. 45, b." (Polypodium marginale; Linn. Sp. Pl. 1522. Nephrodium marginale; Michaux Boreal.-Amer. v. 2. 267.)—Frond doubly pinnate; leaflets oblong, obtuſe, decurrent, crenate; almoſt pinnatifid at the baſe. Maſſes of capſules marginal. Involucrum orbicular, with a lateral ſinus.—In rocky ſhady places, from Canada to Carolina, bearing capſules in July. This ſpecies has often been ſuppoſed a native of Britain, *A. Oreopteris*, whoſe fructification is likewiſe marginal, having been taken for it; but the American plant is very diſtinct, more reſembling *Filix mas* than any other. The *marginale* however is a ſmaller plant, the upper half of whoſe *frond* only bears fructification, and the *leaflets* are bluntly crenate, inſtead of being ſharply ſerrated. They are moreover not uniform, as in *Filix mas*, but the lower ones of each *pinna* are larger and more or leſs pinnatifid. *Involucrum* tumid, corrugated, forming a complete circle, though not peltate.

A. *Filix mas.* Male Shield-fern. Swartz n. 59. Willd. n. 94. Fl. Brit. n. 4. Engl. Bot. t. 1458. Purſh n. 9. "Schkuhr Crypt. 45. t. 44. alſo A. eroſum, t. 45, and A. depaſtum, t. 51," according to Willdenow. (Polypodium Filix mas; Linn. Sp. Pl. 1551. Bolt. Fil. 44. t. 24. Woodv. Med. Bot. t. 49. Filix mas vulgaris; Ger. Em. 1128. Fuchſ. Hiſt. 595. Matth. Valgr. v. 2. 626. Camer. Epit. 991.)—Frond doubly pinnate: leaflets oblong, obtuſe, ſeſſile, ſharply ſerrated without prickles, uniform. Maſſes of capſules crowded towards the rib and baſe of each leaflet. Involucrum orbicular, with a lateral ſinus.—Very common throughout Europe, as well as in the northern parts of Aſia, Africa, and America, in ſhady ſituations, under dry banks, bearing ſeed about July and Auguſt. The *root* is tufted and ſcaly, often very large. *Fronds* numerous, bright green, about a yard high, and a ſpan wide, their *ſtalks* and principal *rib* ſcaly; the *rib* of each *leaflet* is ſometimes a little hairy, and ſlightly bordered, though the *partial leaflets* are ſcarcely decurrent, except the uppermoſt. The *fructification* is abundant over great part of the frond, of a rich tawny-brown, crowded, not confluent. *Involucrum* tumid, umbilicated, with a lateral notch, which is rather more open than in *A. marginale*, but not quite ſo deep. The *root* is a celebrated cure for inteſtinal worms, in Switzerland and other parts of the continent; and its nauſeous taſte may, as we underſtand, be detected in one or more of the popular quack medicines, which in this country obtain credit by puffing advertiſements, whoſe truth it is eaſier to believe than to examine. Happy if they are never compoſed of more dangerous materials than the root of the Male Fern!

A. *ſpinuloſum*. Leſſer Creſted Shield-fern. Fl. Brit. n. 8. Engl. Bot. t. 1460. Swartz n. 58. Willd. n. 99. Purſh n. 11? "Schkuhr Crypt. 48. t. 48." (Polypodium ſpinuloſum; Retz. Prodr. 250. Fl. Dan. t. 707. P. n. 841; Mull. Friedr. 193. t. 2. f. 2. Filix pumila ſaxatilis altera; Pluk. Phyt. t. 179. f. 5.)—Frond doubly pinnate: leaflets decurrent, elliptical, confluent, with deep-cut prickly ſerratures. Mid-rib ſmooth. Nerves zigzag. Involucrum orbicular, with a lateral ſinus.—Native of boggy ſhady places, in various parts of Europe; as well as in North America, if Mr. Purſh be right; but he ſpeaks of his plant as "a large ſpecies;" ours is certainly rather ſmall, not above a foot high. The *root* is creeping. *Frond* broad, with a long *ſtalk*, which is ſcaly in the lower part only. *Partial leaflets* elliptic-oblong, of an elegant bright pellucid green, with wavy ribs; decurrent, ſo as to form a border to the partial ſtalk. *Dots* of capſules ſmall, and rather diſtant. *Involucrum* ſmall, ſoon puſhed to one ſide. We ſee nothing in it of a glandular nature, as mentioned by Willdenow.

A. *dilatatum*. Great Creſted Shield-fern. Fl. Brit. n. 9. Engl. Bot. t. 1461. Willd. n. 100. Purſh n. 12. (Polypodium dilatatum; Hoffm. Germ. v. 2. 7. P. ariſtatum; Villars Dauph. v. 3. 844. Bellardi in Act. Taurin. v. 5. 255. P. criſtatum; Ehrh. Crypt. 81. Hudſ. 457. Bolt. Fil. 42. t. 23. P. n. 845; Mull. Fl. Freidr. 193. t. 2. f. 4. Filix mas ramoſa, pinnulis dentatis; Raii Syn. 124. Pluk. Phyt. t. 181. f. 2. F. mas, pinnulis criſtatis; Moriſ. ſect. 14. t. 3. f. 11.)—Frond doubly pinnate: leaflets deeply pinnatifid, ſharply cut, with prickly teeth and ſerratures. Stalk and branches ſcaly. Involucrum kidney-ſhaped, ſoon orbicular, with a lateral ſinus.—Native of ſhady watery places, ſometimes on dry banks, in a ſandy or gravelly ſoil, or in ſtony moiſt woods, throughout Europe. Mr. Purſh met with this ſpecies in the ſhady rocky woods of Pennſylvania and Virginia. The *root* is tuberous or tufted, ſcarcely creeping. *Fronds* generally two feet, or more, in height, though ſometimes much ſmaller. Their broad, much compounded, form and ſtructure, and their bright-green colour, give them a very handſome aſpect. They are often triply pinnate, or at leaſt their ultimate ſubdiviſions are ſo deeply ſeparated as to cauſe that appearance: theſe are pretty uniform, with deep, ſharp, prickly-toothed ſerratures and points. *Stalks*, *ribs*, and *veins*, a little downy, or glandular; none of them zigzag, or at moſt very ſlightly ſo. *Fructification* copious all over the frond, rather crowded, not confluent, of a bright brown. *Involucrum* at firſt kidney-ſhaped, tumid, but ſoon becoming orbicular, the ſinus nearly cloſing, retaining only an umbilicated depreſſion, and at length the membrane remains folded together vertically, in the centre of the maſs of *capſules*.

Sect. 6, marked 5 by Willdenow. *Frond either doubly pinnatifid, or doubly or triply pinnate. Involucrum lateral.* Twenty-ſix ſpecies in Willdenow; nineteen in Swartz. Theſe are perhaps moſt entitled to conſtitute a diſtinct genus, but in ſeveral inſtances they too nearly approach the laſt ſection to admit of a clear generic definition.

A. *fontanum*. Smooth Rock Shield-fern. Swartz n. 74. Willd. n. 122. Engl. Bot. t. 2024. (Polypodium fontanum; Linn. Sp. Pl. 1550. Fl. Brit. 1114. Hudſ. 456. Villars Dauph. v. 3. 849. P. n. 1706; Hall. Hiſt. v. 3. 15. Adiantum filicinum durius criſpum minimum; Barrel. Ic. t. 432. f. 1. Filicula ſaxatilis, omnium minima, elegantiſſima; Tourn. Inſt. 542. Pluk. Phyt. t. 89. f. 3.)—Frond linear-lanceolate, ſmooth, ſimply or doubly pinnate: leaflets alternate, rounded, their ſegments very ſharply toothed. Stalks winged. Involucrum oblong.—Native of rocks in England, France, Switzerland, and other parts of Europe, but very rare in this country. Mr. Hudſon, and the late Mr. Aiton, to our certain knowledge, have gathered it on Amerſham church, Buckinghamſhire, where it is no longer, as we are told, to be met with. Linnæus confounded this fern with what is now named WOODSIA *hyperborea* (ſee that article); nor has it been well underſtood by botaniſts in general, being of rare occurrence, obſcure in its generic character, and very variable in luxuriance. This may be ſeen by comparing Plukenet's figure above cited, fig. 3, with his fig. 2, quoted by Willdenow, after *Fl. Brit.* which laſt is we believe the ſame plant, but not under its uſual and moſt natural appearance. When once ſeen in perfection, this truly elegant little fern can be confounded with no other. The *root* is tufted. *Fronds* from two to ſix inches high, rigid, ſmooth, rather glaucous, of a narrow lanceolate figure, compoſed of numerous, alternate, pinnate or pinnatifid *leaflets*, whoſe *partial leaflets*, or *lobes*, are wedge-ſhaped, ſomewhat ſtalked, with deep, very ſharp, in ſome degree ſpinous, teeth, and all the ſtalks are winged. Maſſes of *capſules* at the mid-rib of each lobe, round, or nearly ſo, with a delicate white *involucrum* originating from the rib, by a ſtraight lateral inſertion, and ſeparating inwards, that is, towards ſome other more principal rib, not towards the margin. Perhaps this plant is truly an *Aſplenium*. Profeſſor Willdenow has an *A. Halleri*, n. 125, which he conſiders abundantly diſtinct from *fontanum*, but to which he refers ſome of our above-mentioned ſynonyms. We have Haller's plant from Switzerland, and are perfectly certain of its being the ſame as our *fontanum*, though we have not the means of verifying all Willdenow's ſynonyms.

This writer, whoſe labours reſpecting *Filices* will ever do his memory great honour, notwithſtanding errors unavoidably incident to ſo difficult an enterpriſe, has, after the example of Swartz, aſſociated with this tribe ſome ſpecies which we refer to CYATHEA. (See that article, written by the late Rev. Mr. Wood.) Theſe are, *C. dentata*, *fragilis*, and *regia* of Fl. Brit. and Engl. Bot.; there being alſo ſeveral exotic ſpecies in the ſame predicament. Some of them come very near *A. fontanum*, juſt deſcribed, in the character of their *involucrum*, but they ill accord with the reſt of this genus. A few ſpecies, now to be mentioned, perhaps connect them therewith. We ſhall ſelect ſuch as are moſt likely to elucidate the ſubject.

A. *bulbiferum.* Bulbiferous Shield-fern. Swartz n. 82. Willd. n. 126. Ait. n. 20. Purſh n. 13. " Schkuhr Crypt. 55. t. 57." (Nephrodium bulbiferum; Michaux Boreal.-Amer. v. 2. 268. Filix baccifera; Cornut. Canad. 5. t. 4. Barrel. Ic. t. 1120. Moriſ. ſect. 14. t. 3. f. 10.)—Frond doubly pinnate, oblong-lanceolate: leaflets ovate, obtuſe, pinnatifid or deeply ſerrated; upper ones confluent. Ribs bulbiferous.—Found in ſhady woods, among rocks, from Canada to Pennſylvania. *Purſh.* The *frond* is about eighteen inches high, narrow, bright-green, ſmooth, delicately cut; *partial leaflets* half an inch long at moſt, decurrent. Maſſes of *capſules* moſtly ſcattered, ſmall, round. The *involucrum* ſeems concave, almoſt hemiſpherical, turning to one ſide; but our ſpecimens are not ſufficient to aſcertain its exact figure. Several of the ſecondary *ribs* bear fleſhy bulbs, that fall off and become young plants, of which there are inſtances in WOODWARDIA, (ſee that article,) and ſome other ferns.

A. *Filix foemina.* Female Shield-fern. Swartz n. 83. Willd. n. 128. Fl. Brit. n. 7. Engl. Bot. t. 1459. " Schkuhr Crypt. 56. t. 58, 59." (Polypodium Filix foemina; Linn. Sp. Pl. 1551. Bolt. Fil. 46. t. 25. Filix mas non ramoſa, pinnulis anguſtis raris, profundè dentatis; Raii Syn. 121. Pluk. Phyt. t. 180. f. 4. Moriſ. ſect. 14. t. 3. f. 8.)—Frond doubly pinnate: leaflets pinnatifid, ſerrated, pointleſs, oblong-lanceolate. Stalk ſmooth. Dots oblong. Involucrum ſomewhat kidney-ſhaped.—A common fern throughout Europe, in marſhy ſhady places, varying greatly in dimenſions, but of a broadiſh-oblong figure, from one to two feet high, of a fine dark green, and very ſmooth. *Stalk* ſlender, pale, ſmooth, ſomewhat angular. *Leaflets* innumerable, tolerably uniform, delicately cut, bluntiſh, without any terminal briſtles. *Maſſes* of *capſules* covering the frond, one upon each ſegment of the leaflets, inſerted laterally into its minute mid-rib, oblong, the *capſules* dark brown. *Involucrum* ſeparating towards ſome larger adjoining rib, oblong, white, jagged or fringed, ſometimes quite ſtraight at the inſertion, ſometimes kidney-ſhaped, but always finally aſſuming the latter form, as the *capſules* advance and cauſe it to turn back.

A. *irriguum.* Brook Shield-fern. Engl. Bot. t. 2199. Compend. Fl. Brit. 156.—Frond lanceolate, pinnate: leaflets deeply pinnatifid, cut and ſharply toothed. Stalk quadrangular. Involucrum lateral, ſhort, jagged.—Found by T. F. Forſter, eſq. about the boggy margins of clear ſprings, near Tunbridge Wells, in June. Akin to the laſt, and in ſome degree to *A. Thelypteris*, but much ſmaller and more delicate than either. *Stalk* and *main rib* exactly ſquare, ſomewhat ſcaly, pellucid. *Leaflets* deeply pinnatifid, not pinnate; their lobes moſt like thoſe of *A. Filix foemina.* *Maſſes* of *capſules* ſmall, round. *Involucrum* white, inſerted as in the laſt, but ſhorter, extremely delicate, jagged and fringed, very ſlightly kidney-ſhaped, and rather hemiſpherical, ſomewhat reſembling *Cyathea fragilis.*

A. *alpinum.* Fine-cut Alpine Shield-fern. Swartz n. 89. Willd. n. 139. " Schkuhr Crypt. 60. t. 62, a, b." (Polypodium alpinum; Jacq. Coll. v. 2. 171. Ic. Rar. t. 642. P. n. 1709; Hall. Hiſt. v. 3. 15. Filicula alpina criſpa; Bauh. Pin. 358. Segu. Veron. ſuppl. 55. t. 1. f. 3. Moriſ. ſect. 14. t. 4. f. 27. Felce creſpo ſaſſatile; Pon. Bald. 224, with a figure.)—Frond triply pinnate: leaflets linear-wedge-ſhaped, pinnatifid, confluent; their ſegments linear, obtuſe, emarginate.—Found on the alpine rocks of Carinthia, Switzerland, France, and the north of Italy. A very ſlender delicate fern, from ſix to ten inches high, ſmooth, bright green, ſometimes aſſuming a tawny hue. The *frond* is linear-lanceolate; the ultimate ſegments peculiarly narrow and linear, alternate, ſharply cloven at the end, but otherwiſe entire; tapering down into the linear bordered ſtalk, quite ſmooth and naked, ſingle-ribbed. Every ſegment bears one ſmall round maſs compoſed of a very few *capſules*, rather large in proportion, each having a ſhining ring. The *involucrum* is very thin, white, and membranous, repreſented by Wulfen and Jacquin as perfectly peltate, without any notch, and attached by a fine central thread. This would make the plant a moſt indubitable *Aſpidium.* But in our ſpecimens, from Jacquin himſelf, the *involucrum*, turned aſide by the ripe *capſules*, remains in the form of a thin concave or vaulted ſcale, or ſcales, attached laterally beneath them, as in ſome of our Britiſh *Cyatheæ*, without any peltate appearance. Unfortunately we have no fructification in a ſufficiently early ſtate to verify Wulfen's deſcription or Jacquin's figure. We rely on Seguier and Haller for Pona's, and conſequently Moriſon's, ſynonym, though the figure ſuggeſts ſome idea of *Cheilanthes ſuaveolens* of Swartz and Willdenow, which Pona's account of the blackiſh or dark-coloured hue of the *root*, and upper part of the *frond*, rather confirms. Seguier's plate, though deſtitute of fructification, is ſufficiently accurate, and cannot be diſputed.

A. *montanum.* Chervil Shield-fern. Swartz n. 91. Willd. n. 147. " Schkuhr Crypt. 61. t. 63." (Polypodium montanum; Lamarck Franc. v. 1. 23. Allion. Pedem. v. 2. 287. Hæncke in Jacq. Coll. v. 2. 46. P. myrrhidifolium; Villars Dauph. v. 3. 851. t. 53, excluding Plukenet's ſynonym. P. n. 1710; Hall. Hiſt. v. 2. 16.)—Frond ternate, pentagonal, triply pinnate: ſegments elliptic-oblong, obtuſe, ſlightly toothed at the end, decurrent.—Native of the mountains of Auſtria, the Tyrol, Switzerland, Italy, and France. The name given by Villars is infinitely preferable to the unmeaning one which this elegant ſpecies has been ſuffered to retain. It differs from all we have hitherto deſcribed of this ſection, in the pentagonal outline of the *frond.* The colour is a light green. Ultimate *leaflets*, or ſegments, not linear, but rather elliptical, very ſmall and delicate. *Sori* ſolitary on each ſegment or lobe, ſmall, globoſe, of rather numerous brown *capſules*, entirely covered, while young, with a white, pellucid, hemiſpherical *involucrum*, which turns gradually back, remaining attached, at one ſide, under the capſules, like half the cup of a true *Cyathea.*

A. *odoratum.* Scented Shield-fern. Willd. n. 146.—" Frond ternate, doubly pinnate: leaflets oblong, obtuſe, hairy, deeply ſerrated; ſerratures blunt, with two teeth. Root chaffy."—Gathered by M. Bory de St. Vincent, on rocks in the iſland of Mauritius. *Root* as thick as the thumb, ſpringing from the fiſſures of rocks, denſely clothed with brown, oblong-lanceolate, very long-pointed, entire, brown, chaffy ſcales, half an inch in length. *Stalk* three or four inches long, ſmooth. *Ribs* hairy. *Branches* of the *frond* four or five inches long. *Leaflets* linear, oblong, obtuſe, clothed on both ſides with ſhort hairs; their lower ſerratures moſtly with four teeth. *Willdenow.* The compoſition of the *frond* ſeems to agree with the laſt, as being ternate, a character we have not obſerved in any others. This ſtructure gives the whole a pentagonal ſhape, very different from the oblong or lanceolate figure of the greater part of this genus.

ASSIUT, in *Geography.* See SIOUT.

ASTELIA, in *Botany*, a name originally given by ſir Joſeph Banks and Dr. Solander, formed from α, *without*, and ϛηλις, *a little pillar*, becauſe of the want of a ſtyle, which diſtinguiſhes this genus from ſeveral of its natural allies.

—Brown Prodr. Nov. Holl. v. 1. 291.—Claſs and order, *Hexandria Trigynia.* Nat. Ord. between the *Aſphodeli* and *Junci* of Juſſ. *Brown.*

Gen. Ch. *Cal.* none, unleſs the corolla be ſo called. *Cor.* of one petal, in ſix deep, equal, ovate, half-membranous, permanent ſegments. *Stam.* Filaments ſix, awl-ſhaped, about the length of each ſegment, and inſerted into its baſe; anthers roundiſh, of two lobes. *Piſt.* Germen ſuperior, ovate, pointed; ſtyles none; ſtigmas three, obtuſe. *Peric.* Berry ovate, more or leſs perfectly three-celled. *Seeds* numerous, elliptic-oblong, ſomewhat triangular, poliſhed. *Receptacles* three, attached longitudinally to the coat of the berry. Some *flowers* have imperfect *ſtamens*, and others, on a ſeparate plant, an imperfect *piſtil.*

Eſſ. Ch. Calyx none. Corolla in ſix deep, equal, half-membranous ſegments, bearing the ſtamens. Styles none. Stigmas obtuſe. Berry ſuperior, with many *ſeeds.*

The habit of the plants of this genus reſembles TILLANDSIA, (ſee that article,) and they in like manner ſometimes grow on the living or dead trunks of trees. The *roots* are fibrous. Radical *leaves* imbricated in three rows, either linear-lanceolate, or ſword-ſhaped, keeled, furniſhed, on one or both ſides, with cloſe, compreſſed, ſhaggy hairs; their baſe with ſilky wool. *Stem* very ſhort or none, with few leaves. *Flowers* ſmall, ſilky externally, racemoſe, or panicled, rarely almoſt ſolitary; their partial *ſtalks* without a joint, and having each a ſolitary *bractea* at its baſe.

Mr. Brown thinks *Aſtelia* not nearly allied to any other genus, though ſomewhat approaching *Tillandſia.* The New Zealand plants, upon which ſir Joſeph Banks and Dr. Solander founded this genus, differ from the ſolitary ſpecies which grows in Van Diemen's iſland, in having a *berry* of three cells: two ſpecies moreover have a pitcher-ſhaped ſix-cleft *calyx*, (*corolla*, as we term it,) which in another is pulpy. Should the genus therefore be divided? MELANTHIUM *pumilum* (ſee that article n. 9.) appears to be an *Aſtelia. Brown.*

The learned author defines one ſpecies only.

A. *alpina.* Alpine Aſtelia. Br. n. 1.—"Leaves ſtraight, ſilky on both ſides. Cluſter divided in the lower part; its branches bearing few flowers. Berries oval, ſingle-celled. Flowers with ſix deep ſegments."—Gathered by Mr. Brown, on mountains in the iſland of Van Diemen.

To this we are enabled to add the following.

A. *Menzieſiana.* Many-flowered Aſtelia. — Leaves ſtraight; ſilky beneath. Stalk ſhaggy. Cluſters panicled, many-flowered. Berry ovate, three-celled. Flowers in ſix deep ſegments.—Gathered in the Sandwich iſlands, by Mr. Menzies, to whom we are obliged for a ſpecimen. The *leaves* are all nearly, or quite, radical, eighteen inches long, a half or three-quarters of an inch broad, taper-pointed, entire, ſtrongly ribbed; ſmooth and green above; pale, and ſilky with ſhining cloſe hairs, beneath. *Stalk* ſolitary, nearly as tall as the leaves, round, denſely clothed with pale, ſhaggy, ſhining wool; ſimple below; panicled at the top, with many hairy *cluſters*, each two or three inches long. Segments of the *corolla* hairy at the back. *Berries* the ſize of a currant, pointed, each containing ſeveral large, black, ſhining *ſeeds.*

To theſe are to be added the New Zealand ſpecies, not yet publiſhed, which, by Mr. Brown's remarks, appear to be at leaſt three in number; and probably alſo the above-mentioned *Melanthium.*

ASTEPHANUS, from α, *without*, and ϛεφανος, *a crown*, becauſe of the want of the crown to the ſtamens, uſual in this order.—Brown in Wern. Tranſ. v. 1. 54.—Claſs and order, *Pentandria Digynia.* Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla nearly bell-ſhaped; mouth and tube without ſcales. Crown of the ſtamens none. Anthers tipped with a membrane. Maſſes of pollen pendulous. Follicles . . . . .

Perennial, generally twining, plants, of ſouthern Africa, with oppoſite *leaves.* *Umbels* lateral, between the footſtalks. *Flowers* ſmall.

This genus is founded on *Apocynum triflorum* and *lineare*, Linn. Suppl. 169, with two new ſpecies in the Bankſian collection. *A. cordatum* and *lanceolatum*, Thunb. Prodr. 47, probably belong to it. The character is alſo modified ſo as to admit a very remarkable plant, found by Mr. Maſſon in the ſame country, whoſe *ſtem* is ſhrubby, with ſpineſcent branches; *leaves* extremely minute, oppoſite, diſtant, and heart-ſhaped. *Corolla* rather urceolate than bell-ſhaped; the orifice of the tube furniſhed with deflexed hairs. Maſſes of *pollen* fixed by their tapering ſummits. *Stigma* blunt. *Follicles* nearly cylindrical, ſmooth. The whole genus differs from MICROLOMA chiefly in the want of ſcales within the tube. Mr. Brown thinks they might be united, but this would lead to the junction alſo of METASTELMA, which being of Weſt Indian origin, he was unwilling to join it with Cape plants. We ſhould have thought the laſt objection might have been overruled by ſo near an agreement of character. See the two articles in queſtion.

ASTERABAD, in *Geography*, a ſmall province of the Perſian empire, ſometimes included in Mazanderan, which it reſembles in appearance, climate, and productions. It is the ancient Hyrcania; bounded on the W. by the Caſpian ſea; on the S. ſeparated by a lofty ridge of mountains from the diſtricts of Damgan and Biſtan; extending to the E. as far as longitude 58°, and divided from Daheſtan by the river Aſhor. The capital of the ſame name is ſituated near the mouth of the river Eſter, on a bay of the Caſpian ſea. E. of the capital, in which much treaſure is ſaid to be depoſited, and 25 furſungs from Biſtan, is the town of Jorjan, the ancient Hurkaun, from which the name Hyrcania may probably be derived. See ASTRABAD.

ASTROLOMA, in *Botany*, ſo called from αϛρον, *a ſtar*, and λωμα, *a fringe*, alluding to the five tufts of hair, which form a ſtar, near the bottom of the tube of the flower, internally.—Brown Prodr. Nov. Holl. v. 1. 538. (Vintenatia; Cavan. Ic. v. 4. 28.)—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Ericæ*, Juſſ. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, permanent, double; inner of five elliptic-lanceolate, acute, equal, erect leaves; outer of four or more, much ſhorter, concave, imbricated ſcales. *Cor.* of one petal, tubular; tube twice the length of the calyx, inflated, furniſhed on the inſide, near the baſe, with five tufts of ſoft hairs; limb in five deep, ſpreading, lanceolate, acute, hairy ſegments, ſhorter than the tube. Nectary a cup-ſhaped undivided gland, ſurrounding the baſe of the germen. *Stam.* Filaments five, linear, inſerted into the tube, and encloſed within it; anthers oblong, in the mouth of the tube. *Piſt.* Germen ſuperior, roundiſh, of five cells; ſtyle capillary, the length of the tube; ſtigma "globoſe, denſely downy." *Cavan.* *Peric.* Drupa globular, ſlightly juicy. *Seed.* Nut of five cells, hard and ſolid, not burſting, with a pendulous oblong kernel in each cell.

Eſſ. Ch. Outer calyx of ſeveral imbricated leaves. Corolla tubular; tube ſwelling, twice as long as the calyx, with five internal tufts of hair at the baſe; tube ſhorter, ſpreading, bearded. Filaments linear, within the tube. Drupa almoſt dry, of five cells.

This genus is very cloſely related to STENANTHERA, as well as to MELICHRUS. (See thoſe articles.) We might perhaps ſafely unite them all to STYPHELIA. The opinion of Mr. Brown, however, who has examined them in a freſh ſtate, deſerves all poſſible attention, and we have therefore followed his views of the ſubject. *Aſtroloma* conſiſts of ſhrubs, of humble ſtature, for the moſt part decumbent. *Leaves* ſcattered, often ciliated. *Flowers* axillary, erect. Six ſpecies are mentioned by this author, under the following characters.

1. A. *humifuſum*. Diffuſe Aſtroloma. (Vintenatia humifuſa; Cavan. Ic. v. 4. 28. t. 348.)—Stem proſtrate, much branched. Leaves linear-lanceolate, fringed with minute briſtles; ſlightly convex on the upper ſide.—Found in various parts of New Holland, on the ſouth-weſt coaſt, as well as at Port Jackſon, and in Van Diemen's iſland. We have not heard of this plant, nor any other of its genus, in the gardens of Europe. The *ſtems* are a foot, more or leſs, in length, round, ſpreading flat on the ground, and ſending up numerous, crowded, erect, ſhort, leafy *branches*. *Flowers* on the main ſtems and branches, axillary, ſolitary, ſeſſile, an inch long, of a fine crimſon, with a glaucous, ſomewhat roſe-coloured, *calyx*. *Drupa* nearly the ſize of a pea, reddiſh, ſmooth, almoſt concealed in the permanent calyx. The abbé Cavanilles dedicated this plant, as a diſtinct genus, to the honour of M. Ventenat, though he made a miſtake in its orthography. But there is another VENTENATIA, of which the reader may find an account in its proper place. The remaining five ſpecies have all been found in the ſouthern part of New Holland, by Mr. Brown, and apparently by no other botaniſt. We give their names and definitions from his work.

2. A. *proſtratum*. Proſtrate Aſtroloma.—Stem proſtrate, much branched. Leaves linear-lanceolate, fringed; flat above; rather convex beneath.—Seen with unexpanded flowers only, by Mr. Brown.

3. A. *denticulatum*. Toothed Aſtroloma.—Stem procumbent, or ſomewhat erect. Leaves lanceolate, flat, fringed, with hairs dilated at their baſe.

4. A. *pallidum*. Pale Aſtroloma.—Stem diffuſe, with aſcending branches. Leaves lanceolate, ſeſſile, fringed, imbricated; ſlightly concave on their upper ſide.

5. A. *compactum*. Compact Aſtroloma.—Stem diffuſe, with very ſhort aſcending young branches. Leaves obovato-lanceolate, fringed; rather concave on their upper ſide; tapering at the baſe into ſhort footſtalks.

6. A. *tectum*. Upright Aſtroloma.—Stem erect, ſomewhat branched. Leaves lanceolate-oblong, flat, imbricated; rough-edged; their teeth minute, very ſhort, obtuſe.

ATHENS, in *Geography*, l. 4, *r.* 478. Add—Alſo, a townſhip of Maine, in the county of Somerſet, with 374 inhabitants.—Alſo, a townſhip of Pennſylvania, in Lycoming county, having 759 inhabitants.—Alſo, a county of Ohio, containing 2790 inhabitants.—Alſo, a townſhip of the ſaid county, with 840 inhabitants.

ATHEROPOGON, in *Botany*, from αθηρ, *an awn*, and πωγων, *a beard*, alluding to the appearance of the flowers.—Muhlenb. in Willd. Sp. Pl. v. 4. 937. Gram. 287. Purſh 75.—Claſs and order, *Triandria Digynia*. (Polygamia Monoecia, Willd.) Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume of two valves, two-flowered; floret neuter. *Cor.* Glume of two valves; in the perfect floret the outer valve has three awns, and the latter is cloven; in the neutral one the outer valve is membranous, cloven, awned below the point, the inner has two awns. *Stam.* in one floret only, filaments three; anthers ſcarlet. *Piſt.* in the ſame flower only, germen oblong; ſtyles two; ſtigmas feathery. *Seed* ſolitary, oblong.

Eſſ. Ch. Calyx of two valves, two-flowered; one floret neuter. Corolla of two valves, the outermoſt with three awns: in the neutral floret both valves are awned.

1. A. *apludoides*. Reflexed Atheropogon. Willd. n. 1. Purſh n. 1.—Gathered by the late Rev. Dr. Muhlenberg, on gravelly hills, in Pennſylvania, flowering in September. *Root* perennial. *Stem* twelve or eighteen inches high, round, ſmooth, jointed in the lower part. *Leaves* lanceolate, very long; hairy at the baſe; their *ſheaths* downy, crowned with a *ſtipula*. *Cluſter* ſimple, erect, of about twenty alternate, diſtant, pendulous *flowers*, each on a ſhort partial ſtalk. *Anthers* of a vermilion hue. Willdenow attributes but one valve to the *calyx*, Muhlenberg two. Their deſcriptions are meagre. There is no reaſon for referring this genus to *Polygamia*, even according to the moſt ample ideas of that claſs, for the preſence of a neutral *floret* does not conſtitute its character, nor is perhaps any genus of graſſes in the *Triandria Digynia* quite exempt from ſuch.

ATHEROSPERMA, ſo named by the celebrated voyager M. Labillardiere, from αθηρ, *an awn*, and σπερμα, *ſeed*.—Labill. Nov. Holl. v. 2. 74.—Claſs and order, *Monoecia Monadelphia*. Nat. Ord. *Atheroſpermeæ*, Brown Bot. of Terra Auſtralis, 21.

Gen. Ch. Male, *Cal.* Perianth of one leaf, bell-ſhaped, with eight obtuſe marginal ſegments; the four alternate ones external and largeſt; the inner ones coloured. *Cor.* none. *Stam.* Filaments numerous, erect, inſerted into the baſe of the calyx, and much ſhorter than its limb, ſomewhat combined at the bottom, and accompanied by ſcales; anthers elliptical, attached by the back, erect, of two cells, each opening by a longitudinal valve from the baſe upwards.

Female, *Cal.* as in the male, with the addition of numerous, internal, acute, marginal ſcales. *Cor.* none. *Piſt.* Germens numerous, ovate, hairy; ſtyles ſolitary, thread-ſhaped, hairy; ſtigmas ſimple. *Peric.* none, except the permanent, enlarged, hardened calyx. *Seeds* as many as the germens, ſmall, oval, each crowned with its permanent feathery ſtyle.

1. A. *moſchata*. Nutmeg Atheroſperma. Labill. as above, t. 224.—Native of Cape Van Diemen, from whence we have ſpecimens from the author; with others from A. B. Lambert, eſq., gathered by general Groſe. A *tree*, twenty-five feet or more in height; the young branches ſquare, finely downy. *Leaves* oppoſite, on ſhort thick ſtalks, without *ſtipulas*, elliptic-oblong, acute, either quite entire, or with a few ſharp ſcattered teeth; ſmooth and beſprinkled with minute pellucid dots above; finely downy and hoary beneath, with a reddiſh mid-rib and ſlightly viſible veins. *Flowers* axillary, ſolitary, ſtalked, drooping, rather ſmall. *Bracteas* two, (*Involucrum* of Labillardiere,) cloſe to each flower, ovate, acute, concave, downy, deciduous. *Calyx* finely hairy; that of the fruit much enlarged, half an inch broad, hemiſpherical, clothed with denſe ſilky hairs, and filled like a baſon with feathery-tailed *ſeeds*, whoſe down reſembles that of a ſyngeneſious plant, and is not repreſented in the above figure. The dried *leaf*, like every other part, as far as we can examine, has a very ſtrong flavour of nutmegs, to which, and not to any muſky ſcent, the ſpecific name alludes. We have chiefly followed our author in the above deſcription, except a moſt important character, of the valvular *anthers*, borrowed from Mr. Brown, whoſe remarks in the following article will be found greatly to illuſtrate the preſent, and to render ſome future alterations neceſſary.

ATHEROSPERMEÆ, a new natural order, thus denominated from its leading genus. See the laſt article. Brown Bot. of Terra Auſtr. 21.

Flowers either ſeparated or united. *Calyx* of one leaf; its margin divided into a generally double row of ſegments, the innermoſt, ſometimes all of them, half petal-like (or internally coloured). There are alſo in the female, as well as in the united, flowers, ſmall, internal ſcales, at the baſe of theſe ſegments. *Corolla* none. *Stamens* in the male flowers numerous, inſerted into the bottom of the calyx, with acceſſory ſcales; in the united flowers they are fewer, and inſerted into the throat; *anthers* attached by the back, of two cells, each cell opening by a longitudinal valve, ſeparating from the baſe upwards. *Germens* one or more, generally an indefinite number, with a ſingle, erect germ; *ſtyles* ſolitary, occaſionally lateral, or from the baſe; *ſtigmas* ſimple. *Seeds*, (termed ſeed-like pericarps by Mr. Brown,) awned with the feathery ſtyles, and encloſed in the enlarged tube of the calyx; *embryo* erect, ſhort, in the bottom part of a ſoft fleſhy *albumen*. The ſeveral ſpecies are *trees*, with ſimple, oppoſite *leaves*, deſtitute of *ſtipulas*. *Stalks* axillary, ſingle-flowered.

Juſſieu it ſeems, Ann. du Muſ. v. 14. 116, has eſtabliſhed an order termed *Monimieæ*, in which *Atheroſperma* is included, along with *Pavonia* of Ruiz and Pavon, its near ally, and the *Ambora*, (ſee MITHRIDATEA,) *Monimia*, and *Ruiza*, which three laſt Mr. Brown conſiders as conſtituting the genuine order of *Monimieæ*, and therefore he has propoſed the above, of which a moſt eminent diſtinction is their having the valvular *anthers* of the LAURI. (See that article.) This ſeparation is confirmed by two New Holland plants evidently of the ſame family, but which have united *flowers*, a ſtructure not probable in *Monimieæ*. The place of *Atheroſpermeæ*, in a natural ſeries, is difficult to fix. Though ſo widely different, in moſt parts of their ſtructure, from *Lauri*, (now called *Laurinæ*,) they agree in *anthers*, and very remarkably with ſome of them in ſenſible qualities. *Pavonia* above-mentioned cannot, by Mr. Brown's account, be ſeparated from *Atheroſperma*, differing merely in the oblong form, and regular burſting, of its female calyx! Its qualities are the ſame.

ATKINSON, l. 3, *r.* in the year 1810, 556 inhabitants.

ATMOSPHERE, *Weight, &c. of the.* Col. 4, l. 3 from the bottom, for half an inch *r.* $\frac{1}{50}$th or .02 of an inch.

ATMOSPHERIC AIR, *Chemical Compoſition of.* See AIR.

ATOMIC THEORY, in *Chemiſtry.* This important theory, which has added new luſtre to chemiſtry by raiſing it to the rank of a mathematical ſcience, was entirely unknown when the earlier volumes of the Cyclopædia were publiſhed. The hiſtory of its origin and progreſs has been amply detailed in ſubſequent parts of the work, particularly under the articles PROPORTIONS, *Definite*, SIMPLE *Bodies*, and THEORY, *Atomic;* ſo that we have little left to add here, except a brief ſummary of ſome recent modifications ſuggeſted by Dr. Prout, and ſubſequently adopted by Dr. Thomſon. See an anonymous Eſſay on the relation between the Specific Gravities of Bodies in their gaſeous State, and the Weights of their Atoms, vols. vi. and vii. of Thomſon's Annals of Philoſophy.

The object of Dr. Prout in the above eſſay is to ſhew, 1ſt, that the theory of volumes ſuggeſted by Gay Luſſac, and adopted by Berzelius and ſome others, is abſolutely identical with Dalton's Theory of Atoms; and 2dly, that the ſpecific gravities of bodies in their gaſeous ſtate are all multiples of the ſame unit, which unit is conſidered as *hydrogen.*

Dr. Prout's eſſay is terminated very abruptly, and is evidently imperfect. The above views are not explicitly ſtated in the paper alluded to, though it is obvious they are what the author had in view; and as they have been recently adopted by Dr. Thomſon, in the new edition of his Syſtem of Chemiſtry, which may be viewed in the light of a national work, we conſider it our duty to lay a brief account of them before our readers.

The firſt of the above points attempted to be eſtabliſhed by Dr. Prout has been already diſcuſſed at ſome length in the articles PROPORTIONS, *Definite*, and THEORY, *Atomic.* Indeed, we believe it is very generally admitted by all thoſe chemiſts who have taken the pains to examine and think upon the ſubject. It is chiefly founded upon facts and reaſonings, which few at preſent affect to doubt, and of which the following is a ſummary. 1. Bodies unite together in certain definite proportions by *weight*, that is, certain weights of ſome bodies always combine with certain weights of other bodies. This conſtitutes the baſis of the *atomic theory*, or the theory of *definite proportions*, as ſome have choſen to term it. 2. Subſtances in a gaſeous ſtate have been demonſtrated to combine with reference to their *bulk* or *volume*, that is to ſay, one volume of one gas always combines with one or more ſimilar volumes of another, and not with any odd fractional parts. Moreover, the volume or bulk of the reſulting compound, if it happens to be a gas, always bears a ſimilar relation to the original volumes of its component gaſes. For theſe important laws we are indebted to Gay Luſſac, and they conſtitute the baſis of what has been denominated the *theory of volumes*. 3. It is univerſally admitted, that the *ſame* weights of the *ſame* reſulting compounds are formed when bodies unite in a gaſeous ſtate according to their *volume*, as when they unite in any other manner according to their weight; thus, for example, one volume (100 cubic inches) of muriatic acid gas will unite with one volume (100 cubic inches) of ammoniacal gas, and form the ſame weight of the ſame compound, (muriate of ammonia,) as if 39.183 grains (the abſolute weight of 100 cubic inches) of muriatic acid, united with 18.003 grs. (the abſolute weight of 100 cubic inches) of ammonia; the two numbers 39.183 and 18.003 being to one another as 1.278 : .5900, or as 37 : 17, the ſpecific gravities and the weights of the atoms of theſe two ſubſtances reſpectively. Such is a brief ſtatement of the facts; and it is argued that if the above data are correct, it follows irreſiſtibly from them that the *weights* of the *atoms* of bodies, are to one another as the ſpecific gravities of the ſame bodies in a ſtate of gas; and conſequently that the theory of volumes and the theory of atoms is one and the ſame thing, different ſets of numbers only being employed. Some apparent deviations from this law, which however cannot be by any means conſidered as exceptions, will be noticed hereafter.

With regard to the ſecond point contended for by Dr. Prout; namely, that the ſpecific gravities of all bodies in their gaſeous ſtate, or, in other words, the weight of their atoms are multiples of the ſame unit or hydrogen; it is partly founded upon experiment and reaſon, and partly (at preſent at leaſt) upon hypotheſis. The following is a ſummary of the grounds upon which the opinion has been formed.

1. The ſpecific gravity of ammoniacal gas, according to ſir Humphry Davy, is .590164, common air being 1.000; according to Biot and Arrago, it is a fraction greater:

hence Dr. Prout has fixed upon .5902 as the ſpecific gravity of this gas. The ſp. gr. of azote he aſſumes as .9722, common air being 1.000, for reaſons ſtated below. Now, as ammonia is known to be compoſed of one volume azote, and three volumes hydrogen, condenſed into two volumes, the ſpecific gravity of hydrogen, according to theſe data, muſt be .0694.

2. Atmoſpheric air is admitted to be univerſally compoſed of about 21 *per cent.* of oxygen, and 79 *per cent.* of azote, which ſo nearly correſponds with one volume of oxygen, and four volumes of azote, or 20 oxygen and 80 azote, that Dr. Prout has concluded that the above is its true compoſition, and conſequently that it is a real chemical compound. (See Air, *Atmoſpheric.*) Now the weight of the atom of oxygen being ſuppoſed to be 10, and that of the atom of azote 17.5, (Dr. Wollaſton makes it 17.54,) the ſpecific gravity of oxygen gas, according to theſe data, will be 1.1111, and of azote .9722. But theſe numbers are multiples of .0694 for $1.1111 \div .0694 = 16$, and $.9722 \div .0694 = 14$.

Such are two of the leading circumſtances ſtated in the above eſſay, which appear to have induced our author to examine further into the ſubject. For this purpoſe, he ſeems to have ſelected a certain number of ſubſtances, and to have inſtituted a ſeries of experiments on them, with the view of aſcertaining the truth of the opinions which he had been led to adopt. Theſe experiments are ſaid to have been numerous; but their reſults are ſtated in a very ſummary way, and in a manner certainly not very likely to carry conviction. The whole is afterwards arranged in tables, and there contraſted with the acknowledged reſults of other experimentaliſts, with the view of ſhewing how nearly they coincide with each other. Theſe tables will be found at the end of the preſent article, in an extended form, and comprehending all the new determinations of Dr. Thomſon. The near approach to whole numbers of the weights of the atoms of all theſe ſubſtances, which have been moſt carefully examined, and are beſt known, is certainly very ſingular, and muſt ſtrike every one who has paid attention to the ſubject. At the ſame time, no argument can be advanced againſt the opinion that certain relations exiſt among the combining weights or atoms of bodies; on the contrary, this opinion ſeems much more probable than that they have no connection and are entirely independent of one another.

With reſpect to the queſtion, whether the above opinion will ever be verified by actual experiment? it is difficult to determine. The differences in general aſſumed by Dr. Prout are ſo ſmall, that in the preſent ſtate of chemical analyſis they may be fairly ſaid to be within the limits of poſſible error; until, therefore, ſome more refined methods of experimental reſearch be diſcovered, we can ſcarcely hope the matter will be decided in this manner.

We mentioned above, that there are a few ſubſtances whoſe ſpecific gravity does not correſpond with the weight of their atom; thus the ſpecific gravity of oxygen, for example, is ſixteen times that of hydrogen, while its combining weight is only half or eight times that of hydrogen. This at preſent cannot be explained; but it is remarkable, that the ſpecific gravities are always ſome multiple of the weight of the atom. (See further on this ſubject under Theory, *Atomic.*) In the following tables will be found other examples of the curious circumſtance under conſideration.

We ſhall make no further obſervations at preſent, but adopt Dr. Prout's plan of throwing together in tables the great maſs of evidence on the ſubject, and leaving the queſtion to be decided by the impartial judgment of our readers.

In the firſt and ſecond columns of the following tables are given the ſpecific gravities and weights of the atoms of the different ſubſtances, ſuppoſing them to be in a gaſeous ſtate, hydrogen being 1; "and if," ſays Dr. Prout, "we ſuppoſe the volume to be 47.2135 cubic inches, the numbers will at the ſame time repreſent the number of grains this quantity of each gas will actually weigh." We may remark here, that if theſe views ſhould ever be eſtabliſhed, they afford an excellent rational ſtandard for weights, as compared with meaſures. Thus the cube of the pendulum, for example, vibrating ſeconds, might be the unit in volume of hydrogen, whoſe actual weight might be the unit in weight. Such a relation between weights and meaſures would be as general and immutable as the laws of nature themſelves, and be worthy of the enlightened age in which we live. In the third column are the corrected numbers, the atom of oxygen being ſuppoſed, according to Dr. Wollaſton, Dr. Thomſon, &c., 10 or 1: and in the fourth, the ſame, as obtained by experiment are ſtated to ſhew how nearly they coincide. The other columns will be ſufficiently underſtood from inſpection. The laſt column in the firſt table contains the numbers recently aſſigned by Mr. Brande to the elementary ſubſtances.

Table I.—Elementary Subſtances.

Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10 from Experiment.	Specific Gravity, Common Air being 1.000	Specific Gravity, Common Air being 1.000 from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Numbers lately aſſigned by Mr. Brande, Hydrogen being 1.
* Hydrogen	1	1	1.25	1.32	.06944	.073	2.118	2.230	1
* Carbon	6	6	7.5	7.54	.4166	——	12.708	——	5.7
? Boron	6	6	7.5	6.6	.4166	——	12.708	——	5.5
? Silicum	8	8	10.0	10.2	.5555	——	16.944	——	15
? Aluminum	10	10	11.25	——	.6944	——	21.180	——	15
Magneſium	12	12	15.0	15.6	.8333	——	25.416	——	11
? Phoſphorus	12	12	15.0	15.6	.8333	——	25.416	——	10
* Azote	14	14	17.5	17.54	.9722	.969	29.652	29.560	13
* Oxygen	16	8	10.0	10.0	1.1111	1.104	33.888	33.672	7.5
* Sulphur	16	16	20.0	20.0	1.1111	——	33.888	——	15
? Glucinum	18	18	22.5	——	1.2500	——	38.124	——	——
* Calcium	20	20	25.0	25.46	1.3888	——	42.360	——	19
* Sodium	24	24	30.0	29.1	1.6666	——	50.832	——	22
? Nickel	27	27	33.75	——	1.8740	——	57.186	——	55.5
* Iron	28	28	35.0	34.5	1.9440	——	59.302	——	——
? Chrome	28	28	35.0	35.0	1.9440	——	59.302	——	52
Manganeſe	28	28	35.0	——	1.9440	——	59.302	——	56.5
? Cobalt	29	29	36.25	——	2.0130	——	61.420	——	——
* Zinc	32	32	40.0	41.0	2.2222	——	67.777	——	33
? Yttrium	32	32	40.0	——	2.2222	——	67.777	——	——
* Chlorine	36	36	45.0	44.1	2.5006	2.483	76.248	——	33.5
? Zirconium	37	37	46.25	——	2.5694	——	78.366	——	45
? Arſenic	38	38	47.5	47.86	2.6388	——	80.484	——	——
* Potaſſium	40	40	50.0	49.1	2.7777	——	84.720	——	37.5
Strontium	44	44	55.0	55.07	3.0555	——	93.192	——	44.5
? Antimony	—	—	56.25	56.25	3.1250	——	95.310	——	85
? Cerium	46	46	57.5	——	3.1944	——	97.428	——	——
? Iridium	48	48	60.0	——	3.3333	——	101.664	——	——
? Molybdenum	48	48	60.	60.	3.3333	——	101.664	——	44
? Palladium	56	56	70.0	——	3.8888	——	118.604	——	——
Tin	59	59	73.75	73.5	4.0970	——	124.972	——	55
Copper	64	64	80.0	80.0	4.4444	——	135.555	——	60
* Barium	70	70	87.5	87.0	4.8611	——	148.260	——	65
Biſmuth	71	71	88.75	89.94	4.9300	——	150.378	——	66.5
? Tungſten	96	96	120.0	120.0	6.6666	——	203.333	——	——
Lead	104	104	130.0	129.5	7.2222	——	220.272	——	97
Silver	110	110	137.5	135.0	7.6380	——	232.980	——	102
? Rhodium	120	120	150.0	149.03	8.3333	——	254.160	——	——
* Iodine	120	120	150.0	156.21	8.3333	——	254.160	——	117
? Uranium	125	125	156.25	——	8.6800	——	264.750	——	——
? Platinum	181	181	226.25	——	12.5680	——	383.350	——	92
? Gold	198	198	248.75	249.68	13.7490	——	419.364	——	97
Mercury	200	200	250.0	250.0	13.8888	——	423.600	——	190

Thoſe ſubſtances marked thus * were contained in Dr. Prout's table. Thoſe marked thus ? will probably hereafter be found different; or at leaſt we are not certain if the numbers attached to them are accurate.

Table II.—Combinations with Oxygen.

Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10, from Experiment.	Specific Gravity, common Air being 1.000.	Specific Gravity, Common Air being 1.000 from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Elements by Volume.	No. of Vol. after Combination.	Elements by Weight.
Water - -	9	9	11.25	11.32	.625	.6896	19.062	21.033	.5 ox. + 1 hyd.	1	1 ox. + 1 hyd.
Carbonic oxyd -	14	14	17.5	17.54	.9722	.956	29.652	29.16	.5 ox. + 1 car.	1	1 ox. + 1 car.
Nitrous oxyd -	22	22	27.5	—	1.5277	1.614	46.596	49.227	.5 ox. + 1 az.	1	1 ox. + 1 az.
Common air -	14.4	36	45	—	1.000	1.000	30.5	30.5	.5 ox. + 2 az.	2.5	1 ox. + 2 az.
Euchlorine -	44	44	55	—	3.0555	2.409	93.192	73.474	.5 ox. + 1 chl.	1 ?	1 ox. + 1 chl.
Lime, &c. -	28	28	35	35.46	1.9444	—	59.304	—	.5 ox. + 1 cal.	—	1 ox. + 1 cal.
Carbonic acid -	22	22	27.5	27.54	1.5277	1.510	46.596	46.313	1 ox. + 1 car.	1	2 ox. + 1 car.
Nitrous gas - -	15	30	37.5	—	1.0416	1.0388	31.77	31.684	1 ox. + 1 az.	2	2 ox. + 1 az.
Sulphureous acid, &c.	32	32	40	—	2.2222	2.1930	67.777	66.89	1 ox. + 1 ſul.	1	2 ox. + 1 ſul.
Nitrous acid -	38	38	47.5	—	2.6388	2.427	80.484	74.0234	1.5 ox. + 1 az.	1	3 oz. + 1 az.
Sulphuric acid, &c.	40	40	50	50	2.7777	—	84.72	—	1.5 ox. + 1 ſul.	1 ?	3 oz. + 1 ſul.
Nitric acid - -	54	54	67.5	67.54	3.75	—	114.372	—	2.5 ox. + 1 az.	1 ?	5 ox. + 1 az.
Chloric acid -	76	76	95	—	5.277	—	160.968	—	2.5 ox. + 1 chl.	1 ?	5 ox. + 1 chl.
Iodic acid, &c. -	160	160	200	—	11.111	—	338.888	—	2.5 ox. + 1 iod.	1 ?	5 ox. + 1 iod.

The ſubdiviſions of the above Table include the different ſtates of oxydation of the different ſubſtances. A few only of the numbers of thoſe beſt known are introduced, as azote, &c., with the view, in the firſt place, of ſaving room; but more particularly becauſe they are little or altogether unknown, or, if known, may be eaſily obtained from the data given in Table I.

Table III.—Other Compounds, chiefly of Hydrogen.

Name.	Specific Gravity, Hydrogen being 1.	Weight of Atom, Hydrogen being 1.	Weight of Atom, Oxygen being 10.	Weight of Atom, Oxygen being 10, from Experiment.	Specific Gravity, Common Air being 1.000.	Specific Gravity, Common Air being 1.000, from Expt.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60.	Weight of 100 Cubic Inches. Barom. 30. Ther. 60. from Experiment.	Elements by Volume.	No. of Vol. after Combination.	Elements by Weight.
Carburetted hydrogen -	8	4	5	5.09	.5555	.5555	16.999	16.999	2 hyd. + 1 car.	1	2 hyd. + 1 car.
Olefiant gas - -	14	7	8.75	8.86	.9722	.9740	29.652	29.72	1 hyd. + 1 car.	.5	1 hyd. + 1 car.
Sulphuretted hydrogen - -	17	17	21.25	21.32	1.1805	1.177	36.006	35.89	1 hyd. + 1 ſul.	1	1 hyd. + 1 ſul.
Muriatic acid -	18.5	37	46.25	45.42	1.284	1.278	39.183	38.979	1 hyd. + 1 chl.	2	1 hyd. + 1 chl.
Hydriodic acid -	62.5	125	156.25	157.53	4.3402	4.3463	132.375	—	1 hyd. + 1 iod.	2	1 hyd. + 1 iod.
Ammonia - -	8.5	17	21.25	21.5	.5902	.5900	18.003	18.000	3 hyd. + 1 az.	2	3 hyd. + 1 az.
Phoſphuretted hydrogen - -	13	13	16.25	16.25	.9027	—	27.534	—	1 hyd. + 1 phoſ.	1	1 hyd. + 1 phoſ.
Cyanogen - -	26	26	32.5	32.52	1.8055	1.8064	55.068	—	2 car. + 1 az.	1	2 car. + 1 az.
Hydro-cyanic acid -	13.5	27	33.75	33.846	.9374	.9360	28.593	—	1 cya. + 1 hyd.	2	1 cya. + 1 hyd.
Chloro-cyanic acid -	31	62	77.5	—	2.1527	2.1111	65.659	—	1 cya. + 1 chl.	2	1 cya. + 1 chl.

ATRAGENE, in *Botany*, (ſee our former article,) a name adopted from Theophraſtus, whoſe αθραγενη, according to De Candolle, is probably our *Clematis Vitalba*. This genus is much reduced by the learned writer juſt named, who refers *A. japonica* and *alpina* to *Clematis*, *A. capenſis* and *tenuifolia* to ANEMONE. (See that article.) The only remaining ſpecies is *A. zeylanica*, which De Candolle retains as a genus by itſelf, under the new name of *Naravelia*, taken from *Narawael* of Herm. Zeyl. 26, one of its ſynonyms. But this being a Linnæan *Atragene*, and the only one which remains, that name muſt, by every principle and right, remain with it, eſpecially as it is diſtinguiſhed from *Clematis* by the original generic character of *Atragene*. A figure of this plant is given in Roxb. Coromand. v. 2. 47. t. 188.

ATRIPLICES, the twenty-ninth natural order in Juſſieu's ſyſtem, the ſixth of his ſixth claſs, whoſe characters are given under LAURI. Mr. Brown, Prodr. Nov. Holl. v. 1. 405, adopts, from De Candolle, the appellation of *Chenopodeæ* for this order, for which we have diſcovered no reaſon, *Atriplex* being as well-known a genus, and as expreſſive a type of the order, as *Chenopodium*. The characters are as follows.

Calyx of one leaf, often deeply divided. *Stamens* definite, inſerted into the bottom of the calyx. *Germen* ſolitary, ſuperior; ſtyle either ſingle, or wanting, or for the moſt part manifold, of a determinate number; ſtigmas one, rarely two, to each ſtyle. *Seeds* ſolitary, (numerous in *Phytolacca*, two in *Galenia*,) either naked, or covered by the calyx, which thus becomes, in a manner, ſuperior; or incloſed in a pulpy, or a capſular, pericarp. *Corculum* ſurrounding a farinaceous maſs. *Stem* in numerous inſtances herbaceous, in ſome ſhrubby. *Leaves* moſtly alternate, ſometimes oppoſite. *Stamens* occaſionally in ſeparate flowers from the *piſtils*.

Sect. 1. *Fruit pulpy.*

Phytolacca, *Rivina*, *Salvadora*, and *Boſea*; the laſt ſuſpected to be more akin to the *Rhamni*.

Sect. 2. *Fruit capſular.*

Petiveria; *Polycnemum*; *Camphoroſma*; and *Galenia*: not without ſome doubts reſpecting the two laſt.

Sect. 3. *Seed covered by the calyx. Stamens five.*

Baſella; *Anredera*, Juſſ. which is Fegopyrum ſcandens, &c., Sloane Jam. v. 1. 138. t. 90. f. 1; *Anabaſis*; *Caroxylum*, Thunb.; *Salſola*; *Spinacia*; *Acnida*; *Beta*; *Chenopodium*; and *Atriplex*.

Sect. 4. *Seed covered by the calyx. Stamens fewer than five.*

Crucita; *Axyris*; *Blitum*; *Ceratocarpus*; and *Salicornia*.

Sect. 5. *Seed not covered by the calyx.*

Coriſpermum only.

This order is analogous to the *Holeraceæ* of Linnæus, though many extraneous things are referred to the latter.

Mr. Brown aſſerts that the *Atriplices*, or *Chenopodeæ* are not diſtinguiſhable by any character from the AMARANTHI, (ſee that article,) though different in habit, and differing from the *Illecebreæ*, (by which is meant Juſſieu's third ſection of *Amaranthi*,) in the want of *ſtipulas*. The inſertion of the ſtamens into the calyx, according to this accurate obſerver, is not abſolutely conſtant, nor are the *Amaranthi* all free from that inſertion. Yet on this mark the diſtinction is founded, not merely between theſe two neighbouring orders, but between the ſixth and ſeventh claſſes of Juſſieu, which thus run into each other. We do not mean, by pointing out theſe intricacies of Nature, which render it ſo difficult for us to ſubmit her to human regulations, to throw needleſs difficulties in the way of thoſe, who attempt this arduous taſk by other means than we ourſelves purſue. We merely remind them of our common fallibility, and recommend patient inveſtigation, with mutual aſſiſtance, in the place of dogmatical aſſumption and invidious criticiſm.

ATTELABUS, col. 2, l. 1, for are *r.* is; l. 23, *dele* which ſee reſpectively, and add—One of the principal ſpecies is A. *Coryli*, a ſmalliſh inſect found in hazel-trees, black, with red wing-ſheaths, uſually meaſuring about a quarter of an inch in length. A much ſmaller ſpecies is the A. *Betulæ*, altogether black, and remarkable for gnawing the leaves of that tree in the early part of ſpring; ſo that they appear notched on the edges. The A. *Apiarius* is an elegant ſpecies, deriving its name from the injury which its larva does in bee-hives by deſtroying the young. See APIARIUS.

ATTER *of Roſes*. See *Eſſence of* ROSES.

ATTLEBOROUGH. Add—It contains 2716 inhabitants.

ATTRACTION *of Mountains*, col. 2, l. 50, *r.* 4364,4; l. 51, for 43″ *r.* 42″.94.

AVA, l. 1, *r. Aungwa*.

AUBENAS, l. 3, for Coiron *r.* Privas.

AVERILL, in *Geography*, a townſhip of America, in Vermont and county of Eſſex, having nine inhabitants.

AUGUST, a gold coin of Saxony, of which are double, ſingle, and half auguſt d'ors, reckoned at 10, 5, and 2½ rix dollars: 35 ſingle auguſts weigh a Cologne mark of gold 21 carats 8 grains fine.

AUGUSTA, in *Geography*, a town of the diſtrict of Maine, in the county of Kennebeck, containing 1805 inhabitants.

AUGUSTA, a county of Virginia, l. 4, *r.* 14,308, and 2880 ſlaves.

AULAX, in *Botany*, from αυλαξ, *a furrow*, alluding to the chink in each petal containing one of the ſtamens.—Berg. Cap. 33. Brown Tr. of Linn. Soc. v. 10. 49. Ait. Hort. Kew. v. 5. 373.—Claſs and order, *Dioecia Tetrandria*. Nat. Ord. *Proteaceæ*, Juſſ. Brown.

Eſſ. Ch. Male, Flowers diſtinct. Calyx none. Petals four, bearing the ſtamens. Piſtil imperfect.

Female, Flowers aggregate. Calyx none. Petals four, bearing imperfect ſtamens. Stigma oblique. Nut expoſed, tumid, bearded.

1. A. *pinifolia*. Pine-leaved Aulax. Berg. n. 1. Br. n. 1. Ait. n. 1.

Male. Protea pinifolia; Linn. Mant. 187. Willd. Sp. Pl. v. 1. 515. Andr. Repoſ. t. 76.

Female. P. bracteata; Thunb. Diſſ. n. 24. t. 1. Linn. Suppl. 118. Willd. Sp. Pl. v. 1. 517.

Leaves thread-ſhaped, channelled.—Native of hills near the Cape of Good Hope. A *ſhrub* one or two feet high, with round, red, leafy branches. *Leaves* numerous, ſcattered, ſimple, undivided, ſmooth, ſlender, ſpreading every way, two or three inches long. *Flowers* yellow; the male in ſeveral long cluſters, forming a terminal leafy umbel; female in a denſe ſolitary head.

2. A. *umbellata*. Umbellate Aulax. Br. n. 2. Ait. n. 2.

Male. Protea aulacea; Thunb. Diſſ. n. 33. t. 2. Willd. Sp. Pl. v. 1. 520.

Female. P. umbellata; Thunb. Diſſ. n. 34. Linn. Suppl. 118. Willd. Sp. Pl. v. 1. 520. Andr. Repoſ. t. 248.

Leaves linear-ſpatulate, flat.—Native of hills at the Cape of Good Hope. A *ſhrub* two or three feet high, with bright-green, bluntiſh, ſmooth *leaves*. *Flowers* yellowiſh, terminal; the male in ſhortiſh blunt cluſters; female in a ſolitary whitiſh head, encompaſſed with long, narrow, yellow, radiating *bracteas*.

Both theſe are green-houſe plants in England, flowering in the latter part of ſummer. The ſecond is ſaid to be the moſt hardy.

AVOLA, l. 4, for minor *r.* major.

AVON, in *Geography*, a townſhip of America, in the diſtrict of Maine and county of Somerſet, having 304 inhabitants.

AURA, in *Ornithology*, l. 5, *r.* Ulloa.

AURANTIA, in *Botany*, a well-marked natural order, comprehending the Orange tribe and its allies, as the name expreſſes. Juſſieu is the author of this order, the ſeventieth in his arrangement, or the tenth of his thirteenth claſs; nor are there any traces of it among the *fragmenta* of Linnæus. For the characters of this important thirteenth claſs, we refer the reader to Gerania, and proceed to define the order in queſtion.

Calyx of one leaf, often deeply divided. *Petals* definite, broad at the baſe, inſerted around a diſk on which the germen is placed. *Stamens* placed upon the ſame diſk, definite, or more rarely indefinite, their filaments either diſtinct, or combined in one or more parcels. *Germen* one; ſtyle one; ſtigma ſimple, or rarely divided. *Fruit* moſtly pulpy, ſometimes capſular, of one or many cells, with one or two *ſeeds* in each. *Corculum* ſtraight, aſcending, deſtitute of albumen. *Stem* arboreous or ſhrubby. *Leaves* alternate, ſimple, or, in ſome few inſtances, compound.

Sect. 1. *Fruit with only one ſeed.* The leaves of this ſection are not marked with reſinous dots, and hence the plants are termed ſpurious *Aurantia.* Except *Ximenia*, their affinity to this order is by no means apparent, in any degree, to us.

Ximenia; Heiſteria; and *Fiſſilia* a genus of Commerſon's, whoſe identity with *Olax* we have already indicated in its proper place. See Fissilia.

Sect. 2. *Fruit many-ſeeded, pulpy.* Theſe are genuine *Aurantia*, having the leaves full of pellucid reſinous dots.

Chalcas, which is not only, as Juſſieu ſuſpected, the ſame genus, but the very ſame ſpecies with *Murraya; Bergera; Murraya; Cookia* of Sonnerat; *Citrus;* and *Limonia.*

Sect. 3. *Fruit many-ſeeded, capſular.* Leaves not dotted. Genera akin to *Aurantia* and to *Meliæ.*

Ternſtromia, of Mutis, with *Tonabea* of Juſſieu, which is the very ſame genus, are here prefixed to *Thea* and *Camellia;* but ſurely they have little relationſhip to the true *Aurantia*, either in their habit or fructification. They form an order by themſelves, and there is ſo much connection between their ſtamens and the corolla, as might remove this order to Juſſieu's ninth claſs, where it would very naturally follow his *Guaiacanæ*, if not abſolutely reducible to that very family, at leaſt to its ſecond ſection.

That Linnæus had formed no conception of any order analogous to the genuine *Aurantia*, is evident, from his having referred *Citrus* to a ſection of the *Bicornes*, and having left *Limonia* undetermined, though ſo naturally and evidently akin to *Citrus.* He had even introduced *Garcinia*, with a mark of doubt indeed, into the ſame ſection of *Bicornes;* but expunged it in manuſcript, giving its oppoſite leaves as a reaſon. By that character, and indeed every other, *Garcinia* anſwers to Juſſieu's *Guttiferæ*, a natural order which, however ſtriking and important, likewiſe eſcaped the ſagacity of Linnæus.

AURELIUS, in *Geography*, l. 1, for military *r.* poſt; l. 2, for Onondago *r.* Cayuga; l. 5, for 1796 *r.* 1810, and for 123 *r.* 323. Add—The number of inhabitants, who are principally employed in agriculture, is 4642, and this capital of Cayuga county ranks the third in population and wealth of the county, and has three poſt-offices.

AURORA, a townſhip of Ohio, in the county of Portage, containing 189 inhabitants.

AUSTIN, a townſhip of Ohio, in the country of Trumbull, containing 440 inhabitants.

AUTOGRAPHUM. See Writing-*Machine.*

AUTOMALITE. See Ruby and Mineralogy, *Addenda.*

AXIA, in *Botany*, from αξιος, *valuable*, alluding to its medical virtues and high eſtimation.—Loureir. Cochinch. 35. Vahl Enum. v. 2. 38.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Nyctagines*, Juſſ.?

Gen. Ch. *Cal.* Perianth ſuperior, of three ſhort, acute, unequal, deciduous leaves. *Cor.* of one petal, bell-ſhaped, very ſmall, its border in ten flat, ſhort, rounded, equal ſegments. *Stam.* Filaments three, capillary, the length of the corolla; anthers of two globular lobes. *Piſt.* Germen inferior, ovate, furrowed; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma thickiſh. *Peric.* none. *Seed* ſolitary, ovate, furrowed, hairy.

Eſſ. Ch. Calyx three-cleft, ſuperior, deciduous. Corolla of one petal, with ten ſegments. Seed ſolitary.

1. A. *cochinchinenſis. Nhon ſâm phu yen.* of the Cochinchineſe.—Native of Cochinchina, nor did Loureiro ever meet with this plant elſewhere. It is almoſt as much eſteemed as *Gin-ſeng*, as a warm ſtrengthening medicine, promoting expectoration and the various ſecretions, uſeful in intermittent fevers, indigeſtions, &c. The *ſtem* is ſhrubby, procumbent, with many knotty branches, extending about two feet. *Root* tapering. *Leaves* oppoſite, unequal, ſmall, ovato-lanceolate, ſlightly crenate, downy. *Flowers* ſmall, variegated with red and white, in nearly terminal cluſters.

AYA-PANA, a South American plant of the genus Eupatorium, (ſee that article,) of which an account is given in the Bulletin des Sciences, n. 67. 147, as peculiarly efficacious againſt the poiſon of ſerpents, on which account it is much cultivated in the iſland of Mauritius, and in Cayenne. The bruiſed leaves are ſaid to cure the ſting of a ſcorpion, and that of a poiſonous fiſh, named *laſt.* An infuſion of the herb has proved uſeful in dropſy, as well as in ſyphilitic diſorders. This plant has been cultivated in the ſtoves at Paris, but we have heard nothing of it in England.

AYMOUTH. See Eymouth, *dele.*

AZOLLA, in *Botany*, an unexplained name.—Lamarck Dict. v. 1. 343. Illuſtr. t. 863. Willd. Sp. Pl. v. 5. 541. Purſh 672. Juſſ. 17, under Salvinia. Brown Prodr. Nov. Holl. v. 1. 166. Bot. of Terra Auſtr. 79.—Claſs and order, *Cryptogamia Filices.* Nat. Ord. *Filices*, Linn. Juſſ. Rhizoſpermæ; Roth. De Cand. *Marſileaceæ*, Brown.

Gen. Ch. Male, in pairs, encloſed in a ſingle-leaved, membranous, cloſe *involucrum*, (occaſionally ſolitary under the female,) ovate, of two cells, their outer covering burſting tranſverſely; *upper cell* containing nine or ſix angular bodies, inſerted around a tubular axis, which finally opens at the ſummit; *lower cell* ſpherical, cloſed by a double membrane, and filled with a fluid, which may perhaps change to a powder.

Female, axillary, on the ſame plant, ſolitary (ſometimes accompanied underneath by a ſolitary male). *Involucrum* double, both cloſed, membranous; the *outer* like that of the male flowers; *inner* ovate, without valves, containing numerous *capſules*, without valves, attached by capillary ſtalks to a common *receptacle*, originating from the baſe of the involucrum. *Seeds* from ſix to nine, angular, with exterior radicles.

Eſſ. Ch. Male, ovate, of two cells, ſeparating tranſverſely; the upper containing ſeveral angular, ſtalked bodies.

Female on the ſame plant, capſules numerous, ſtalked, globoſe, of one cell and one valve, in an ovate, cloſe involucrum. Seeds ſeveral, angular.

1. A. *filiculoides*. South-American Azolla. Lamarck n. 1. t. 863. (A. magellanica; Willd. n. 1. Muſcus ſquamoſus aquaticus elegantiſſimus; Feuill. Voy. v. 3. 43. t. 35. Dill. Muſc. 335. t. 43. f. 72.)—Frond pinnate. Leaflets all papillary. Roots ſmooth.—Found by Feuillée in Peru; by Mr. Menzies in Chili; in watery places; and at the ſtraits of Magellan by Commerſon. This is a little floating moſſy plant, reſembling a *Jungermannia*, an inch or two long, alternately pinnate, with ſmall, imbricated, ovate, fleſhy *leaves*, clothed externally with papillary hairs, and membranous at the edges. The *roots* are long, ſlender, ſmooth and naked, dark brown. No fructification has been diſcovered in this ſpecies.

2. A. *pinnata*. Triangular Pinnate Azolla. Br. n. 1. Bot. of Terra Auſtr. 79. t. 10.—Frond pinnate, triangular. Upper leaflets papillary. Roots longitudinally feathery.—Gathered by Mr. Brown, in lakes and ponds, at Port Jackſon, New South Wales. A little floating plant like the foregoing. *Roots* axillary, ſolitary, perpendicular, unbranched, pellucid, hooded at the point when young, at firſt ſight quite ſimple, but under a magnifier they appear feathery about the middle part. *Frond* half an inch long. *Branches* two-ranked, alternate, crowded. *Leaves* alternate, imbricated every way; thoſe on the upper ſide of each branch ovate, ſomewhat angular, cellular, thick, often reddiſh, rough on the upper ſurface with papillary tubercles; thoſe on the under ſide thinner, ſmooth, and leſs angular. *Flowers* on the under ſide of the frond, ſeſſile, ſolitary at the baſe of each branch.

Mr. Brown ſeems to think the true *pollen* of this curious genus originates in the watery or turbid fluid, which he once found changed to powder, and which may be diſcharged through the tube above, whoſe angular appendages, once ſuſpected to be *anthers*, (ſee his *Prodr.*) may by preſſure facilitate its ejection, whether in a watery or powdery ſtate.

3. A. *rubra*. Red Orbicular Azolla. Br. n. 2.—Frond orbicular; lobes palmate; their ſubdiviſions undivided or cloven. Upper leaves ſmooth. Roots feathery beyond the middle.—Gathered by Mr. Brown, at Port Jackſon, as well as in Van Diemen's iſland. The fructification has eſſentially the ſame ſtructure of that of *A. pinnata*, except the angular bodies of the upper cell being only ſix, not nine. *Brown.*

4. A. *caroliniana*. Carolina Azolla. Willd. n. 2. Purſh n. 1.—"Leaves imbricated, ovate-oblong, obtuſe, ſpreading; red underneath."—Found by Richard, in Carolina; by Purſh floating on the waters of lake Ontario. We know nothing more of this ſpecies; and as thoſe who have deſcribed it were unacquainted with the fructification, as well as with Mr. Brown's ſpecific definitions, the above character requires reviſion.

AZORELLA, Lamarck Dict. v. 1. 344. Illuſtr. t. 189. Juſſ. 226. 453. See CHAMITIS, as well as BOLAX hereafter.

AZOTE, in *Chemiſtry*. The ſpecific gravity of azote, according to the moſt recent determinations, is .9722, and 100 cubic inches of it will weigh, at a mean temperature and preſſure, 29.652 grains. Biot and Arrago make its ſpecific gravity .9691, and Lavoiſier .978. See ATOMIC *Theory*.

A new compound of chlorine and azote was diſcovered a few years ago, which, from its remarkable properties, deſerves to be deſcribed here.

This compound ſeems to have been firſt noticed by M. Dulong in 1812; but this chemiſt, on account of two ſevere accidents which happened to him in the courſe of his experiments, did not complete the inveſtigation of its properties, nor publiſh any thing on the ſubject. Sir H. Davy was informed of the diſcovery of the ſubſtance ſoon after, but not of the method of preparing it. Chancing, however, to hear from Mr. Children, that Mr. Burton of Cambridge had procured an oily ſubſtance by paſſing a current of chlorine through a ſolution of nitrate of ammonia, he was enabled to prepare the compound in queſtion, and inveſtigate its properties.

Chloride of azote may be prepared by placing a jar of chlorine gas over a ſolution of nitrate or muriate of ammonia, heated to about 110°. The gas is ſlowly abſorbed, and an oily-like matter collects at the bottom of the veſſel, which is the ſubſtance in queſtion. Care muſt be taken not to collect at one time more than a globule or two, as it explodes with prodigious violence from the ſlighteſt cauſe. Its colour cloſely reſembles that of olive-oil. It is tranſparent: its ſmell is ſtrong and peculiar, though it is not ſo diſagreeable nor injurious to the lungs as chlorine. It is very volatile, and ſoon diſappears when left in the open air. At 160° it may be diſtilled over without danger, but is partially decompoſed. The temperature of 200° only occaſions it to evaporate faſter, but when heated to 212° it explodes with amazing force. In a vacuum it is converted into vapour, but again aſſumes the liquid form when the preſſure of the air is reſtored. This vapour, if heated ſufficiently, explodes with as much violence as the liquid itſelf. The ſp. gr. of the chloride of azote is 1.653. It does not become ſolid on expoſure to cold. When left in water it ſpeedily diſappears, and azotic gas eſcapes. In ſtrong muriatic acid, chlorine eſcapes, and muriate of ammonia remains in ſolution. When brought in contact with phoſphorus, oils, and many other ſubſtances, it explodes with very great violence. Metals, reſins, ſugar, and moſt of the gaſes, do not cauſe it to explode. The experiments of ſir H. Davy on the compoſition of this curious ſubſtance render it probable, in Dr. Thomſon's opinion, that it is compoſed of one volume or atom of azote, and four volumes or atoms of chlorine.

Azote has likewiſe the property of forming an analogous compound with *iodine*. (See IODINE, and SIMPLE *Bodies*.) The celebrated chemiſt Berzelius ſtill, we believe, maintains the opinion, that azote is a compound of oxygen and an unknown ſubſtance, which he denominates *nitricum;* and a laborious ſet of experiments was ſome time ago publiſhed by Mr. Miers, to ſhew that this unknown ſubſtance is nothing but *hydrogen*. Chemiſts in general, however, do not at preſent acquieſce in either of theſe opinions, but conſider azote as an elementary ſubſtance.

For the combinations of azote with oxygen, ſee ATOMIC *Theory*, NITRIC *Acid*, *&c.* and PROPORTIONS, *Definite*.

AZUMBRE, a liquid meaſure in Spain. See ARROBA, *Addenda*.

B.

BABIANA, in *Botany*, an unexplained name. Can it allude to the Syrian Venus, *Babia?* Or does it acknowledge the baſer etymology of *Papio*, a Baboon, becauſe thoſe animals perhaps eat the roots? (See the 8th ſpecies.) —Ker in Sims and Kon. Ann. of Bot. v. 1. 233. Dryandr. in Ait. Hort. Kew. v. 1. 104.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Irides*, Juſſ.

Gen. Ch. *Cal.* Spatha inferior, large, of two valves; the inner valve deeply cloven, with an intermediate pellucid membrane. *Cor.* of one petal, ſuperior; tube funnel-ſhaped, longer than the ſpatha; limb ſhorter than the tube, in ſix deep, uſually regular and nearly equal ſegments, ſometimes very irregular. *Stam.* Filaments three, thread-ſhaped, inſerted into the mouth of the tube, erect, much ſhorter than the limb; anthers oblong, incumbent. *Piſt.* Germen roundiſh; ſtyle thread-ſhaped, rather longer than the tube; ſtigmas three, ſpreading, obtuſe, undivided. *Peric.* Capſule roundiſh-ovate, coriaceous, unequally tumid, of three cells and three valves. *Seeds* numerous, globoſe, pulpy, tapering at the baſe, at length corrugated, and deformed by mutual preſſure.

Eſſ. Ch. Spatha of two valves; the innermoſt deeply divided. Corolla tubular; limb in ſix deep ſegments. Stigmas three, ſpreading. Seeds pulpy.

1. B. *Thunbergii*. Many-ſpiked Babiana. Ker n. 2. Ait. n. 1. (Antholyza plicata; Thunb. Prodr. 7. Fl. Cap. v. 1. 169. Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 223.)—Leaves many-ribbed, finely downy as well as the ſtalks and ſheaths. Corolla ringent.—Native of ſandy plains near the ſea, below *Verlooren Valley*, at the Cape of Good Hope, flowering in October. *Thunberg*. Mr. Maſſon ſent this ſpecies, in 1774, to Kew, where it flowers in April. *Bulb* deep in the ground. *Leaves* radical, equitant, acute, with ſome principal, yellow, and many intermediate green ribs; minutely downy on both ſides, with ſoft prominent hairs. *Stalk* radical, taller than the leaves, a foot high, zigzag, denſely clothed with fine ſoft hairs, and divided into about half a dozen alternate, ſpiked, many-flowered branches. *Flowers* crimſon, two inches long, crowded, erect.

2. B. *ringens*. Gaping Babiana. Ker n. 1. Ait. n. 2. (Antholyza ringens; Linn. Sp. Pl. 54. Willd. Sp. Pl. v. 1. 223. Thunb. Prodr. 7. Fl. Cap. v. 1. 167. Gladiolo æthiopico ſimilis; Comm. Hort. v. 1. 81. t. 41. Rudb. Elyſ. v. 2. 237.)—Leaves many-ribbed, ſmooth. Stalk downy. Corolla ringent.—Found in low ſandy fields, often by the way ſide, in many places about the Cape of Good Hope, flowering from July to September. Not at preſent in the gardens, as far as we could ever learn; or at leaſt we never heard of its flowering. Not ſo tall as the preceding, nor ſo much branched, but the *flowers* are larger and more handſome, remarkably widely ringent, with one *ſtamen* far removed from the other two.

3. B. *nervoſa*. Four-ribbed Babiana. (Antholyza nervoſa; Thunb. Prodr. 7. Fl. Cap. v. 1. 164.)—Leaves ſmooth, with four ſtrong, prominent ribs. Stalk ſmooth. Spike oblong, two-ranked. Corolla ringent.—Native of the Cape of Good Hope. *Leaves* three or four, acute, ſmooth, with four yellowiſh, elevated ribs, erect, about a foot high. *Stalk* as tall as the leaves. *Flowers* fleſh-coloured, drooping, crowded into an ovate, rather abrupt, ſpike; their lower lip rather the ſhorteſt, reflexed. There can ſurely be no doubt reſpecting the genus of this plant.

4. B. *tubiflora*. Long-tubed Babiana. Ker n. 3. Ait. n. 3. Ker in Curt. Mag. t. 847. (Gladiolus tubiflorus; Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 219. Thunb. Diſſ. n. 23. t. 2. f. 2. Fl. Cap. v. 1. 210. Jacq. Ic. Rar. t. 266. G. inclinatus; Redoubt. Liliac. t. 44.)

β. Ker in Curt. Mag. t. 680. (G. tubatus; Jacq. Ic. Rar. t. 264. Willd. Sp. Pl. v. 1. 219. Redout. Liliac. t. 261. G. longiflorus; Andr. Repoſ. t. 5.

γ. Ker ibid. (G. tubati varietas; Jacq. Ic. Rar. t. 265.)

Leaves ribbed, plaited, downy, taller than the downy ſtalk. Tube of the corolla ſlender-clubſhaped, thrice as long as the irregular nearly equal limb, whoſe upper ſegment is divaricated.—Native of Svartland, at the Cape of Good Hope, flowering from Auguſt to October. The *leaves* vary greatly in length, but are more or leſs elliptic-oblong, and taller than the oblique *ſtalk*, whoſe height is from one to ten inches. *Spike* ſolitary, ſimple. *Sheaths* lanceolate, downy. *Corolla* white, with a crimſon ſpot on each of the three lower ſegments; its tube ſometimes reddiſh, varying in thickneſs, but always about three inches long.

5. B. *ſpathacea*. Stiff-leaved Babiana. Ker n. 4. Ait. n. 4. Ker in Curt. Mag. t. 638. (Gladiolus ſpathaceus; Thunb. Diſſ. n. 25. Fl. Cap. v. 1. 208. Linn. Suppl. 96. Willd. Sp. Pl. v. 1. 221.)—Leaves plaited, rigid, pungent, ſomewhat downy. Tube of the corolla thread-ſhaped, twice as long as the regular limb. Sheaths tumid, pointed, ſmooth.—Found in dry ſituations above the Cape of Good Hope, in Bockland, and Hantum, flowering in October and afterwards. *Thunberg*. *Leaves* linear-lanceolate; thoſe of old plants often naked; their baſe tapering into long *footſtalks*, dilated downward. *Stalk* varying in height, from four inches to near three feet. *Spike* many-flowered. *Spathas* much inflated, with beaked points. *Tube* very

ſlender. *Limb* pale blueiſh purple, with elliptic-oblong, nearly equal ſegments, an inch long; three alternate ones bluntiſh, with a point; three lowermoſt marked with white and violet.

6. B. *ſambucina*. Elder-ſcented Babiana. Ker n. 12. Ait. n. 5. Ker in Curt. Mag. t. 1019. (Gladiolus ſambucinus; Jacq. Hort. Schoenbr. v. 1. 7. t. 15. Vahl Enum. v. 2. 117.)—Leaves ſcarcely downy. Stalk ſmooth. Tube hardly longer than the downy, pointed ſpatha; throat cylindrical; ſegments of the limb nearly equal and uniform, keeled.—Imported from the Cape, by George Hibbert, eſq. in 1799. About a ſpan high, with large, violet-coloured, very ſweet-ſcented *flowers*, each of whoſe ſegments, above an inch long, has a darker violet keel, or mid-rib.

7. B. *ſulphurea*. Pale Babiana. Ker n. 5. Ait. n. 6. Ker in Curt. Mag. t. 1053. (Gladiolus ſulphureus; Jacq. Ic. Rar. t. 239. Vahl Enum. v. 2. 99. G. plicatus; Andr. Repoſ. t. 268.)—Leaves downy, ſhorter than the aſcending downy ſtalk. Tube ſhorter than the ſpatha, and but one-third as long as the nearly uniform limb.—Native of the Cape, from whence it was procured by Meſſrs. Lee and Kennedy, in 1795. The *leaves* are elliptic-oblong, ſtrongly plaited, downy all over. *Flowers* large, with a ſhort tube; limb cream-coloured, with ſome tints of blue.

8. B. *plicata*. Sweet-ſcented Babiana. Ker n. 13. Ait. n. 7. Ker in Curt. Mag. t. 576. (Gladiolus plicatus; Thunb. Diſſ. n. 24. Fl. Cap. v. 1. 211, with many wrong ſynonyms. G. fragrans; Jacq. Hort. Schoenbr. v. 1. 7. t. 14.)—Leaves elliptic-lanceolate, looſely plaited, very ſoft and downy. Segments of the limb nearly equal, the length of the tube; upper one hooded.—One of the moſt common ſpecies at the Cape, near the town, and in various other places, flowering from May to October. Thunberg ſays the Europeans call this plant *Babianer*. Has this, whatever it means, given occaſion to Mr. Ker's generic name? Nearly akin to the laſt, but of a ſofter texture. *Flowers* fragrant, pale lilac, or blueiſh-white, marked with violet at the baſe of their three lower ſegments. *Stamens* aſcending.

9. B. *ſtricta*. Upright Babiana. Ker n. 6. Ait. n. 8. Ker in Curt. Mag. t. 621. 637. (Gladiolus ſtrictus; Ait. ed. 1. v. 1. 63. G. plicatus; Linn. Sp. Pl. 53. Ixia; Mill. Ic. 103. t. 155. f. 1.)—Leaves elliptic-lanceolate, plaited, downy. Corolla funnel-ſhaped, nearly regular; ſegments about as long as the tube, all flat.—Native of the Cape; long known in our green-houſes, though not very frequent. The *flowers* are ſmaller than moſt of the foregoing, with obovate, pointed, equal ſegments, either all blue, or pale grey, or alternately white and purpliſh, each hardly an inch long. *Spatha* ſmall, linear-lanceolate, downy.

10. B. *villoſa*. Dark-red Babiana. Ker n. 8. Ait. n. 9. Ker in Curt. Mag. t. 583. (Ixia villoſa; Ait. ed. 1. v. 1. 58. I. pumicea; Jacq. Ic. Rar. t. 287. Willd. Sp. Pl. v. 1. 198. Gladioli plicati var. purpurea; Thunb. Diſſ. n. 24. Fl. Cap. v. 1. 213.)—Leaves downy. Tube thread-ſhaped, the length of the regular, bell-ſhaped limb, whoſe three alternate ſegments are obtuſe with a point.—Native of the Cape. The *leaves* are rather broad, elliptic-lanceolate, ſtrongly plaited. *Stalk* oblique and wavy, rather taller than the leaves. *Flowers* the ſize of the laſt, of a deep blood-red, without ſcent; their tube ſuddenly united to the limb, without any dilatation at the throat. *Anthers* dark violet, remarkably large and thick.

11. B. *rubro-cyanea*. Red and blue Babiana. Ker n. 7. Ait. n. 10. (Ixia rubro-cyanea; Jacq. Ic. Rar. t. 285. Willd. Sp. Pl. v. 1. 198. Curt. Mag. t. 410. I. villoſa; Schneev. Ic. t. 16. Gladiolus rubro-cyaneus; Vahl Enum. v. 2. 98.)—Leaves elliptic-lanceolate, ſtalked, downy. Tube thread-ſhaped, the length of the regular, wide-ſpreading limb, whoſe ſegments are uniform, rhomboid-obovate.—Native of the Cape. Sent to Kew by Mr. Maſſon in 1794. Very nearly akin to the laſt, particularly in the ſhape of the *tube*; but the *limb* is more ſpreading, with uniform blue ſegments, red at their baſe, making a very ſhowy appearance. It is not eaſy to diſcover by what rule Vahl reduced this plant to *Gladiolus*, except by the herbage.

12. B. *obtuſifolia*. Blunt-leaved Babiana. Ker n. 9. (Ixia villoſa; Jacq. Ic. Rar. t. 284. Willd. Sp. Pl. v. 1. 198.)—Leaves elliptical, bluntiſh, downy. Tube thread-ſhaped, nearly the length of the funnel-ſhaped regular limb, whoſe ſegments are elliptical; throat ſomewhat dilated.—Native of the Cape. We know this ſpecies merely from Jacquin's figure, where it is repreſented of humble growth, all over downy, with an oblique *ſtalk*, and a few large *flowers* of an uniform blueiſh-white; their *ſheaths* elliptic-lanceolate, ſomewhat tumid. *Stigmas* ſlender. *Anthers* ſmall, blue.

13. B. *diſticha*. Hyacinth-ſcented Babiana. Ker n. 10. Curt. Mag. t. 626. (Gladiolus plicatus; Jacq. Ic. Rar. t. 237.)—Leaves elliptic-oblong, ſtrongly plaited, finely fringed. Throat of the corolla funnel-ſhaped; ſegments of the limb linear-lanceolate, nearly equal, partly criſped at the margin.—Native of the Cape. It flowered at Mr. Colville's nurſery in June 1802. The *leaves* are broad. *Flowers* blueiſh-white, with dark-blue marks and *anthers*, their ſcent like an oriental hyacinth, but finer. Mr. Dryander ſeems to have overlooked this ſpecies; unleſs, as we ſuppoſe, he included it under *plicata*, n. 8.

14. B. *mucronata*. Briſtle-pointed Babiana. Ker n. 11. (Gladiolus mucronatus; Jacq. Ic. Rar. t. 253. Coll. v. 4. 162. Willd. Sp. Pl. v. 1. 221. Vahl Enum. v. 2. 115. G. ringens; Thunb. Prodr. 186. Fl. Cap. v. 1. 214, excluding Jacquin's *ſulphureus*.)—Leaves elliptic-oblong, ſtalked, plaited, downy. Stalk branched. Throat of the corolla funnel-ſhaped, elongated; ſegments of the limb linear-obovate, three alternate ones awned; three lower reflexed.—Native of the Cape of Good Hope. The *leaves*, in Jacquin's figure, have ſtalks nearly of their own length. The *ſheaths*, like the whole herbage, are downy, and as long as the tube of the *corolla*. *Throat* rather ſhort, funnel-ſhaped as well as the *limb*, whoſe ſegments are very deep; linear and elongated at the baſe, pale yellow in that part, lilac towards the extremity; the central one of the upper lip largeſt; the two next awned, like the central one of the lower lip.

BACILLUM, (a little ſtick or ſtaff,) was once uſed by Acharius for the ſtalks elevating the tubercles of the Cup Lichens. (See Lichen, ſect. 7.) This term occurs in his Prodromus, but is ſupplanted in his more recent publications by *Podetium*. Both terms appear to us ſuperfluous, *Pedicellus* having preciſely the ſame meaning.

BADKU, in *Geography*. See Baku.

BÆOMYCES, in *Botany*, from *βαιος*, *ſmall*, and *μυκης*, *a fungus*, is well appropriated to this genus of *Lichenes*, their fructification looking exactly like ſome minute kinds of *Agaricus* or *Helvella*.—Perſoon in Uſt. Annal. faſc. 7. 19. Achar. Lichenogr. 108. t. 12. f. 1, 2. Syn. 279.—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Tubercles ſolitary, on ſolid ſimple ſtalks, from an uninterrupted granulated cruſt.

In the *Methodus* of Acharius, this genus is ſo characterized as to include all the *Lichenes pyxidati*, as well as the *Cladoniæ*, of other authors. At preſent it is reſtricted to the firſt ſection of the original *Bæomyces*, conſiſting of four ſpecies only. The characters and ſynonyms of theſe are correctly given by our learned friend, except that of *Lichen ericetorum* of Linnæus, which we remove from this genus, on the authority of original ſpecimens.

1. B. *roſeus*. Roſe-coloured Muſhroom-Lichen. Perſ. as above. Ach. n. 1. (Lichen Bæomyces; Linn. Suppl. 450. Ehrh. Phyt. n. 89. Sibth. Ox. 321. Engl. Bot. t. 374. Hoffm. Enum. 37. t. 8. f. 3. L. ericetorum; Web. Gott. 195. Lightf. 809, α. Fl. Dan. t. 1003. f. 2. Coralloides fungiforme carneum, baſi leproſâ; Dill. Muſc. 76. t. 14. f. 1.)—Cruſt glaucous-grey. Stalks very ſhort, cylindrical. Tubercles tumid, lobed, roſe-coloured.—Found on mountainous heaths, in broad uninterrupted patches on the ground, of a greeniſh or glaucous grey when freſh and moiſt, conforming to all the inequalities of the ſoil; the ſurface finely granulated. *Tubercles* from one to two or three lines in diameter, of a bright and moſt elegant roſe colour, convex, more or leſs lobed, or irregularly tumid, each ſupported by a thick, round, ſolid *ſtalk*, about as high as the diameter of the head, white tinged with a bluſh of red. This is by far the moſt elegant, as well as the moſt rare, of our Britiſh ſpecies. Dr. Acharius here cites Engl. Bot. t. 372, which is his *Lecidea Icmadophila*, Syn. 45, the true *Lichen ericetorum* of Linn. Sp. Pl. 1608. Fl. Suec. 408. and Herb. Linn. Fl. Dan. t. 472. f. 4. Lichen Icmadophila; Linn. Suppl. 450. Ehrh. Phyt. n. 40. L. æruginoſus; Jacq. Auſtr. t. 275.

2. B. *fungoides*. Pale Muſhroom-Lichen. Ach. n. 2. ("B. helveloides; Bory Voy. 3." Lichen fungoides; Swartz Ind. Occ. 1886.)—Cruſt white. Stalks thrice as tall as the diameter of the pale fleſh-coloured tubercles.—Gathered by Dr. Swartz on the gravelly ſoil of high mountains, in the ſouthern part of Jamaica. Bory de St. Vincent found the ſame in the iſle of Bourbon. We have ſpecimens from Dr. Acharius. The *cruſt* is thin, hard, of a dirty white. *Stalks* white, thrice as tall as the foregoing; tumid at the baſe. *Heads* of a lighter fleſh-colour, with a white powdery effloreſcence.

3. B. *rufus*. Browniſh Muſhroom-Lichen. "Wahlenb. Lapp. 449." Ach. n. 3. (Lichen rufus; Hudſ. 527. L. fungiformis; Web. Goett. 196. Sibth. Ox. 322. Hoffm. Enum. 38. t. 8. f. 2. L. byſſoides; Linn. Mant. 133. Lightf. 809. Engl. Bot. t. 373. L. peltifer; Wulf. in Jacq. Coll. v. 3. 104. t. 3. f. 1. Coralloides fungiforme ſaxatile, pallide fuſcum; Dill. Muſc. 78. t. 14. f. 4.)

β. B. lignorum. Achar. (β. rupeſtris γ; Ach. Meth. 322.)

Cruſt greeniſh-white. Stalks ſhort, ſomewhat compreſſed. Tubercles nearly globular, reddiſh-brown; ſometimes aggregate.—Common on heathy ground, or on rocks, rarely on rotten wood; in which laſt ſituation the *tubercles* aſſume a darker brown. They are much ſmaller than in *B. roſeus*, rounder and leſs lobed, though often cluſtered together; their colour is a dirty brick-red.

The variety β of Engl. Bot. figured in Raii Syn. t. 1. f. 3, not f. 4; and in Dill. Muſc. t. 14. f. 5, is now eſteemed a fungus. See Onygena.

4. B. *placophyllus*. Broad-leaved Muſhroom-Lichen. "Wahlenb. Lapp. 449." Ach. n. 4. Meth. 323. t. 7. f. 4.—Cruſt orbicular, rugged, ſomewhat lobed and imbricated, glaucous-white. Stalks elevated, compreſſed. Tubercles convex, ſimple, reddiſh-brown.—Found by Wahlenberg, on the ſterile ſandy ſoil of Lower Lapland. We are obliged to Dr. Acharius for a ſpecimen of this very curious ſpecies, whoſe cruſt approaches that of the true Cup Lichens, its circumference at leaſt being lobed and almoſt leafy, though of a thick ſubſtance. The tubercles are altogether thoſe of a *Bæomyces*.

BAGDAD, col. 4, l. 1, after terraces. Bagdad is ſtill a place of great trade, and the reſort of merchants from almoſt every quarter of the Eaſt. It ſupplies all Aſia Minor, Syria, and part of Europe, with Indian commodities, which are imported at Baſſora, brought in boats up the Tigris, and then tranſported by caravans to Tocat, Conſtantinople, Aleppo, Damaſcus, and the weſtern parts of Perſia. The chief imports from India are, gold brocade, cloths, ſugar, pepper, tin, ſandal-wood, iron, china-ware, ſpice, cutlery, arms, and broad-cloth; in return for which they ſend bullion, copper, gall-nuts, tamariſk, leather, and otto of roſes. From Aleppo are imported European ſilk-ſtuffs, broad-cloths, ſteel, cochineal, gold thread, and ſeveral other European articles, which are brought in Greek veſſels to Scanderoon. The imports from Perſia are, ſhawls, carpets, ſilk, cotton, white cloth, leather, and ſaffron: and thoſe from Conſtantinople are, bullion, furs, gold and ſilver thread, jewels, brocade, velvets, and otto of roſes. The principal manufacture at this place is that of red and yellow leather, which is much eſteemed; but ſilk and cotton ſtuffs are likewiſe made. The climate, notwithſtanding its exceſſive heat, is allowed to be very healthy. But the natives are ſubject to a cutaneous diſorder, for which no cure has yet been diſcovered: it appears in the form of a pimple, then degenerates into an ulcer, and at the end of eight or ten months dries up of itſelf, leaving a prominent mark. The inhabitants of Aleppo, and other towns in Syria, are ſubject to this diſeaſe. The military government of Bagdad is, &c.

Bagdad, *Pachalic of*, extends in a N.W. direction from the mouth of the Shat-ul-Arab to the rocks of Merdin, and in an E. and W. line from the confines of Perſia to the banks of the Khabour, which ſeparates it from the pachalic of Orfa. It comprehends the whole of the ancient Babylonia, and the greateſt part of Aſſyria Proper; that is, the ſpace which is embraced by the Tigris and the Euphrates, and that which is beyond the Tigris, commonly called the lower Kurdiſtan. See Babylonia and Assyria.

BAHAR. Add—The bahar of Acheen, in Sumatra, conſiſts of 100 cattees, and is equal to 490 lbs. avoirdupois. The bahar of Betleſackee, in Arabia, conſiſting of 40 farcels, is = 815¼ lbs. avoirdupois. The bahar of Bencoolen = 560 lbs. avoirdupois. The bahar of Junkſeylon of 8 capins = 485 lbs. 5 oz. 5⅓ dr. The bahar of Malacca, of 3 peculs = 405 lbs. avoirdupois. The bahar of Mocha, of 15 franks = 445 lbs. avoirdupois.

Bahrein, N. lat. 26° 43′.

BAJOCCO. Add—Rome exchanges with Amſterdam 42 bajocchi, more or leſs, for 1 florin banco; with Leghorn, 95 bajocchi, more or leſs, for 1 pezza of 8 reali. Rome keeps accounts in ſcudi. See Scudo.

BAIRDSTOWN, l. 3, *r.* 821, 202 being ſlaves.

BAIT, White. Add—See Clupeæ *Aloſa*.

BAKERSFIELD. Add—It contains 812 inhabitants.

BAKU. Inſert, or Badku. N. lat. 42° 22′. Add—Baku is defended by a double wall and deep ditch, conſtructed during the reign of Peter the Great. This was once a celebrated city of the ancient worſhippers of fire, and before the conqueſt of the Saracens was annually viſited by thouſands of pilgrims.

BALDIVIA, l. 7, *r.* W. long. 74°.

BALDWIN, in *Geography*, a town of America, in the diſtrict of Maine, and county of Cumberland, containing 546 inhabitants.

Printed by A. Strahan,
New-Street-Square, London.

inhabitants.—Alſo, a county of Georgia, which, together with its town Milledgeville, contains 6356 inhabitants; the ſlaves in the county being 2324, and in the town 226.—Alſo, a county in the territory of Miſſiſſippi, having 1427 inhabitants, including 717 ſlaves.

BALFOURIA, in *Botany*, received its name from the pen of Mr. Brown, in honour of his illuſtrious countryman ſir Andrew Balfour, knight, founder of the Botanic Garden, as well as of the Public Muſeum, at Edinburgh. His friend, ſir Robert Sibbald, has embalmed his memory in the *Memoria Balfouriana;* nor could any one be more competent to this ſubject. Theſe diſtinguiſhed men firſt laid the foundation of the ſtudy of natural hiſtory in Scotland.—Brown Tr. of the Wern. Soc. v. 1. 70. Prodr. Nov. Holl. v. 1. 467.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. Br.

Eſſ. Ch. Corolla funnel-ſhaped; throat crowned with a ſmall crenate tube; ſegments of the limb ſtraight, equilateral. Stamens inſerted into the throat; anthers arrow-ſhaped, pointed, cohering with the ſtigma about the middle. Germen of two cells; ſtyle ſolitary, thread-ſhaped, dilated at the top; ſtigma angular. Scales ten at the baſe of the calyx, on the outſide of the corolla; none under the germen. *Follicles*......

1. B. *ſaligna.* Willow-leaved Balfouria. Br. n. 1.—Diſcovered by Mr. Brown, in the tropical part of New Holland. A *tree*, about twelve feet high, ſmooth. *Leaves* oppoſite, linear-lanceolate, falcate, with little teeth between the inſertion of their *footſtalks*. *Cymes* lateral as well as terminal, three-cleft.

BALK. Inſert—or BULKH. Col. 1, l. 3, after Bactriana, inſert—It was formerly included in Khoraſſan, and is bounded on the N.E. by the Oxus, E. by Koondooz, W. by Khoraſſan, and S.W. by the mountains of Huzara, and the independent ſtate of Mymuna. Col. 2, l. 17, after Perſians, add—The Tanjets, or the race of people who inhabit this country, beſides the Afghans and Uſbecks, are corrupt and diſſolute, and addicted to the moſt unnatural vices. The Uſbecks are ſimple, honeſt, and humane. Col. 2, l. 60, after Hindoſtan, add—It is ſaid to be as large as Delhi; but moſt of the houſes are uninhabited; and the population is ſaid to be reduced to between 6 and 7000 men, ſubject to the king of Cabul. The vicinity of the town is well cultivated, and corn and proviſions are abundant.

BALLABUAN, *r.* BALLAMBUAN, and remove to next column.

BALLISTIC PENDULUM, a pendulum uſed in aſcertaining the velocity, &c. of balls, the ſtrength of gunpowder, &c. &c. See GUNNERY, GUNPOWDER, and PENDULUM.

BALLOGISTAN, l. 10, *r.* Mekran. At the cloſe, add—Ballogiſtan, or, as it is otherwiſe called, Balouchiſtan, the country of the Balouches, is conſidered by ſome as a province diſtinct from Mekran or Mecran; and as ſuch properly commences at Koohinee (the hilly road) 25 miles N.E. of Bayla, or in N. lat. 26° 35′, from which place it extends to Nooſhky, 79 miles N.W. of Kelat, or in N. lat. 30°. It is ſaid to be a confuſed maſs of tremendous mountains, through which the road generally leads in water-courſes. Flocks of ſheep and herds of cattle are numerous in every part of this country, and it alſo produces great quantities of wheat. The territories of Mahomed Khan, chief of Balouchiſtan, comprehend all the countries lying between 20° 30′ and 30° N. lat., and from 65° to 69° E. long. It is divided into the two mountainous provinces of Ihalawan and Sarawan, the low country of Cutch Gandava to the E., and the provinces of Zuhree and Amund Dajul; to which may be added the ſmall diſtricts of Shat and Muſtung, lying N. of Kelat. See SARAWAN and MECRAN.

BALLOTADE, l. 5, *r.* theſe airs, &c.; l. 8, *r.* horſeman.

BALLS, CHAIN. For *chain-balls* r. *chain-bullets.*

BALLS, *Stang*, *dele.*

BALOUCHISTAN. See BALLOGISTAN.

BALSAMITA, in *Botany*, an old name, uſed by Dodonæus and others, alluding to the balſamic odour of the flowers and herbage, and their reputed ſtimulating healing qualities. It is revived by Profeſſor Desfontaines, who, after the example of Vaillant, has recently ſeparated the ſeveral ſpecies of this genus from *Cotula*, *Chryſanthemum*, and *Tanacetum*, into which they had been forced, though deſtitute of radiant, or female, florets, as well as of a crown to their ſeeds.—Desfont. Act. Soc. Hiſt. Nat. Pariſ. v. 1. 1. Willd. Sp. Pl. v. 3. 1800. Ait. Hort. Kew. v. 5. 519.—Claſs and order, *Syngeneſia Polygamia-æqualis.* Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* flattiſh, imbricated; ſcales numerous, linear, convex, acute, the inner ones with a membranous margin. *Cor.* compound, uniform, tubular, longer than the calyx. Florets all perfect, numerous, funnel-ſhaped, equal; their limb in five regular, acute, ſpreading ſegments. *Stam.* in each floret, Filaments five, capillary; anthers united into a five-toothed tube, hardly longer than the tube of the corolla. *Piſt.* Germen roundiſh; ſtyle thread-ſhaped, longer than the corolla; ſtigmas two, revolute. *Peric.* none, except the permanent calyx. *Seeds* ſolitary to each floret, ſmall, oblong, ſtriated, ſometimes bordered with a narrow longitudinal membrane at one ſide, but abrupt at the ſummit, without any crown or wing. *Recept.* ſlightly convex, naked.

Eſſ. Ch. Receptacle naked. Seed-down none. Calyx imbricated.

1. B. *grandiflora.* Large-flowered Coſtmary. Desf. Act. Soc. Hiſt. Nat. Par. v. 1. 1. t. 1. Willd. n. 1. (Cotula grandis; Linn. Sp. Pl. 1257.)—Stem herbaceous, hairy, ſimple and ſingle-flowered. Leaves ſerrated; radical ones obovate; thoſe of the ſtem lanceolate; dilated and deeply toothed at their baſe.—Found by Desfontaines in corn-fields at Algiers, flowering in May. Linnæus had it from thence. A handſome biennial plant, conſpicuous for its large, yellow, cuſhion-like *flower*, about two inches broad, compoſed of innumerable crowded *florets*. The *ſtem* is two or three feet high, unbranched, leafy, and hairy. *Leaves* numerous, ſmooth; the radical ones ſtalked, two or three inches long.

2. B. *virgata.* Wand-branched Coſtmary. Desf. as above, 2. Willd. n. 2. Ait. n. 1. (Cotula grandis; Jacq. Obſ. faſc. 4. 4. t. 81. Chryſanthemum diſcoideum; Allion. Pedem. v. 1. 190. t. 11. f. 1.)—Stem herbaceous, ſmooth; branched at the baſe; branches ſingle-flowered. Leaves linear-lanceolate, ſerrated, nearly ſeſſile; upper ones linear, entire.—Native of Italy. This is the plant mentioned under his *Cotula grandis* by Linnæus, as having been ſent by Allioni. It is however, as he ſuſpected, very diſtinct from that plant; being much ſmaller in every part; the *ſtem* ſmooth and branched; *leaves* none of them ſpatulate, nor dilated and deeply cut at the baſe. *Flowers* ſimilar, but ſcarcely half ſo large, eſpecially thoſe of the lateral branches.

3. B. *ageratifolia.* Sharp-toothed Coſtmary. Desf. as above, 2. Willd. n. 3. Ait. n. 2. (Chryſanthemum floſculoſum; Linn. Sp. Pl. 1255. Bellis ſpinoſa; Alpin. Exot. 327. t. 326. B. major ſpinoſa, petalis carens; Moriſ. ſect. 6. t. 9. f. 16.)—Stem ſhrubby, branched at the baſe. Leaves obovate, ſharply ſerrated, crowded. Flowers corymboſe.—Native of Crete; an old green-houſe plant in England,

Printed by Strahan and Spottiswoode,
New-Street-Square, London.

England, but not popular at preſent. The *branches* are rather looſely ſpreading, ſmooth, covered with ſmooth *leaves*, an inch and a half long, whoſe numerous teeth are ſharp, and even ſpinous. Several deep-yellow convex *flowers* compoſe a corymboſe cluſter at the extremity of the ſtem or branch.

4. B. *vulgaris*. Common Coſtmary. Willd. n. 4. (B. major; Deſf. as above, 3. Dod. Pempt. 295. B. mas; Ger. Em. 648. Mentha græca; Matth. Valgr. v. 2. 75. Camer. Epit. 480. Tanacetum Balſamita; Linn. Sp. Pl. 1184.)—Stem herbaceous. Leaves ovate, ſerrated; the lower ones ſtalked; upper auricled. Flowers corymboſe.—Native of Tuſcany, France, and Switzerland. A hardy old kitchen-garden herb, flowering in Auguſt and September. *Root* perennial. *Stems* round, leafy, ſomewhat branched, two feet high. *Leaves* hoary. *Flowers* numerous, ſmall, yellowiſh, accompanied with ſmall leaves. The whole plant has a ſtrong warm odour. Gerarde ſpeaks of it as ſometimes infuſed in ale, for medicinal purpoſes, but we know not of its being in uſe at preſent, though often kept in ruſtic gardens.

BALTIMORE, l. 12, after contains, add—by the cenſus of 1810, 29,255; and for 5877 *r.* 6697.

Baltimore, col. 1, l. 9 from the bottom, add—By the cenſus of 1810, the number of inhabitants in the city of Baltimore was 35,583, including 3713 ſlaves; in the eaſtern precincts 4050, comprehending 262 ſlaves; and in the weſtern precincts 6922, including 697 ſlaves.

Baltimore, a town of Vermont, in the county of Windſor, having 207 inhabitants.

BAMBERG, col. 1, l. 19, add—Before it was ſecularized in 1813, it contained a ſurface of 65 German miles, with a population of 192,000 ſouls, and a revenue of 556,000 dollars. Col. 1, l. 24, after populous, add—containing about 2030 houſes, and 16,500 inhabitants.

BAMFF, col. 2, l. 31, inſert—The burgh and pariſh contained, in 1811, 3603 perſons; 1540 males, and 2063 females.

BAMFFSHIRE, col. 2, l. 4, *r.* in 1811, was 36,668 perſons; 16,465 males, and 20,203 females: 3815 families being employed in agriculture, and 2195 in trade, manufactures, and handicraft.

BAMPTON, l. 19, *r.* 1061 houſes, and 5864 inhabitants; 2882 males, and 2982 females.

BANBURY, l. *ult.* *r.* and the borough and pariſh, by the returns of 1811, contained 582 houſes, and 2841 perſons; 1331 males, and 1510 females.

BAND, a weight uſed on the Gold Coaſt for weighing gold duſt, and equal to two ounces troy.

Band-*Fiſh*. See Cepola.

Bander-Abassi, *r.* Gambron.

BANGOR, col. 2, l. 37, *r.* the city and pariſh, in 1811, contained 456 houſes, and 2383 inhabitants, *viz.* 1094 males, and 1289 females.

Bangor, in America, add—It contains 850 inhabitants.

BANK, Million. Add to diſſolution—in 1796.

BANKSIA, in *Botany*, one of the moſt magnificent and peculiar genera among the native plants of New Holland, was with great propriety dedicated to the honour of the illuſtrious diſcoverer of this genus, by the younger Linnæus. (See our former article Banksia, which requires correction, as embracing ſeveral ſpecies not now included herein, but already deſcribed in the preſent work under the articles Conchium and Xylomelum.) On the other hand, a much greater number of genuine *Bankſiæ*, firſt made known by Mr. Brown, ſince the publication of that original article, require to be added. We are at a loſs to account for the report concerning the ſpecies with ſolitary flowers, at the end of that article. It may have had ſome foundation which has eſcaped the memory of the writer of this. The only Salisburia ever publiſhed belongs to a totally different family, and may be found in its proper place. Thirty-one ſpecies of *Bankſia* are defined by Mr. Brown, of which four only were known to Linnæus, from ſpecimens and engravings communicated by ſir Joſeph Banks.—Linn. Suppl. 15. Schreb. Gen. 79. Murr. in Linn. Syſt. Veg. ed. 14. 16[illegible]. Willd. Sp. Pl. v. 1. 535. Mart. Mill. Dict. v. 1. Ait. Hort. Kew. v. 1. 213. Brown Tr. of Linn. Soc. v. 10. 202. Prodr. Nov. Holl. v. 1. 391. Juſſ. 79. Lamarck Illuſtr. t. 54. f. 1, 2. Gærtn. t. 48.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Cal.* Catkin cylindrical, denſe, many-flowered; flowers in pairs, with three permanent ſcales to each pair, two of which are interior, and ſmalleſt. *Cor.* of one petal, in four deep linear ſegments, at length ſeparating entirely, ſomewhat dilated and concave at the ſummits, their points long cohering, till forced aſunder by the growing ſtyle. Nectary four ſcales at the baſe of the germen. *Stam.* Filaments four, very ſhort, inſerted into the baſe of the cavity of each petal; anthers oblong. *Piſt.* Germen ſuperior, of two ſingle-ſeeded cells, very ſmall; ſtyle cylindrical or angular, rigid, gradually curved, firmly held, for a long time, by the combined tips of the corolla; ſtigma undivided. *Peric.* Follicle woody, firmly fixed in the receptacle, obovate, of two ſhallow cells; the partition unconnected, rigid, elaſtic, cloven by a deep tranſverſe fiſſure at the top. *Seeds* ſolitary, compreſſed, quite flat at the inner ſide, wedge-ſhaped, and extended into a rounded, membranous, terminal wing.

Eſſ. Ch. Corolla of one petal, four-cleft, bearing the ſtamens in the hollows of its ſegments. Nectary four ſcales at the baſe of the germen. Follicle woody, of two ſingle-ſeeded cells, with a cloven moveable partition. Catkin with three ſcales to each pair of flowers.

Obſ. The greater part of the very numerous flowers are neceſſarily abortive, or there would not be room for the follicles to ripen.

The various ſpecies, all natives of New Holland, are either ſhrubs, or trees of no lofty ſtature. The *branches* are umbellate; or in Linnæan language the *ſtem* is "determinately branched," as in *Erica* and other *Bicornes*. *Leaves* ſcattered, rarely whorled, ſimple, undivided, either entire, ſerrated, toothed, or cut in a pinnatifid manner; in a young plant they are often variouſly cut, or toothed, though undivided and entire on the ſame when full grown. (*Brown.*) *Catkins* ſolitary, terminal, rarely lateral, cylindrical, in ſome caſes very ſhort. *Bracteas* ſeveral at the baſe of each catkin, ſhort and narrow. *Catkin* when in fruit hard and heavy, its enlarged common *receptacle* firmly united with the baſes of the *follicles*, the ſurface briſtly with remains of the *flowers*, and eſpecially with the unimpregnated *ſtyles* of the greater part, intermixed with the large, hard, uſually downy or hairy, *follicles*. *Seeds* black, with a brown, ſhining, oblique *wing*, the convex ſide of each filling a depreſſion in the correſponding ſide of the thin wooden *partition*.

Sect. 1. *Style longer than the corolla, projecting laterally, in a curved poſition, between its ſegments, the ſtigma being held faſt, for ſome time longer, between their points. Catkin, when in flower, cylindrical; when in fruit, laden with numerous tranſverſe follicles.* Theſe Mr. Brown conſiders as true *Bankſiæ*. Indeed this ſection embraces the whole genus, except one ſpecies. We follow Mr. Brown's names and numbers.

1. B. *pulchella*. Small-flowered Bankſia. Ait. n. 1.—Leaves aceroſe, entire, pointleſs. Tube of the corolla woolly;

woolly ; limb ſmooth. Stigma capitate, depreſſed.—Native of dry heaths, near the ſea-ſhore in Lewin's land, on the ſouthern coaſt of New Holland, where it was found by Mr. Brown, and ſent to Kew in 1805, but had not yet flowered there in 1810. The *leaves* are not longer than the finger-nail.

2. B. *ſphærocarpa.* Round-fruited Bankſia. Ait. n. 2.—Leaves aceroſe, entire, pointed. Corolla hairy all over, externally. Stigma awl-ſhaped. Cones globoſe. Follicles tumid, rather compreſſed at the ſummit.—Found on low heaths in Lewin's land. Sent to Kew by Mr. Peter Good, in 1803. The *leaves* are an inch long.

3. B. *nutans.* Nodding-flowered Bankſia. Ait. n. 3.—Leaves aceroſe, entire, pointed. Catkins drooping. Corolla ſilky. Follicles dilated at the ſummit, depreſſed.—On dry heaths near the ſhore of Lewin's land, where, like the two former, it was gathered by Mr. Brown.

4. B. *ericifolia.* Heath-leaved Bankſia. Linn. Suppl. 127. Willd. n. 7. Ait. n. 4. Banks Ic. Ined. apud Bibl. Linn. t. 4. Andr. Repoſ. t. 156. Curt. Mag. t. 738. Cavan. Ic. v. 6. 27. t. 538. (Bankſia ; White's Voy. 225. t. 22. f. 1.)—Leaves aceroſe, emarginate, with two teeth ; entire at the edges. Catkins elongated. Corolla ſilky. Stigma capitate.—Native of the eaſtern coaſt of New Holland, on rocky heaths near Port Jackſon, from whence it was ſent by Dr. White, among the firſt botanical communications from that country, and is now in ſeveral green-houſes, flowering at various times of the year. This ſpecies was however firſt diſcovered by ſir Joſeph Banks and Dr. Solander, in their celebrated voyage. The *ſtem* is three or four feet high. *Leaves* very numerous, the length of the nail, evergreen, ſmooth, revolute. *Flowers* bright yellow. *Catkins* five or ſix inches long. *Follicles* abrupt, rough with ruſty, deciduous hairs.

5. B. *ſpinuloſa.* Prickly-leaved Bankſia. Sm. Bot. of New Holl. 13. t. 4. Willd. n. 6. Ait. n. 5. Andr. Repoſ. t. 457. Cavan. Ic. v. 6. 26. t. 537.—Leaves linear, revolute, with ſpinous teeth towards the end, and three terminal ones, the intermediate tooth longeſt. Corolla ſmooth internally at the baſe. Stigma awl-ſhaped.—Native of dry heaths about Port Jackſon. Larger than the laſt. *Leaves* from one to three inches long ; white beneath. *Corolla* yellow. Expoſed part of the *ſtyle* purple.

6. B. *collina.* Hill Bankſia. Br. n. 6.—Leaves linear, with ſpinous teeth ; veiny beneath ; their terminal tooth ſhorteſt. Scales of the catkin obtuſe, downy at the extremity. Corolla ſmooth internally at the baſe. Stem ſhrubby.—Gathered by Mr. Brown on dry open hills about Hunter's river, New South Wales.

7. B. *occidentalis.* Weſt-coaſt Bankſia. Ait. n. 6.—Leaves linear, with ſpinous teeth beyond the middle ; veinleſs beneath. Scales of the catkin ſmooth at the extremity. Corolla withering ; bearded internally at the baſe. Follicles tumid, downy ; rather compreſſed and naked at the ſummit. Stem ſhrubby. Young branches ſmooth.—Found by Mr. Brown, in heathy ground, at Lewin's land.

8. B. *littoralis.* Sea-ſide Bankſia. Ait. n. 7.—Leaves linear, elongated, with ſpinous teeth ; veinleſs beneath ; tapering at the baſe. Corolla deciduous. Follicles compreſſed, downy at the ſummit, as well as the ſcales of the catkin. Stem arboreous. Young branches downy.—Found by Mr. Brown on the ſandy ſhores of creeks in Lewin's land. The *flowers* were paſt.

9. B. *marginata.* Various-leaved Bankſia. Cavan. Ic. v. 6. 29. t. 544. Ait. n. 8.

β. B. microſtachya ; Cavan. Ic. v. 6. 28. t. 541, excluding the reference to B. dentata of Linnæus !

γ. Brown.

Leaves linear, abrupt, pointed, either entire or toothed, with ſcarce-viſible veins beneath. Ultimate branches hairy. Scales of the catkin all ſmooth at the end ; the larger ones acute. Stem ſhrubby.—Native of heaths, in the neighbourhood of Port Jackſon, New South Wales. The *ſtem* is uſually ſix feet high. *Leaves* generally entire, ſhorter than the *catkin*, ſcarcely exceeding two inches in length ; their under ſide white and downy. *Flowers* orange-coloured. In variety β the *leaves* are bordered with ſpinous teeth, and leſs revolute, ſometimes exceeding the length of the unuſually ſmall *catkins.* γ is a dwarf diffuſe ſhrub, with flattiſh, wedge-ſhaped, ſpinous-toothed *leaves*, longer than the *catkins.* *Brown.*

10. B. *depreſſa.* Proſtrate Bankſia. Br. n. 10.—Leaves long-wedgeſhaped, abrupt, pointed, ſpinous-toothed ; ſlightly ribbed and veined beneath ; rather longer than the catkins, all whoſe ſcales are downy and obtuſe. Stem proſtrate. Ultimate branches hairy.—Found by Mr. Brown, in ſtony ground at the roots of the mountains in Van Diemen's iſland, towards the ſouth.

11. B. *patula.* Spreading Bankſia. Br. n. 11.—Leaves linear, ſomewhat wedge-ſhaped, abrupt, pointed, very ſparingly toothed ; reticulated with veins beneath. Scales of the catkin downy at the ſummit and obtuſe. Keel of the limb of the corolla ſmooth. Stem diffuſe. Ultimate branches downy.—Diſcovered by Mr. Brown, in Flinders' land, on the ſouth coaſt of New Holland, growing amongſt other ſhrubs, in barren elevated ſpots.

12. B. *auſtralis.* South-coaſt Bankſia. Br. n. 12.—Leaves linear, abrupt, pointed, entire, revolute ; reticulated with veins beneath. Ultimate branches downy. Scales of the catkin obtuſe, nearly equal ; downy at the ſummit. Keel of the limb of the corolla very ſlightly ſilky. Stem arboreous.—Obſerved by Mr. Brown, every where in the open fields of Van Diemen's iſland, as well as by the ſea-ſide ; and alſo on the ſouth coaſt of New Holland, near Port Phillip.

13. B. *inſularis.* Inſular Bankſia. Br. n. 13.—Leaves linear-oblong, or ſomewhat wedge-ſhaped, ſlightly rounded, pointed, either ſcattered or whorled ; reticulated with veins beneath. Scales of the catkin obtuſe, externally downy. Follicles compreſſed ; ſmooth at the ſummit.—Native of the iſlands of the Baſs ſtrait, as well as of that of Van Diemen, near the ſhore. *Brown.*

14. B. *integrifolia.* Entire-leaved Bankſia. Linn. Suppl. 127. Willd. n. 3. Ait. n. 9. Banks Ic. Ined. t. 3. Cavan. Ic. v. 6. 30. t. 546. (B. oleæfolia ; Cavan. Ic. v. 6. 30. t. 545. B. glauca ; Cavan. Ic. v. 6. 31. B. ſpicata ; Gærtn. t. 48.)—Leaves whorled, oblong-lanceolate, entire, pointed ; reticulated with conſpicuous veins beneath. Follicles downy. Stem arboreous.—Native of the eaſt coaſt of New Holland, near the ſea-ſhore at Port Jackſon. This is generally a ſmall, or middle-ſized, *tree.* *Leaves* narrow-obovate, for the moſt part acute ; tapering at the baſe ; white beneath. The twin ſcales of the *catkin* obtuſe ; ſolitary one acute, and only half as large.

Mr. Brown ſays this is a very variable ſpecies, too nearly akin to the laſt, as well as to that immediately following. He obſerved on the ſouth coaſt, near Port Phillip, a variety which forms a large *tree*, with lanceolate-oblong, moſtly rather obtuſe, *leaves*, acute at their baſe ; the ſolitary ſcales of the *catkin* rather acute, but more than half the ſize of the twin ones.

15. B. *compar.* Doubtful Bankſia. Br. n. 15.—Leaves ſcattered, oblong-tongueſhaped, obtuſe, pointleſs ; veinleſs and ſnow-white beneath. Branches, and ſcales of the catkin, downy. Corolla ſilky. Stem arboreous.—Found by

Mr. Brown, but not in fruit, by the ſea-ſide at Keppel Bay, on the eaſt coaſt of New Holland. He ſuſpects it to be a variety of the laſt.

16. B. *verticillata.* Whorled Bankſia. Ait. n. 10.—Leaves whorled, oblong-tongueſhaped, obtuſe, pointleſs; veinleſs and ſnow-white beneath. Scales of the catkin downy, obtuſe. Bracteas at the baſe hairy. Stem arboreous.—Gathered by Mr. Brown, in Lewin's land, near the ſea-ſide. Mr. Menzies alſo met with this ſpecies on the ſouth-weſt coaſt of New Holland.

17. B. *coccinea.* Scarlet-flowered Bankſia. Ait. n. 11.—Leaves alternate, wedgeſhaped-obovate or oblong, toothed, abrupt, ribbed, reticulated with veins; tranſverſe at the baſe. Scales of the catkin awl-ſhaped. Corolla woolly. Stigma pyramidal.—Found by Mr. Brown in Lewin's land, in fields near the coaſt. It was ſent to Kew, by Mr. Good, in 1803.

18. B. *paludoſa.* Marſh Bankſia. Ait. n. 12.—Leaves imperfectly whorled, wedgeſhaped-oblong, ſomewhat abrupt; tapering at the baſe; ſlightly revolute; coarſely ſerrated beyond the middle; ribbed and reticulated with veins beneath. Footſtalks and young branches ſmooth. Corolla ſilky. Stem ſhrubby.—Gathered by Mr. Brown, in marſhy ground, near Port Jackſon. It is ſaid to flower in the green-houſe at Kew, from January to March.

19. B. *oblongifolia.* Oblong-leaved Bankſia. Cavan. Ic. v. 6. 28. t. 542. Ait. n. 13. (B. ſalicifolia; Cavan. Ic. v. 6. 31?)—Leaves ſcattered, narrow-oblong, abrupt, ſtrongly ſerrated; rather acute at the baſe; ribbed, and reticulated with veins, beneath. Footſtalks and young branches downy. Larger ſcales of the catkin pointed. Corolla ſilky. Stem ſhrubby.—Seen by Mr. Brown on heaths near Port Jackſon. The *leaves*, according to his obſervations, are ſometimes entire, or nearly ſo, (as we judge in this caſe from the word *integra*,) and therefore may anſwer to the *ſalicifolia* of Cavanilles, of which it is difficult to judge preciſely, for want of a figure.

20. B. *latifolia.* Broad-leaved Bankſia. Br. n. 20. Ait. n. 14. (B. robur; Cavan. Ic. v. 6. 29. t. 543.)—Leaves obovate-oblong, with ſpinous ſerratures; acute at the baſe; ribbed, reticulated, downy and grey beneath. Tube of the corolla ſilky; limb ſmooth. Stem ſhrubby.—Obſerved by Mr. Brown, in boggy ſituations near Port Jackſon; plentiful about the town of Sydney, where it rarely ripens ſeed. That accurate botaniſt informs us the *ſtem* is uſually three or four feet high, ſcarcely ever ſix feet. Louis Née, from whom Cavanilles had his information, appears to have accidentally confounded his ſpecimens of this ſpecies, with his memorandums relating to *B. ſerrata*, and hence it is deſcribed of the ſize of an Oak, to which the name *robur* alluding, was neceſſarily obliged to be changed.

21. B. *marceſcens.* Short-leaved Bankſia. Br. n. 21. Ait. n. 15. (B. præmorſa; Andr. Repoſ. t. 258.)—Leaves wedge-ſhaped, flat, ſcattered, abrupt, ſtrongly ſerrated more than half way down; rather acute at the baſe. Branches downy. Corolla permanent, ſmooth as well as the follicles. —Native of the ſouthern coaſt of New Holland; at Lewin's land, near the ſhore. Mr. Andrews ſays this ſpecies was firſt raiſed from ſeed at Kew, in 1788. Mr. Brown and Mr. Aiton, on the contrary, mark it as introduced in 1794, by its firſt diſcoverer Mr. Menzies. The *ſtem* is ſix or ſeven feet high in the green-houſe. *Leaves* ſo abrupt, that we could almoſt have allowed the name *præmorſa* to remain. *Flowers* purple, in large handſome *catkins;* inſide of the *corolla* white.

22. B. *attenuata.* Smooth-flowered Bankſia. Ait. n. 16. —Leaves elongated and nearly linear, abrupt; tapering at the baſe; ſerrated more than half way down; ribbed and reticulated, with downy interſtices, beneath. Scales of the catkin hairy at the ſummit. Corolla ſmooth. Follicles downy.—This alſo was diſcovered by Mr. Menzies, on the ſouthern coaſt of New Holland; and ſeen by Mr. Brown in Lewin's land, near the ſea-coaſt. It was raiſed at Kew, in 1794, but appears not yet to have flowered; nor have we heard of the plant elſewhere.

23. B. *elatior.* Tall Bankſia. Br. n. 23.—Leaves elongated and nearly linear, ſerrated, rather abrupt; reticulated, and almoſt ſmooth when full grown, beneath. Scales of the catkin beardleſs, but, like the corolla, downy. Style quite ſmooth. Stigma oval-clubſhaped. Stem arboreous. —Diſcovered by Mr. Brown, on the eaſt coaſt of New Holland, by the ſea-ſide, at Sandy Cape.

24. B. *ſerrata.* Great Serrated Bankſia. Linn. Suppl. 126. Willd. n. 1. Ait. n. 17. Banks Ic. Ined. t. 2. White's Voy. 222. t. 18, 19, 20. Andr. Repoſ. t. 82. Cavan. Ic. v. 6. 27. t. 540. (B. conchifera; Gærtn. t. 48.) —Leaves linear-oblong, abrupt, rather bluntly ſerrated; reticulated and nearly ſmooth beneath; tapering at the baſe. Lower part of the ſtyle downy and powdery. Stigma cylindrical, furrowed; obliquely ſwelling at the baſe. Stem arboreous.—Native of the eaſt coaſt of New Holland, at Port Jackſon, in fields near the ſea, from whence ſpecimens were brought by ſir Joſeph Banks; but the plant was firſt raiſed in England, by Meſſrs. Lee and Kennedy, in 1788. This is deſcribed as the moſt ſtately of its genus, riſing to the height of thirty feet, with a hard reddiſh wood. The *leaves* are near a ſpan long, almoſt perfectly ſmooth on both ſides, not ſo deeply ſerrated as in the figures of Andrews or Cavanilles, or in White's t. 20, but rather bordered with a ſeries of rectangular bluntiſh notches. *Catkins* large, thick and heavy, of innumerable downy *flowers*, whoſe *corolla* is purpliſh, and *ſtyle* crimſon. *Cone* ten inches long, very heavy. *Follicles* downy, an inch in diameter. Gærtner's figure is from a poor diminutive cone.

25. B. *æmula.* Large-fruited Bankſia. Br. n. 25.—Leaves linear-oblong, abrupt, deeply and ſharply ſerrated; reticulated and nearly ſmooth beneath. Corolla ſilky. Stigma capitate, poliſhed, pyramidal, not furrowed, twice as thick as the ſtyle. Stem ſhrubby.—Native of heaths, and ſandy fields, near Port Jackſon, from whence we long ago received ſpecimens, with full-grown *fruit*, by the kindneſs of Dr. White. We have been uſed to call this ſpecies *B. macrocarpa*, a name well expreſſing its ſingularly large *follicles*, which are twice the dimenſions of the preceding, though the whole *cone* is uſually much ſhorter. It is impoſſible to miſtake Mr. Brown's faithful ſpecific definition, eſpecially the character of the ſhort pyramidal *ſtigma*. The *leaves* are much ſmaller than thoſe of *B. ſerrata*, though their ſerratures are much deeper and ſharper. Hence Mr. Brown was led to apply t. 20 of White's Voyage to the preſent ſpecies, with which the *leaves* in that figure pretty nearly agree; but the *cone* certainly, to our knowledge, belongs to the *ſerrata*, which it well expreſſes, except being too ſmall. The ſerratures in Mr. Andrews's plate of *ſerrata* moſt nearly approach our preſent plant. The ſhape and proportion of the *catkin* moreover beſt agrees herewith.

26. B. *dentata.* Broad-toothed Bankſia. Linn. Suppl. 127. Willd. n. 5. Banks Ic. Ined. t. 5.—Leaves wedgeſhaped-oblong, abrupt, ſinuated and wavy, with broad ſpinous teeth; contracted at the baſe; ſnow-white, ribbed, and finely veiny, beneath. Corolla ſilky. Capſules downy. —Diſcovered by ſir Joſeph Banks and Dr. Solander, near Endeavour river, in the tropical part of New Holland. Mr. Brown alſo met with this noble ſpecies, which as yet is a

ſtranger to our gardens, at Arnhem's land, on the northern coaſt. Of the height or ſize of the plant we are not informed. The *branches* are ruſty and ſomewhat downy. *Leaves* alternate, from a ſpan to a foot long, on ſhort ſtalks; their margins remarkably undulated, and bordered with broad, ſhallow, ſpinous-pointed teeth. *Catkins* ſix inches long, more ſlender than uſual; their ſcales downy, the larger one to each pair of *flowers* ſpinous-pointed.

27. B. *quercifolia.* Oak-leaved Bankſia. Ait. n. 18.—Leaves oblong-wedgeſhaped, rather abrupt, ſmooth, deeply ſerrated, pointed. Segments of the corolla awned. Follicles nearly ſmooth.—Found by Mr. Brown, in fields near the ſhore, in Lewin's land. The awns of the *corolla* are indicated by him as a very remarkable character.

28. B. *ſpecioſa.* Long-leaved Bankſia. Ait. n. 19.—Leaves linear, pinnatifid; lobes triangular-halfovate, pointed; ſnow-white and ſlightly ribbed beneath. Limb of the corolla woolly. Style rather hairy. Follicles downy.—Native of the rocky ſea-ſhore of Lewin's land, where it was found by Mr. Brown, and ſent to Kew, with the laſt, in 1805.

29. B. *grandis.* Great Winged Bankſia. Willd. n. 2. Br. n. 29. Ait. n. 20.—Leaves deeply pinnatifid; lobes triangular-ovate, acute, flat; many-ribbed, and nearly ſmooth, beneath. Corolla and follicles ſmooth.—Gathered by Mr. Menzies, at King George's ſound, on the weſt coaſt of New Holland. Mr. Brown met with the ſame on rocky hills in Lewin's land. Seeds were ſent to Kew in 1794, where this magnificent ſhrub thrives well, in the green-houſe, but has not yet flowered. Willdenow's ſpecific name alludes, we preſume, to the *foliage*, and not to the *flowers*, with which he was not acquainted. The *leaves* are twelve or fourteen inches long, pinnatifid to the very rib; abrupt at the extremity; lobes numerous, more or leſs alternate, crowded, tranſverſe, coriaceous, entire, rather ſpinous-pointed; roughiſh to the touch on the upper ſide; paler underneath, furniſhed with five principal ribs, and many intermediate veiny reticulations; they diminiſh gradually towards the top, and eſpecially towards the baſe, of the leaf. We have ſeen no *flowers* nor *fruit.*

30. B. *repens.* Creeping Bankſia. Labill. Voy. v. 1. 412. t. 23. Br. n. 30. Ait. n. 21.—Leaves pinnatifid; lobes ſinuated or toothed. Stem proſtrate.—Found by Labillardiere, on calcareous rocks on the ſouth-weſt coaſt of New Holland, where alſo Mr. Brown met with this ſpecies. It flowers there in December. The creeping *ſtem* is clothed with ruſty down. *Leaves* a ſpan long, ſtalked, erect, deeply pinnatifid, but not quite to the rib, which is winged nearly all its length: they are downy when young, but finally very ſmooth. *Catkins* ovate, nearly ſeſſile, erect, denſe, many-flowered, about three inches long. *Corolla* and *germen* hairy.

Sect. 2. *Points of the corolla more ſpeedily ſeparating; the narrow part of their ſegments cohering longitudinally, and as long as the ſtyle. Catkin ſhort and level-topped, perfecting ſcarcely more than one vertical follicle.*

31. B. *ilicifolia.* Holly-leaved Bankſia. Br. n. 31.—Leaves wedge-ſhaped, deeply ſerrated; nearly ſmooth beneath. Catkins very ſhort.—Gathered by Mr. Brown, in fields and hilly ground near the ſea-coaſt, in Lewin's land. This ſpecies is ſo ſingular, that its learned diſcoverer appears to have been inclined to make it a diſtinct genus, by the name of *Iſoſtylis.* He remarks that it forms a connecting link between *Bankſia* and DRYANDRA; ſee the latter hereafter.

BANNIUM, in *Ancient Geography*, a Roman ſtation, called Gaer, or Caer Bannau, ſituated about three miles above the town of Brecknock, in South Wales, near the confluence of the rivers Yakin and Uſk. The camp is a parallelogram, 624 feet by 456, having its longeſt parallels in a direction nearly S. and N. The foundation of the wall that encompaſſed this area remains ſtill entire, and may be traced through the underwood that has overgrown and concealed it. In this ſtation there is a cauſeway, ſuppoſed to have been a branch of the great Roman cauſeway leading from Caerleon, in Monmouthſhire, through the vale of Uſk, and the eaſtern part of Brecknockſhire to Ariconium, which is the 12th Iter in Antonine's Itinerary.

BANQUETTE. Add—See BREAST-WORK.

BANTAM, col. 1, l. 50, after ſettled there, inſert—That of the Engliſh was eſtabliſhed in 1601, and maintained until 1683. That of the Dutch was erected in the year 1595, and this was their firſt ſettlement in the Spice iſlands, which had been firſt viſited by the Portugueſe in 1510. The Engliſh made no attempt to recover a free port in Java until the year 1811, when Holland became a province of France, and the Dutch colonies were induced to accept the protection of Great Britain.—Col. 3, at the cloſe of Bantam, add—Raffles's Hiſtory of Java, 2 vols. 4to. 1817.

BAPTISIA, in *Botany*, ſo called by the late M. Ventenat, from βαπτω, *to colour by immerſion, to dye*, becauſe a tincture of the leaves, of ſome of the ſpecies, is ſaid to be ſcarcely inferior, in that reſpect, to Indigo.—Venten. Decas Gener. Novor. 9. Brown in Ait. Hort. Kew. v. 3. 5. (Podalyria; Michaux Boreal.-Amer. v. 1. 263. Purſh 307. Lamarck Illuſtr. t. 327. f. 1.)—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, permanent, cut half way down into four or five ſegments, forming two lips; its baſe externally convex. *Cor.* papilionaceous, of five petals. Standard inverſely-heartſhaped, reflexed at the ſides, with a thick claw. Wings two, nearly as long as the ſtandard, half-obovate, converging at their upper edges. Keel as long as the wings, of two oblong converging petals. *Stam.* Filaments ten, awl-ſhaped, aſcending, equal, inſerted into the baſe of the calyx, deciduous; anthers roundiſh, two-lobed. *Piſt.* Germen ſuperior, ſtalked, ovate or elliptical; ſtyle longer than the ſtamens, aſcending; ſtigma capitate, hemiſpherical. *Peric.* Legume on a ſtalk longer than the calyx, elliptic-oblong, turgid, membranous, of one cell. *Seeds* numerous, elliptical, ſtalked.

Eſſ. Ch. Calyx two-lipped, divided half way down into four or five ſegments. Corolla papilionaceous; petals all nearly of equal length; ſtandard reflexed at the ſides. Stamens diſtinct, deciduous. Legume inflated, ſtalked, with many ſeeds.

To this genus we have already adverted, under the article PODALYRIA, as compriſing the North American ſpecies of that genus, as it ſtands in Lamarck and Willdenow. They are doubtleſs ſufficiently marked by the above characters, to form a genus by themſelves. They are herbaceous, perennial, many of them glaucous, and have moſtly the quality of dyeing blue. *Leaves* ternate, except the firſt, with a pair of rather large *ſtipulas.* *Flowers* moſtly racemoſe, with ſmall partial *bracteas;* their colour blue, white, or yellow.

1. B. *perfoliata.* Perfoliate Wild Indigo. Ait. n. 1. (Rafnia perfoliata; Willd. Sp. Pl. v. 3. 949. Podalyria perfoliata; Purſh n. 1. Crotalaria perfoliata; Linn. Sp. Pl. 1003. Sm. Inſ. of Georgia, v. 2. 133. t. 67. C. perfoliatæ folio; Dill. Elth. 122. t. 102.)—Leaves ſimple, perfoliate, roundiſh, entire. Flowers axillary, ſolitary.—Native of Carolina and Georgia, in dry barren fields,

flowering in July. The whole plant is very ſmooth, ſcarcely glaucous, two or three feet high, diſtinguiſhed by its perfoliate, almoſt orbicular *leaves*, about two inches broad, accompanied by lemon-coloured *flowers*, on ſhort ſimple ſtalks. *Legume* nearly globular.

2. B. *uniflora*. Downy Single-flowered Wild Indigo. (Podalyria uniflora; Michaux Boreal.-Amer. v. 1. 263. Purſh n. 2. Sophora lanceolata; Walt. Carol. 135.)—Leaves ternate, ſeſſile, downy; leaflets lanceolate, obtuſe. Stipulas briſtle-ſhaped, minute. Flowers axillary, ſolitary.—Obſerved by Michaux in Carolina and Georgia. The whole herbage is downy, as well as the *calyx*. *Flowers* ſtalked, yellow.

3. B. *villoſa*. Downy Cluſtered Wild Indigo. (Podalyria villoſa; Michaux ibid. 261. Purſh n. 3. Sophora villoſa; Walt. Carol. 134.)—Leaves ternate, nearly ſeſſile, downy beneath; leaflets elliptic-oblong, obtuſe. Stipulas linear. Cluſter terminal, denſe. Calyx four-cleft.—In low ſandy grounds of Virginia and North Carolina, flowering in June and July. Reſembles a Lupine very much. *Flowers* yellow. *Purſh*. Michaux ſays the *flowers* are pale, nearly ſeſſile; Walter calls them "*cinerei*."

4. B. *auſtralis*. Blue-flowered Wild Indigo. Ait. n. 2. (Podalyria auſtralis; Willd. Sp. Pl. v. 2. 503. Venten. Hort. Celſ. t. 56. P. cærulea; Mich. ibid. 264. Purſh n. 4. Sophora auſtralis; Linn. Syſt. Veg. ed. 13. 325. Mant. 378. Curt. Mag. t. 509. S. cærulea; "Trew Pl. Rar. 6. t. 14.")—Leaves ternate, ſtalked, ſmooth; leaflets lanceolate, ſomewhat wedge-ſhaped. Stipulas lanceolate, longer than the footſtalk.—On the banks of rivers in Virginia and Carolina, particularly in the weſtern diſtricts, flowering in June and July. *Purſh*. A hardy perennial in our gardens, about two feet high, ſmooth in every part, of a fine glaucous-green, with erect *cluſters* of large handſome blue *flowers*; the ſtandard and wings ſtriped with a darker blue; the keel white.

5. B. *alba*. White-flowered Wild Indigo. Ait. n. 4. (Podalyria alba; Willd. Sp. Pl. v. 2. 503. Mich. ibid. 264. Purſh n. 5. Curt. Mag. t. 1177. Sophora alba; Linn. Syſt. Veg. ed. 13. 325. Crotalaria alba; Linn. Sp. Pl. 1006. Anonis caroliniana perennis, non ſpinoſa, &c. Mart. Cent. t. 44.)—Leaves ternate, ſtalked, ſmooth; leaflets elliptic-oblong. Stipulas awl-ſhaped, ſhorter than the footſtalk, deciduous. Germen ſmooth.—In the weſtern parts of Virginia and Carolina, on the banks of rivers, flowering in June and July. *Purſh*. Hardy in our gardens, but not of frequent occurrence. Cateſby firſt introduced it in 1724. The habit of this ſpecies, its ſmoothneſs, and rather glaucous hue, agree with the laſt, to which it is certainly moſt nearly allied; but the *leaflets* are elliptical, the *flowers* white, more oblong, in conſequence of the greater length of the wings and keel, the *ſtipulas* ſmaller and deciduous. The *corolla* is here and there ſpotted with brown, and is reported to be ſometimes blue. Some of the *flowers*, in both theſe ſpecies, are often whorled, and give the *cluſter* an interrupted form, like that of a Lupine, the aſpect of which genus is otherwiſe viſible in theſe plants.

6. B. *mollis*. Soft Wild Indigo. (Podalyria mollis; Mich. ibid. 264. Purſh n. 6.)—"Herbage and calyx minutely downy. Leaves ternate; leaflets lanceolate, ſlightly rhomboid. Stipulas lanceolate, leafy. Cluſter ſpiked, terminal. Teeth of the calyx acute."—Found by Michaux in the county of Mecklenburg, Upper Carolina. Perennial. *Flowers* deep yellow. *Michaux*.

7. B. *tinctoria*. Common Wild Indigo. Ait. n. 3. (Podalyria tinctoria; Willd. Sp. Pl. v. 2. 503. Mich. ibid. 265. Purſh n. 7. Lamarck f. 1. Curt. Mag. t. 1099. Sophora tinctoria; Linn. Sp. Pl. 534. Cytiſus procumbens americanus, flore luteo, ramoſiſſimus, qui Anil ſuppeditat apud Barbadenſium colonos; Pluk. Phyt. t. 86. f. 2.)—Leaves ternate, ſomewhat ſtalked, ſmooth; leaflets roundiſh-obovate. Stipulas ſetaceous, obſolete. Flowers racemoſe.—In woods on dry hills, from Canada to Carolina, flowering in July and Auguſt. Called Wild Indigo. *Purſh*. A low, partly procumbent, ſmooth plant, whoſe numerous branches are each terminated by a ſimple cluſter of yellow *flowers*, about half the ſize of *B. auſtralis*. The *pods* are ovate, on ſtalks much longer than the permanent *calyx*. This ſpecies is ſaid to have been cultivated for Indigo, in the North American ſettlements, and even in Barbadoes, before the true *Indigofera* was introduced. It is tolerably hardy with us, in a dry ſoil and ſheltered ſituation, but has nothing to recommend it for general cultivation.

BAR, in *Heraldry*, r. *Plate* III.

BAR, *Trial at*. See JURY.

BARACKS, col. 2, add—See CASERNS.

BARAQUICIMITO, *dele* lat. and long., and add—See BARQUISIMETO.

BARBAREA, in *Botany*, a name uſed by Dodonæus, becauſe this plant had been called the Herb of St. Barbara by ſome preceding botaniſts. It has always been referred to ERYSIMUM, (ſee that article,) till Mr. Brown raiſed it to the rank of a ſeparate genus, under the above appellation, in Ait. Hort. Kew. v. 3. 109.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pod quadrangular, compreſſed. Cotyledons accumbent. Seeds in a ſingle row. Calyx erect. Glands between the ſhorter ſtamens and the germen.

Two ſpecies only are deſcribed.

1. B. *vulgaris*. (Eryſimum Barbarea; Linn. Sp. Pl. 922. Sm. Fl. Brit. 706. Fl. Dan. t. 985.) See ERYSIMUM, n. 2.

2. B. *præcox*. See the ſame article, n. 3.

Mr. Brown thus defines ERYSIMUM.

Eſſ. Ch. Pod quadrangular. Seeds without a border. Cotyledons incumbent. Stigma capitate; ſometimes emarginate, with ſpreading lobes. Calyx cloſed.

We have explained the terms *accumbent* and *incumbent*, as thus technically uſed, under the article TETRADYNAMIA, where a more particular account is given of our ingenious friend's arduous undertaking, of reforming the genera of the natural order in queſtion.

BARBAREEN. See CALTURA.

BARBET, in *Fortification*. See BATTERY.

BARBOURSVILLE, in *Geography*, a town of Kentucky, in Knox county, containing 55 inhabitants, eight of whom are ſlaves.

BARBULA, in *Botany*, ſo called by Hedwig, in alluſion to the beard-like *fringe* of the *capſule*. See TORTULA.

BARDSTOWN. Add—See BEARDSTOWN.

BARETTI, col. 2, l. 27, for Burke r. Bowle.

BARILLA. Add—See CARBONATE *of Soda*.

BARIUM, in *Chemiſtry*, the metallic baſe of barytes. (See BARYTES, *infra*.) Dr. Clarke has lately propoſed the name of *Plutonium* for this metal.

BARK-PIT, col. 4, l. 19, for *Gardening* r. *Bark-beds*, &c.

BARKHAMPSTEAD, in *Geography*, a town of Litchfield county, in Connecticut, having 1506 inhabitants.

BARKWAY, l. *ult*. r. Its houſes in 1811 amounted to 99, and its inhabitants to 686.

BARLEY, CAUSTIC *Indian*, &c. *dele*.

BARNARD, in *Geography*, l. 2, for 673 r. 1648.

BARNARD-*Caſtle*, l. *ult*. for 310 r. 450; and for 2966 r. 2986; add—1312 being males, and 1674 females.

BARNET, l. *ult.* *r.* pariſh are 259 houſes, inhabited by 1579 perſons; 755 males, and 824 females.

Barnet, in America, for 477 *r.* 1301.

BARNSTAPLE. At the cloſe *r.* in the borough and pariſh is ſtated by the return in 1811 to be 628, and of perſons 4019, *viz.* 1633 males, and 2386 females.

Barnstaple, or *Barnſtable*, American county, l. 6, *r.* 22,211. Do. col. 2, l. 25, for 2610 *r.* 3646.

BARNWELL, a diſtrict of South Carolina, containing 12,280 inhabitants, including 4153 ſlaves.

BAROMETER, col. 7, l. 17, *r.* 68-hundredth parts of, &c. Col. 14, l. 40, add—We obſerve, however, that it is merely a floating manometer, and as ſuch more influenced by the temperature than the denſity of the atmoſphere, and therefore not to be ſo much depended upon as to warrant the high commendation above given to it. Col. 68, l. 36, *r.* 42 − 32. Col. 69, l. 6 from bottom *r.* $\frac{29.4 + 25.19}{2}$.

BARON, col. 1, l. 21 from bottom, for *Minerva* r. *Minever*.

BARQUISIMETO, in *Geography*, a city of America, in the government of Caraccas, 40 leagues W.S.W. of Caraccas, 150 leagues N.N.E. of Santa Fé, and 15 leagues from Tocuyo. N. lat. 9° 45′. The exceſſive heat is rendered ſupportable by the cooling breeze ariſing from its elevated ſituation. The adjacent plains are covered with excellent paſturage favourable for rearing every marketable animal. The ſugar-cane and the beſt wheat are alſo cultivated. The vales produce excellent cacao; and the ſides of the hills are devoted to the culture of coffee. This city accommodates 11,300 perſons; its houſes are well built, and the ſtreets are ſo laid out as to afford a free circulation of air. It has a pariſh-church and two officiating prieſts, a monaſtery of Franciſcans, and a hoſpital badly attended.

BARRE′, a townſhip of America, l. 2, *r.* 1971; l. 11, add—having 1053 inhabitants.—Alſo, a town of Vermont, in Orange county, having 1669 inhabitants.

BARREL. By 43 Geo. III. c. 69. every 36 gallons of beer or ale brewed by the common brewers in Great Britain, taken according to the ſtandard of the ale quart, four thereof to the gallon, in the exchequer, ſhall be reckoned by the gauger or other officer of exciſe for a barrel of beer or ale.

Barrel, a weight by which corn is ſold in Ireland. The barrel of wheat, peas, beans, and rye, is 20 ſtone: of barley, bere, and rape-ſeed, 16 ſtone; of oats 14, and in ſome places 12 ſtone; of malt, 12 ſtone: the ſtone being 14 lbs. avoirdupois weight. A barrel of good wheat anſwers to about four Wincheſter buſhels.

BARREN Flowers, in *Botany* and *Vegetable Phyſiology*, *Flores maſculi* in Linnæan terminology, are ſuch as are not provided with organs for the formation of fruit or ſeed, but only with *ſtamens* for its impregnation. See Fecundation *of Plants*.

BARRIER, in *Fortification*. Add—See Cheval *de Friſe*, Herison, Klinkets, and Turnstile.

BARRILE, plur. Barrili, a liquid meaſure in Italy.

BARRIN, in *Geography*, a county of the diſtrict of Kentucky, containing 11,042 inhabitants, of whom 1656 are ſlaves. The town, Glaſgow, has 244 inhabitants, of whom 68 are ſlaves.

BARRINGTON, a townſhip in Strafford county, &c. l. 3, for 2470 *r.* 3564. Id. l. 5, for 683 *r.* 604. Id. l. 2, for 1373 *r.* 1784.

BARRIQUE, a meaſure for wine and brandy in ſome parts of France, as at Bourdeaux, Rochelle, &c. At Bourdeaux, a tonneau of wine contains 4 barriques or hogſheads = 50 ſtekans in Amſterdam, 259 ſtubgen in Hamburgh, or 243 Engliſh gallons; and weighs with the wood about 2000 lbs. of Bourdeaux. The barrique contains 110 pots, or 32 veltes.

Barry-Bendy, &c. *Plate* III. *Heraldry*, &c.

BART, in Lancaſter county, add—It contains 1099 inhabitants.

BARTHELEMY, a river of Louiſiana, which riſes near the Arkanſas, and after a courſe generally from N. to S. of 100 miles, falls into Ouachitta, 3 miles below the Derbane, on the contrary ſide.

BARTHOLINA, in *Botany*, a genus of the *Orchis* family eſtabliſhed by Mr. Brown, and dedicated by him to the memory of the great Daniſh anatomiſt and phyſiologiſt, Thomas Bartholin, whoſe life is already given in its proper place, and whoſe various writings relating to plants, in the old Copenhagen Tranſactions, entitle us to adorn the hiſtory of our ſcience with his truly illuſtrious name.—Brown in Ait. Hort. Kew. v. 5. 194.—Claſs and order, *Gynandria Monogynia*. Nat. Ord. *Orchideæ*.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular at the baſe, deeply divided above into three, elliptic-oblong, equal, ribbed, ſpreading ſegments, externally hairy. *Cor.* Petals two, linear-lanceolate, erect, ſmooth, taper-pointed, nearly twice the length of the calyx. Nectary a large ſpreading lip, united to the baſe of the petals, thrice the length of the calyx, in three deep principal lobes, the middle one broadeſt, all divided, more than half way down, into many linear, fringe-like ſegments, and terminating behind in a tumid, curved, bluntly-pointed ſpur, rather longer than the tube of the calyx. *Stam.* Anther pointed, of two oblong, rather diſtant, parallel cells, opening in front, attached to the two margins of the ſtyle; maſſes of pollen each ſupported on a long, membranous-bordered ſtalk, to which their cells are laterally attached, "their glands diſtinct, half covered by the exterior lobe." *Piſt.* Germen inferior, elliptic-oblong, curved, very hairy; ſtyle flattened, much ſhorter than the calyx; ſtigma a cavity between the lobes of the anther. *Peric.* Capſule……

Eſſ. Ch. Calyx tubular at the baſe. Petals united to the baſe of the lip, whoſe ſpur is ſhorter than the germen. Stalks of the pollen elongated; their cells laterally fixed; "glands diſtinct, half covered by the exterior lobe."

1. B. *pectinata*. Fringed Bartholina. Ait. n. 1. (Orchis Burmanniana; Linn. Sp. Pl. 1334. Am. Acad. v. 6. 108. "Swartz in Web. and Mohr Archiv. v. 1. 55. t. 3." O. pectinata; Thunb. Prodr. 4. Fl. Cap. v. 1. 45. Willd. Sp. Pl. v. 4. 11. Arethuſa ciliaris; Linn. Suppl. 405.)—Gathered by Thunberg and Sparrmann, on the ſides of hills at the Cape of Good Hope, in Roode Sand, as well as near Cape Town, flowering from October to December. The *root* conſiſts of two ovate hairy knobs, the ſize of a horſe-bean. *Leaf* ſolitary, radical, orbicular, claſping the flower-ſtalk, an inch broad, horizontal, fleſhy; ſmooth, and of a fine green, on the upper ſide; paler and veiny beneath; the margin reflexed, and very denſely fringed. *Flower-ſtalk* ſolitary, ſimple, ſingle-flowered, five or ſix inches high, erect, hairy, with a ſolitary, funnel-ſhaped, hairy *bractea*, half an inch long, near the top. *Flower* large, of a very ſingular aſpect. *Calyx* green, converging, ſtrongly ribbed, and externally hairy, near an inch long, its tube included. *Petals* whitiſh, with a blue mid-rib, and a ſtripe of the ſame colour in their lower part. *Lip* two inches in length and breadth, ſpreading, finely cut; its ſegments white above, blue underneath, the throat dotted and minutely ſtreaked

with blue. *Spur* greeniſh-white. Maſſes of *pollen*, (which Linnæus in the *Supplement* has deſcribed as a pair of ſtyles,) inſerted into the baſe of the ſtyle, yellowiſh, prominent, very conſpicuous even in dried ſpecimens.

BARTLET, a town of America, in Coos, &c. *r.* 436.

BARTON, in Orleans county, &c. add—it contains 447 inhabitants.

BARTON-*upon-Humber*, l. *ult.* for 412 *r.* 191—for 1709 *r.* 1129. The pariſh of Barton, St. Mary, has 209 houſes and 976 perſons; and the pariſh of St. Peter has 260 houſes, and 1228 perſons.

BARTONIA, in *Botany*, received that name from Dr. Sims, in 1812, in juſt commemoration of the ſcientific merits and zeal of Dr. Benjamin Smith Barton, at that time profeſſor of botany and natural hiſtory, in the univerſity of Pennſylvania, who after many exertions, and ſeveral publications, in the ſervice of natural ſcience, died of hydrothorax, at Philadelphia, on the 19th of December 1815, in the fiftieth year of his age. His nephew, Dr. William Barton, in an animated and intereſting "Biographical Sketch" of his character and purſuits, has preſerved ſome account of the plants which compoſe this genus, written by the late profeſſor, three or four days before his death, and accompanied by many particulars, relative to Mr. Purſh and Mr. Nuttall, through whoſe means it has come to the knowledge of European botaniſts; all which evince a love of ſcience, that the moſt painful bodily ſufferings could not repreſs.—Sims in Curt. Mag. 1487. Purſh 327. Ait. Epit. 364.—Claſs and order, *Icoſandria Monogynia.* Nat. Ord. *Loaſeæ*, Juſſ. Ann. du Muſ. d'Hiſt. Nat. v. 5. 18. *Sims.*

Eſſ. Ch. Calyx ſuperior, in five deep ſegments. Corolla of many petals, with claws. Stamens uniform. Capſule cylindrical, of one cell, with a lid of three or five valves, and as many parietal receptacles. Seeds numerous, flat, in double rows.

1. B. *ornata.* Large-flowered Bartonia. Purſh n. 1. Ait. n. 1. (B. decapetala; Sims as above, t. 1487.)—Germen leafy. Seeds without a wing.—Found by governor Lewis, in 1804, on chalky ſoil on the borders of the Miſſouri, flowering in July and Auguſt. *Purſh.* Profeſſor Barton records that Mr. Nuttall firſt made this fine plant known to him in 1811, having found it growing all the way from the river Platte to the Andes, on broken hills and in the clefts of rocks. Mr. Purſh by miſtake, as the profeſſor thought, ſpeaks of the ſoil as volcanic. Living plants were brought to England by Mr. Nuttall, who is unqueſtionably entitled to the honour of this diſcovery, as he could not know what might be concealed in the herbarium of any deceaſed traveller. The figure in the Magazine, though taken from a dried ſpecimen, is unexceptionable, as far as it goes. The *herb* is biennial, downy, glaucous, about three feet high. *Leaves* alternate, ſeſſile, oblong, pinnatifid. *Flowers* terminal, enveloped in leaves, three inches broad, with about ten elliptical, acute, white *petals*, and numerous *ſtamens*, half as long, whoſe *anthers* are elliptical, yellowiſh. Theſe *flowers* expand ſuddenly in an evening, diffuſing a moſt agreeable odour, and rival thoſe of ſome of the fine ſpecies of *Cactus* in elegance.

2. B. *nuda.* Small-flowered Bartonia. Purſh n. 2. Ait. n. 2.—Germen naked. Seeds winged.—Found by Mr. Nuttall, on gravelly hills near the Grand Detour of the Miſſiſſippi, flowering in Auguſt. *Root* perennial. *Petals* more numerous. *Barton.* Mr. Purſh obſerves that this has ſmaller *flowers* than the foregoing, and leſs glaucous *leaves.* The *petals* vary in number, from ten to fifteen.

We have ſeen no ſpecimens, and have ſcarcely ſufficient materials for drawing up a full generic character.

BARTRAMIA, is intended to commemorate the venerable John Bartram, the friend of Collinſon, Dillenius, Fothergill, and Linnæus, to whom gardeners and botaniſts are indebted for ſome of the moſt valuable plants of North America. The original *Bartramia* of Linnæus, having been referred by its author himſelf to TRIUMFETTA, (ſee that article,) Hedwig has transferred the name to a fine, and very diſtinct, genus of Moſſes, now univerſally received.—Hedw. Crypt. v. 2. 111. Sp. Muſc. 164. Schreb. Gen. 761. Sm. Fl. Brit. 1339. Engl. Bot. v. 14. 997. Compend. 182. Turn. in Sims and Kon. Ann. of Bot. v. 1. 522. Muſc. Hib. 106. Hooker and Taylor Muſc. Brit. 85. t. 3.—Claſs and order, *Cryptogamia Muſci.* Nat. Ord. *Muſci.*

Eſſ. Ch. Capſule ſpherical, furrowed. Outer fringe of ſixteen teeth, dilated at the baſe; inner membranous, plaited, deeply laciniated. Veil ſmooth. Lid depreſſed.

Eight ſpecies are deſcribed in Engl. Bot. and Compend. Fl. Brit., and there are ſeveral of exotic growth.

Sect. 1. *Fruit-ſtalks ſhorter than the ſtem.*

1. B. *Halleriana.* Lateral Bartramia. Hedw. Crypt. v. 2. 111. t. 40. Engl. Bot. t. 997. Hook. and Tayl. n. 5. t. 23. (Bryum laterale; Hudſ. 483. Ehrh. Crypt. 33. B. n. 1802; Hall. Hiſt. v. 3. 43. t. 46. f. 8.)—Fruit-ſtalks lateral, curved, ſhorter than the linear-awlſhaped, ſingle-ribbed, rough-edged leaves.—Native of moiſt rocky mountainous woods, in Switzerland, Germany, Scotland, Wales, and the north of England. The *ſtems* are, as Mr. Hooker obſerves, perennial, and repeatedly proliferous, ſo that, although the *flowers* are, like every *Bartramia*, originally terminal, the *fruit* ſoon becomes lateral, and remaining two or three years, is found numerouſly ranged along the main ſtem, among the denſe, ſlender *leaves.* When ripe it becomes ſtrongly furrowed, though originally ſmooth or even.

2. B. *arcuata.* Curve-ſtalked Bartramia. Engl. Bot. t. 1237. Fl. Brit. n. 5. Hook. and Tayl. n. 6. t. 23. (Mnium arcuatum; Dickſ. Crypt. faſc. 3. 2. t. 7. f. 3. M. chryſocomum; Hedw. Sp. Muſc. 74. Hypnum paluſtre erectum, comâ luteâ, baſi nigricante; Dill. Muſc. 302. t. 39. f. 36.)—Fruit-ſtalks recurved. Leaves lanceolate, ſingle-ribbed, furrowed, finely ſerrated. Branches ſcattered, ſpreading.—Native of mountains in Great Britain and Ireland. According to Mr. Hooker, it is found, in the greateſt abundance, on wet rocks, at Lowdore and Keſwick, Cumberland, and is alſo very common in the mountainous diſtricts of Ireland, though unknown on the continent of Europe. With all deference to our worthy friend however, the ripe *capſule* is as decidedly furrowed as in any other ſpecies. The more branched and tufted habit of this moſs, and the broader, ſhorter, rigid, yellowiſh, more ſpreading *leaves*, at once diſtinguiſh it from the foregoing. The *fruit-ſtalks* ſoon become lateral, and are wavy rather than recurved, longer than in the preceding. Mouth of the *capſule* ſmall, with a red *outer fringe*, whoſe teeth are lined, as it were, with the ſixteen oppoſite teeth of the *inner* one.

Sect. 2. *Fruit-ſtalks riſing above the ſtem.*

3. B. *pomiformis.* Apple Bartramia. Hedw. Sp. Muſc. 164. Fl. Brit. n. 2. Engl. Bot. t. 998. Hook. and Tayl. n. 1. t. 23. Hook. in Curt. Lond. ed. 2. t. . . . (Bryum pomiforme; Linn. Sp. Pl. 1580. B. capillaceum, capſulis ſphæricis; Dill. Muſc. 339. t. 44. f. 1.)—Fruit-ſtalks erect, taller than the ſtem. Leaves awl-ſhaped, ſingle-ribbed; ſomewhat twiſted when dry.—Common on heaths and dry banks, in various parts of Europe, bearing capſules in the ſpring. An elegant moſs, conſiſting of denſely leafy *ſtems*

from one to three inches in height, clothed and matted together below with copious brown fibres. *Leaves* bright green, ſlender, gradually tapering from their baſe; ſtrongly ſerrated towards the point; ſomewhat twiſted and curved by drying. *Fruit-ſtalks* near the tops of the ſtems, about an inch long, bright orange-red, ſlightly wavy. *Capſule* globoſe, green and ſmooth while young; more elliptical when ripe, oblique, brown, with ſixteen furrows. *Lid* rather convex, boſſed. *Fringe* ſhort, red. *Veil* conical, curved, ſplit half way up on one ſide.

4. B. *criſpa*. Frizzled Bartramia. Swartz Muſc. Suec. 73. Turn. in Ann. of Bot. v. 1. 527. Winch Guide v. 2. 16. "Bridel. Muſc. v. 2. 3. t. 1. f. 4. Schwægr. Suppl. t. 59." Sm. Compend. n. 3. Engl. Bot. t. 1526. (B. pomiformis β; Turn. in Ann. of Bot. v. 1. 527. Hook. and Tayl. n. 1, β.)—Fruit-ſtalks erect. Leaves briſtle-ſhaped; dilated at the baſe; incurved and curled when dry. Lid ſlightly conical.—Native of mountainous ſituations in Britain, and other parts of Europe. Larger in its *ſtems* and *foliage* than the preceding, the *leaves* of a lighter brighter green, longer, and more ſlender, except at the very baſe, and when dry ſo ſtrongly curled, twiſted, and involute, as to give the plant a very different aſpect. The intelligent authors of the *Muſcologia Britannica* nevertheleſs judge this to be but a variety of the *pomiformis*, and they unite it with Mr. Turner's ſuppoſed variety of that ſpecies, which he diſtinguiſhed from *criſpa*, and which he has thought to be figured for *criſpa*, in Engl. Bot. t. 1526. We acknowledge that figure to be not a very happy one, except the *lid*, which ſeems to us always rather more conical than in *pomiformis*.

5. B. *ithyphylla*. Straight-leaved Bartramia. Bridel. Muſc. v. 4. 132. t. 1. f. 6. Sm. Compend. n. 4. Engl. Bot. t. 1710. Winch Guide v. 2. 17. Hook. and Tayl. n. 2. t. 23.—Fruit-ſtalks elongated, erect. Leaves capillary, nearly entire, ſingle-ribbed half way up; dilated at the baſe; ſtraight when dry.—Found on dry banks, in the mountainous parts of Germany, Sweden, England, and Wales. The long, very ſlender, light-green *leaves* are only ſerrated at the very point, and are remarkable for remaining always ſtraight when dry, which Mr. Hooker has well attributed to the whole ſubſtance of the mid-rib being dilated and loſt in the upper half of the leaf, to which it conſequently gives firmneſs. The *capſules* are much curved; their *ſtalks* longer than in the foregoing. The dilated baſe of each *leaf* is ſingularly membranous and ſhining.

6. B. *gracilis*. Tall Slender Bartramia. Flörke in Schrad. Journ. v. 2. 171. Fl. Brit. n. 3. Engl. Bot. t. 1826. Hook. and Tayl. n. 3. (B. Oederi; Schwægr. Suppl. t. 59, as alſo, according to Mr. Hooker, B. grandiflora, t. 58. Bryum Oederi; Retz. Prodr. 261. Fl. Dan. t. 478.)—Fruit-ſtalks from lateral branches, taller than the ſtems. Leaves lanceolate, ſerrated towards the point; recurved and twiſted when dry.—Native of the loftieſt Scottiſh mountains, as well as of the north of Europe. The *ſtems* are two or three inches high. *Leaves* broader than in any of the three preceding ſpecies, ſomewhat revolute at the margin, eſpecially when dry, in which ſtate they become recurved, and not curled inwards. Their colour is a darkiſh graſs-green. *Capſules* ſmall, from ſhort lateral ſhoots.

7. B. *ſquarroſa*. Spreading-leaved Bartramia. Turn. in Ann. of Bot. v. 1. 528. t. 11. f. 2.—Fruit-ſtalks lateral, taller than the ſtems. Leaves awl-ſhaped, entire; ſingle-ribbed at the baſe; ſpreading and ſtraight when dry.—Received from Java by Mr. Dickſon. Gathered by Commerſon, at the ſtraits of Magellan. The tufted leafy *ſtems*, ſhaggy with ruſty fibres, and ſcarcely branched, are two or three inches high. *Leaves* ſlender, yellowiſh-green, longer than any of the preceding, except perhaps *B. Halleriana*, and always quite ſtraight, probably from the ſame cauſe as in *ithyphylla*, the rib being ſoon loſt in the ſubſtance of the leaf. *Fruit-ſtalks* ſtraight, erect. *Capſule* curved, ſtrongly furrowed. *Lid* convex, blunt.

8. B. *Menzieſii*. Tall Forked Bartramia. Turn. ibid. 525. t. 11. f. 1.—Fruit-ſtalks ſlightly elevated above the tall forked ſtems. Leaves lanceolate, ſingle-ribbed, taper-pointed, entire; cloſe-preſſed when dry. Capſule nearly globular, with ſhallow furrows.—Gathered on the north-weſt coaſt of America, by Mr. Menzies. The tall ſlender *ſtems*, covered with cloſe-preſſed, tawny, ſhining *leaves*, half the length of the laſt, clearly diſtinguiſh this ſpecies. The *capſules* are ſcarcely curved, even when fully ripe, and their ſurface is wrinkled as well as finely furrowed.

9. B. *ſphærocarpa*. Globoſe Bartramia. Hedw. Crypt. v. 3. 93. t. 38 A. Turn. as above, 525. (Mnium ſphæricarpon; Swartz Prodr. 139, from the author.)—Fruit-ſtalks taller than the ſlender cluſtered branches. Leaves lanceolate-awlſhaped, cloſe-preſſed, finely ſerrated.—Native of Jamaica. *Swartz.* The ſlender *ſtems* are determinately branched, as in the following, to which this ſpecies is very nearly allied, though ſmaller, with longer *branches*. In the *leaves*, though uſually narrower, we ſcarcely find a permanent difference. Hedwig's figure erroneouſly omits the furrows of the *capſule*.

10. B. *marchica*. Narrow-leaved Bog Bartramia. Web. and Mohr Ind. 5. Sm. Compend. n. 7. Engl. Bot. t. 2074. (B. fontana β; Hook. and Tayl. n. 4. Turn. Muſc. Hib. 107. t. 10. f. 1. Mnium marchicum; Hedw. Crypt. v. 2. 108. t. 39.)—Fruit-ſtalks elongated, much taller than the cluſtered branches. Leaves lanceolate, finely ſerrated at the point, cloſe-preſſed.—Native of wet ſituations in Germany, the Highlands of Scotland, and the mountains of Nepaul, for Mr. Hooker aſſures us his *B. fontana*, Tr. of Linn. Soc. v. 9. 317, is this plant. He is alſo of opinion that *B. marchica* is merely a lanceolate-leaved variety of the following.

11. B. *fontana*. Broad-leaved Fountain Bartramia. Fl. Brit. n. 4. Turn. Muſc. Hib. 107. Hook. and Tayl. n. 4. t. 23. (Mnium fontanum; Linn. Sp. Pl. 1574. Hedw. Sp. Muſc. 195. Bryum fontanum; Engl. Bot. t. 390. B. paluſtre, ſcapis teretibus ſtellatis, capſulis magnis ſubrotundis; Dill. Muſc. 340. t. 44. f. 2.)—Fruit-ſtalks elongated, much taller than the cluſtered branches. Leaves ovate, finely ſerrated at the point, cloſe-preſſed.—Native of ſpongy bogs throughout Europe, and perhaps in other parts of the world. It is one of our handſomeſt and largeſt moſſes, bearing capſules in ſpring and ſummer. The barren *flowers* form terminal leafy ſtars, on a ſeparate plant from the *capſules*, whoſe ſtalks are two or three inches long, riſing high above the tuft of leafy branches, which have overtopped the originally terminal ſituation of their *flowers*. *Capſule* brown, with a minute ſharp beak to the lid. *Leaves* uſually direct, broadly ovate, entire at the edges, the point only being ſerrated. They appear at firſt ſight very different from the lanceolate narrow ſhape of the laſt, and ſtill more from the curved taper-points of Mr. Hooker's *B. falcata*, Tr. of Linn. Soc. v. 9. 317. t. 27. f. 4, which he is diſpoſed to reduce to the *fontana*, having found the latter in Switzerland with leaves as decidedly curved. We cannot diſpute his accuracy of obſervation and judgment in this point; nor are we much diſpoſed to queſtion his further opinion, that Hedwig's *ſphærocarpa*, our n. 9, as well as

ſcabrida Muhlenbergii, (of which we have ſpecimens from its finder,) and *radicalis* of Schwægrichen's Supplement, may poſſibly be likewiſe varieties of *B. fontana*.

BARYTES, in *Chemiſtry*, one of the earthy ſubſtances termed *alkaline*. We ſtated that this earth was conſidered by Bergman, Lavoiſier, and other eminent chemiſts, as a refractory metallic oxyd; and this ſuppoſition has been ſince confirmed by the experiments of Berzelius and Pontin, who, led by ſir H. Davy's decompoſition of potaſh and ſoda by galvaniſm, ſubjected this earth to the ſame agent. Their experiments were attended with complete ſucceſs, and have been ſince verified by ſir H. Davy and other chemiſts. To this metallic baſis, Davy gave the name of *barium*. More lately, Dr. Clarke of Cambridge thought he had decompoſed this earth by expoſing it to an intenſe heat, produced by the combuſtion of a ſtream of oxygen and hydrogen gas, mixed together in the requiſite proportions to form water. To the metal thus obtained, he propoſed to give the name of *plutonium*. Many chemiſts, however, think, that Dr. Clarke from ſome cauſe or other permitted himſelf to be deceived in theſe experiments, and that inſtead of a metal he only obtained a ſlag with a pſeudo-metallic ſurface.

Barium obtained by galvanic agency is a ſolid metal of the colour of ſilver. It melts at a temperature below redneſs, and is not volatilized by a heat capable of melting plate-glaſs; but at that temperature it acts violently on the glaſs, probably by decompoſing the alkali of the glaſs, and converting it into a protoxyd. When expoſed to the air, it rapidly tarniſhes, abſorbs oxygen, and is converted into barytes. It ſinks readily in water, and ſeems to be at leaſt four or five times heavier than that fluid. It decompoſes water very rapidly. Hydrogen is emitted, and the barium is converted into barytes. Barium ſeems to be both ductile and malleable.

Barium, according to the experiments of Gay Luſſac and Thenard, combines with two proportions of oxygen. The protoxyd is the earth called *barytes*. No direct experiments have been made to aſcertain the proportion of oxygen it contains; but this may be determined by other means. Thus, ſulphate of barytes is compoſed of

Sulphuric acid - - -	100
Barytes - - - -	194

and carbonate of barytes of

Carbonic acid - - -	100
Barytes - - - -	354.54

Hence it may be eaſily aſcertained by calculation, that the equivalent number for barytes is 97.5, oxygen being 10; and if we conſider this earth as a protoxyd, the number for barium will of courſe be $97.5 - 10 = 87.5$. Hence one hundred parts of barytes conſiſt of

Barium - - - -	89.74
Oxygen - - - -	10.26
	100.00

Gay Luſſac and Thenard found, that when dry barium, from nitrate of barytes, or from the carbonate of barytes decompoſed by charcoal, was heated in oxygen gas, it abſorbed that gas with great rapidity. The peroxyd formed was grey. It gave out its exceſs of oxygen, when put into water. When heated in hydrogen gas, the hydrogen was abſorbed, and water was formed, which remained united to the barytes.

The ſalts of barytes are deſcribed under SALTS. The equivalent numbers of theſe, however, require a little correction; for which purpoſe, we refer our readers to the article ATOMIC *Theory*, where the lateſt determinations will be found.

The muriate of *barytes* (ſee SALTS) has been employed as a medicine in ſcrofulous and cancerous caſes. Although it has been accounted highly poiſonous, Dr. Johnſtone, in his "Eſſay on Poiſons," ſays, that he has ſeen a female take 30 drops of a ſaturated ſolution of muriate of barytes *repeatedly* in the courſe of a day, without even nauſea: and he concludes, that it would require at leaſt two or three drachms to do miſchief. Barytes is capable of making a very tenacious cement, but it has been yet much uſed in the arts, except by limners, as a moſt excellent water-colour. Mr. Hume, ſays Mr. Parkes (Chem. Catech.), many years ago diſcovered the method of making a colour from this earth. It is the only *white* for water-painting that never changes. It has another peculiar advantage, that it may be mixed with any other colour without injury. It is ſold under the name of "Hume's permanent White." See WHITE.

BARYTES, *Carbonate of*. See CARBONATE *of Barytes*.

BASALT, in *Mineralogy* and *Geology*, a compact dark-coloured rock, claſſed by geologiſts with trap-rocks. (See TRAP.) It has received the name of whin-ſtone in the north of England (ſee WHIN-STONE); and in Staffordſhire, Rowley-rag (ſee ROWLEY-RAG). In the arrangement of rocks by the Wernerian geologiſts, baſalt is conſidered as a compact green-ſtone, which latter rock is compoſed of felſpar and hornblende; but green-ſtone being more cryſtalline, the conſtituent parts are diſtinctly ſeparated. Green-ſtone and baſalt often paſs into each other. (See GREEN-*Stone*, *Addenda*.) Baſalt has generally been claſſed with ſimple minerals; and a ſhort account of its characters and conſtituent parts are given under the article BASALT (which ſee). More correct analyſes of this rock have ſince been made, in which ſoda is found to be a conſtituent part. We greatly doubt the propriety of claſſing baſalt with ſimple minerals; for it has been aſcertained, that moſt baſaltic rocks are compoſed of two or more minerals intimately mixed, but requiring the aid of a lens to diſtinguiſh them. Of theſe, the mineral called augit is the one which prevails, or forms the dark colour: it is intermixed with felſpar and olivine. It is thus aſcertained that baſalt reſembles in its conſtituent parts, as it does in other characters, dark compact lava. (See VOLCANIC *Products*.) Before the obſervations of the French mineralogiſt Cordier, both baſalt and compact dark lava were ſuppoſed to be formed of hornblende and felſpar.

Before the blow-pipe, baſalt melts eaſily, without addition, into an opaque black-coloured glaſs. It melts at a comparative low degree of temperature from 38° to 45° of Wedgewood. If it be cooled rapidly, the maſs is vitrified; if cooled ſlowly, it is ſtony, and preſents a tendency to a columnar arrangement. Some intereſting experiments of this kind are deſcribed under the article ROWLEY-RAG (which ſee).

The conſtituent parts of baſalt, as given by Klaproth and Dr. Kennedy, are as follow:

	Baſalt of the Haſſenberg.	Baſalt of Staffa.
Silex	44.50	48.0
Alumine	16.75	16.0
Lime	9.50	9.0
Magneſia	2.25	
Soda	2.60	4.0
Oxyd of iron	20.0	16.0
Oxyd of manganeſe	0.12	
Muriatic acid		1.0
Water and volatile matter	2	4
Klaproth	97.72	Kennedy 98

Baſalt exiſts abundantly in the northern parts of England and in Scotland. It occurs at the Clee Hills in Shropſhire, and at Rowley in Staffordſhire; but is not met with in the ſouthern counties of England. Some rocks of the trap or baſaltic formation occur in Glouceſterſhire and Somerſetſhire. Baſalt forms the well-known columnar ranges at the Giant's Cauſeway in the county of Antrim, and at Staffa. See GIANT'S *Cauſeway* and STAFFA.

The origin of baſaltic rocks has excited much attention among geologiſts. Their ſimilarity to volcanic rocks in compoſition and ſtructure, the remarkable poſitions in which they occur, and the changes they frequently produce on the rocks in their vicinity, have led moſt intelligent and unprejudiced obſervers to the concluſion, that a great number, if not all, baſaltic rocks have been formed by igneous fuſion. The mineral veins filled with baſalt, that interſect other rocks, frequently produce all the changes which a fluid maſs of heated lava would have effected. (See VEINS, *Mineral*, and TRAP.) In the latter article, the arguments which have been offered againſt the igneous origin of baſalt are alſo ſtated. For further remarks on the ſubject, ſee *Syſtems of* GEOLOGY. But the moſt ſtriking phenomena, and which ſeem to decide the queſtion, are preſented in the diſtricts called Velay and Viverais, in the ſouth of France. Theſe diſtricts have all the appearance of having been once the ſeats of active volcanoes, the remains of which are diſtinctly viſible: from ſome of theſe ancient volcanoes, the lava may be traced to the crater, and this lava is a compact columnar baſalt. See *Plate* II. *Mineralogy*, *Baſalt*.

The mountain of Aiſa, called La Coupe, or the Col d'Aiſa, of which a view is given, is ſituated near the village Entrague, in the Viverais. This village, according to St. Fond, is placed on a kind of platform of volcanic matter above the torrent of the Volant, which has here excavated a bed of great depth and width, bordered on the right and left by grand ranges of baſaltic columns. In the midſt of a prodigious rampart of theſe columns, at different levels, may be ſeen a current of lava deſcending from a neighbouring mountain, and joining the columns that border the river. Here we ſee, in the moſt unequivocal and convincing manner, that the lava under the form of hard and compact baſalt, has flowed at ſeveral times from the mountain, and has formed the great cauſeway at different heights, to which the lava is ſtill united and adhering. We may follow the current of baſalt up the declivity of the mountain, which has a conical form and a great elevation, and is entirely volcanic from the baſe to the ſummit. According to St. Fond, it is the moſt remarkable and beſt characteriſed crater in all the Viverais.

All the baſe of the conical mountain La Coupe is covered by porous and cellular lava in detached irregular maſſes, heaped on each other, ſo as to leave no doubt that they have been ejected in a liquid ſtate by one or more formidable eruptions, and have taken their forms as they fell at the foot of the cone.

On reaching the ſummit or edge of the crater we may ſee the whole mountain, which forms a regular cone reſembling that of Veſuvius. The edges of the crater are ſteep, and formed in the ſhape of a tunnel; the greateſt diameter being from 140 to 150 toiſes, and the depth about 600 feet. The lavas are coloured, and converted into a kind of puzzolani, and mixed with great maſſes of black and ſharp ſcoriæ, which makes the deſcent difficult. At the bottom of this inverted cone is a magnificent plantation of cheſnut-trees, which have flouriſhed aſtoniſhingly in this ancient mouth of a volcano, having no other ſoil than the dry and friable puzzolani. It may be noticed, that the crater of Veſuvius was lined with lofty trees at the period of its eruption in 1631, having been in a ſtate of repoſe for nearly four hundred years.

At the bottom of the crater in La Coupe, we may obſerve a breach or opening on the ſide facing the houſes of the Colet d'Aiſa; there is a general inclination to this opening, which has ſerved to give a paſſage to the lava. When we are arrived at the opening, we may obſerve a ſtream of lava coming from the interior, and taking its courſe down the mountain, it deſcends in a waving direction amidſt the porous lavas. This current is a true black baſalt, compact and ſimilar to that of the columns; in certain parts, its ſurface appears bliſtered, and in other places is become porous. Following the current of lava, after it has croſſed the path, which is at the foot of the mountain, we may trace its courſe to the bed of a torrent not far from the high road. There may be ſeen, ſays St. Fond, a ſpectacle moſt gratifying to the geologiſt; for the lava, whilſt ſtill on the deſcent, and before it had reached the level ground, has affected a priſmatic form; and the lava at the bottom has formed a beautiful colonnade.

We cannot doubt, ſays St. Fond, after viewing this mountain, that the lava which flows from volcanic craters is not abſolutely the ſame as baſalt. The name of La Coupe is evidently derived from the crater, the Latin name for a cup.

There is another conical mountain in the Viverais with a diſtinct crater, called La Coupe de Jaujeac. The general reſemblance of the latter is ſo ſimilar to that of La Colet d'Aiſa, that it may well be conceived from the view given of the latter. (See *Plate* II. *Mineralogy*.) It is rather leſs lofty, but the crater is nearly twice as large. The river Vignon flows at the foot of Jaujeac. On its banks are immenſe ranges of baſaltic columns, the moſt elevated of any in the Viverais. They incloſe the borders of the river on each ſide for more than a league.

Some of the priſms riſe in one ſhaft to the height of fifty feet; in other parts, the articulated columns form a kind of regular cauſeway. In ſome places the columns are bent, and above we ſee immenſe ramparts of baſalt, of more than 140 feet in height, in ſeveral ranges, ſpreading out like a fan, and diverging in every direction. On the left, the current of baſalt covers ſeveral little hills of granite, and is moulded upon them. In ſome parts, the compact lava forms one ſolid maſs; in other places, it is arranged in great beds. Nothing can be more grand and varied, ſays St. Fond, than the courſe of the river Vignon to Ardeche, where the great current of lava joins the ſtreams that have flowed from the volcanoes of Theuyts and Neyrac. Faujas St. Fond ſur les Volcans eteints du Viverais et du Velay.

Plate II. *Mineralogy*, *Baſalt*, which is taken for this work, will convey at once a ſatisfactory proof of the igneous origin of the baſaltic columns in the Viverais; but one engraver has omitted to repreſent the diviſion of the upper part of the bed into columns. The ends of the columns may be diſtinctly ſeen before the baſalt reaches the river.

BASALTIC HORNBLENDE. See MINERALOGY, *Addenda*.

BASMAN, in *Geography*, an iſland of the Perſian gulf, ſituated $11\frac{3}{4}$ leagues N.N.W. from Shorga, in N. lat. 25° 54′. It is an uninhabited iſland, about five miles long, and remarkable for a high round hill in its centre.

BASSORA, col. 1, l. 15 from the bottom, after 1668, add —ſubject to various revolutions. L. 11, after Porte, inſert— The muſſeleem, or governor, has ever ſince the year 1787, when it was recovered from the Monte-ſidge Arabs, by Solyman Pacha, been ſent from Bagdad, and is generally an officer of high rank. Full liberty is allowed, &c. Col. 2, l. 12, after 50,000, add—or 60,000, conſiſting of perſons of almoſt every nation in the Eaſt. L. 29, N. lat. 31° 30′. E. long. 48° 39′.

BAT-*Horſes*, in *Artillery*, are baggage-horſes belonging to the officers when on actual duty; and *bat-men* were originally ſervants hired in time of war to take care of the horſes belonging to the train of artillery, baggage, &c., and who, during their ſervice, generally wear the king's livery. Thoſe who are excuſed regimental duty, for the ſpecific purpoſe of attending to the horſes belonging to their officers, are called bat-men. Horſes and men of the preceding deſcription are ſometimes called *bow-horſes* and *bow-men*.

BATARREA, in *Botany*, ſo named by Purſh, in honour of his learned predeceſſor in the ſtudy of the *Fungus* tribe, Antonio Battarra, profeſſor of philoſophy in the Lyceum at Rimini, author of *Hiſtoria Fungorum Agri Ariminenſis*, publiſhed at the neighbouring city of Faenza, in 1759, in 4to., with 40 plates. A preceding edition is indicated in the title-page, which Haller dates 1755. The author was a diſciple of Janus Plancus, or Giovanni Bianchi, the conchologiſt, and died in 1789, according to Dryander in Bibl. Bankſ. He was, however, an original obſerver, and delineated the figures himſelf.—Perſ. Syn. Fung. 129.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eſſ. Ch. Stalk burſting from a wrapper, and elevating the bell-ſhaped, downy, powdery head, capped with a portion thereof.

1. B. *phalloides*. Tall Brown Batarrea. Perſ. n. 1. t. 3. f. 1. (Lycoperdon phalloides; Dickſ. Crypt. faſc. 1. 24. Woodward in Phil. Tranſ. v. 74. 423. t. 16. Sm. Spicil. 11. t. 12. Sowerb. Fung. t. 390.)—Found on ſandy banks about Norwich, by Mr. William Humphrey, and about Bungay in Suffolk, by T. J. Woodward, eſq. We have reaſon to think it may be met with in other parts of England, as Mr. Hudſon, author of the *Fl. Angl.*, told the writer of the preſent article, he had ſeen this ſingular production on heaths in Kent, but paſſed it by as a blaſted or abortive *Agaricus procerus*. We have not heard of this very curious fungus in any other part of the world. The *volva*, or wrapper, is about the ſhape and ſize of a hen's egg, originally of three ſlightly coriaceous layers, hollow internally, where a ſpongy *ſtalk* is formed, which riſes very ſuddenly (in a few hours) to its full height of about twelve inches. This *ſtalk* is hollow, ſoon becoming dry, and externally filamentous, and carries up, on its ſummit, full half the innermoſt layer of the *volva*, which is white and ſmooth within, covered externally with copious brown powdery ſeeds, intermixed with fibres, as in a *Lycoperdon*. A ſmaller portion of the two outer layers, irregularly torn away, forms a double cap to this powdery ſurface.

BATAVIA, in *Geography*, a poſt-townſhip of New York, the capital of Geneſee county, 256 miles from Albany, on the great road to Buffalo; about 50 miles long from N. to S., and from 24 to 28 miles wide; bounded N. by lake Ontario, E. by Murvay and Caledonia, S. by Warſaw, Attica, and Sheldon, and W. by Niagara county. The whole population of this town, in 1810, was 3645, with 104 ſenatorial electors, and 464,216 dollars of taxable property.

BATH. Add—The city of Bath, by the return of 1811, contained 3933 inhabited houſes, and 31,496 perſons; *viz.* 12,373 males, and 19,123 females.

BATH, a county of Virginia, &c. add—The total number of inhabitants, in 1810, was 4837, including 882 ſlaves.

BATH, a townſhip, &c. l. 2, for 949 *r.* 2491.

BATH, in Grafton county, &c. l. 2, for 493 *r.* 1316.

BATH, a poſt-townſhip, the capital of Steuben county, 245 miles W. of Albany. The whole population, in 1810, was 1036, with 97 electors.

BATH, a townſhip of the diſtrict of Ohio, in the county of Greene, having 913 inhabitants.

BATSCHIA, in *Botany*, was ſo named by profeſſor Gmelin, the compiler of the 13th edition of the whole *Syſtema Naturæ* of Linnæus, in honour of profeſſor Batſch of Jena, known particularly by his *Elenchus Fungorum*, publiſhed at Halle in 1783 and 1784, in 4to., with coloured plates, and his *Analyſes Florum*, a work of a ſimilar deſcription, which appeared in 1790. Gmelin however adopted this genus, like many others, entirely from the *Flora Caroliniana* of Mr. Thomas Walter, who had modeſtly left ſuch genera without names, becauſe, though he ſuppoſed them to be new, he had not the advantage of books, or other helps, to confirm his opinion. In the preſent inſtance we apprehend his *Anonymos*, n. 78. Fl. Carol. 91, cannot be ſupported, but we ſhall give its character and ſynonyms. —Gmel. Linn. Syſt. Nat. v. 2. 315. Michaux Boreal.-Amer. v. 1. 129. Purſh 132.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Aſperifoliæ*, Linn. *Boragineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth in five deep, linear, acute, erect ſegments. *Cor.* of one petal, ſalver-ſhaped; tube ſtraight, longer than the calyx, ſurrounded at the baſe, internally, with a ring of hairs; throat pervious; limb orbicular, in five deep rounded ſegments. *Stam.* Filaments five, very ſhort, inſerted into the tube; anthers erect, ovate, concealed within the tube. *Piſt.* Germen ſuperior, roundiſh, with four prominences; ſtyle capillary, the length of the ſtamens; ſtigma minute, ſlightly cloven. *Peric.* none. *Seeds* four, ovate, hard, poliſhed.

Eſſ. Ch. Corolla ſalver-ſhaped; throat naked; tube with a hairy internal ring at the baſe; ſegments of the limb rounded. Calyx in five deep ſegments.

Obſ. It appears to us that this genus cannot be kept ſeparate from LITHOSPERMUM. (See that article.) The only mark of diſtinction is the hairy ring in the bottom of the tube, which ſurely is not ſufficient. The form of the *corolla* is as much funnel-ſhaped as in that genus, and the *ſeeds* are acknowledged to be preciſely the ſame. Michaux aſks, (perhaps on account of the yellow *flowers*,) "whether *L. orientale* of Linnæus be not a *Batſchia*?" We find no traces there of the hairy ring, nor was any ſuch character detected by Mr. Bauer, when he made the drawing for Dr. Sibthorp's Fl. Græca, t. 160. This circumſtance does away the preſumption of a generic difference here indicated by colour. The following are the only reputed ſpecies of *Batſchia*.

1. B. *Gmelini*. Hairy Puccoon. Michaux n. 1. Purſh n. 1. (Anonymos carolinenſis; Walt. Carol. 91.)—Hairy.

Floral leaves ovate. Calyx elongated, ſomewhat lanceolate. —In dry ſunny woods of Lower Carolina. Perennial, flowering from May to July. Seen in Mr. Lyon's herbarium. *Purſh.* *Flowers* bright yellow, on ſhort footſtalks. *Walter.*

2. B. *caneſcens.* True Puccoon. Mich. n. 2. t. 14. Purſh n. 2. (Anchuſa hirta; Muhlenb. Cat. 19. A. virginiana; Linn. Sp. Pl. 191. A. floribus ſparſis, caule glabro; Gron. Virg. ed. 2. 24. Lithoſpermum virginianum, flore luteo duplici; Moriſ. ſect. 11. t. 28. f. 4.)—Downy and hoary. Leaves all oblong. Calyx very ſhort. Segments of the corolla entire.—On dry ſunny hills on a ſandy ſoil, in Virginia, Tenneſſee, &c. perennial, flowering in June and July. *Flowers* of a deep golden-yellow. The *root* is covered with a red ſubſtance, which is the true Puccoon of the Indians, and paints a beautiful red. *Purſh.* With this colour, it ſeems, the native Americans painted their bodies. The whole *herb* is clothed with ſoft hairs, nor is the *ſtem*, as Linnæus ſays, ſmooth. He had no ſpecimen of this plant, when he wrote either edition of *Sp. Pl.*, but afterwards confounded herewith a totally different Siberian plant, which lies under this name in his herbarium, but without the requiſite marks of authenticity. Moriſon's figure repreſents a double-flowered variety, which is very unuſual in this natural order.

3. B. *longiflora.* Long-flowered Puccoon. Purſh n. 3. —"Downy and ſilky. Leaves linear. Calyx long and linear. Segments of the corolla notched; tube elongated." —Found by Mr. Nuttall, on the banks of the Miſſouri. Perennial, flowering in July. *Flowers* yellow. *Purſh.*

We ſhould preſume that all theſe ſpecies belong rather to *Lithoſpermum* than to *Anchuſa*, but we have only ſeen the ſecond, communicated in a dried ſtate, from Pennſylvania, by the late Rev. Dr. Muhlenberg.

BATTAM, the *Bahta* of Strabo, in *Geography*, a town of Armenia, in the pachalic of Erzeroom, on the Euxine. This is a commercial place; and between it and Akiſka are the towns of Iſchoetſcheloe, Gartziemie, Schwaghaewal, and Kaettaejac.

VOL. IV.

BATTING. See COTTON, and MANUFACTURE *of Cotton.*

BATTLE, l. *ult. r.* and in 1811 had 361 houſes, and 2531 perſons; 1232 being males, and 1299 females.

BATTLE, *Order of.* Col. 6, l. 19, to l. 41, *dele.*

BATZ. Add—The florin at Augſburg is divided into 15 batzes, (or batzen,) or 20 kayſergrochen. A thaler, or rix-dollar, is worth $1\frac{1}{2}$ florin, $22\frac{1}{2}$ batzes, or 90 creutzers. At Baſil, the thaler, or rix-dollar, is worth 3 livres, 27 good batzes, or 30 Swiſs batzes; the florin, 15 good batzes, or $16\frac{2}{3}$ Swiſs batzes; the livre, 9 good batzes, or 10 Swiſs ditto. A good batze is 4 creutzers; a Swiſs batze, 2 ſous, or $3\frac{3}{5}$ creutzers. At Bern, accounts are kept in livres of 20 ſous, the ſou of 12 deniers; alſo in livres, or francs, of 10 batzes, or 40 creutzers; and in crowns of 25 batzes, or 100 creutzers. A rix-dollar, or ecu blanc, is worth 30 batzes; a crown, 25 batzes; a florin, 15 batzes; a livre, or franc, 10 batzes; a pfund, $7\frac{1}{2}$ batzes, or 15 ſous; a batze, 2 ſous, or 4 creutzers.

BAUERA, in *Botany*, received its name, not from ſir Joſeph Banks, as Mr. Andrews, by miſtake, has recorded, but from the author of the preſent article; in due commemoration of thoſe excellent botanical artiſts, and practical obſervers, Mr. Francis Bauer, ſo long employed as a draughtſman at Kew, and his brother Mr. Ferdinand Bauer, who after being engaged in the ſame occupation by Dr. Sibthorp in Greece, accompanied Mr. Brown to New Holland, and is now returned to Germany, having left behind him in England unrivalled monuments of his abilities.— Andr. Repoſ. t. 198. Ait. Hort. Kew. v. 3. 317. Saliſb. in Ann. of Bot. v. 1. 514. t. 10.—Claſs and order, *Polyandria Digynia.* Nat. Ord. *Saxifragæ Juſſ.* Saliſb. *Cunoniaceæ*, Brown, Bot. of Terra Auſtr. 16.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in eight deep, lanceolate, reflexed, permanent ſegments. *Cor.* Petals eight, obovate, equal, concave, alternate with the calyx, and nearly twice as long. *Stam.* Filaments numerous, thread-ſhaped, inſerted into the receptacle, half as long as the petals; anthers erect, obovate, of two cells, burſting at the ſummit. *Piſt.* Germen ſuperior, ſomewhat pyramidal, obtuſe; ſtyles two, thread-ſhaped, longer than the ſtamens, recurved; ſtigmas ſimple, obtuſe. *Peric.* Capſule roundiſh, tumid, ſomewhat compreſſed, with two ſhort, divaricated, pointed lobes, of two cells and two valves, burſting at the top, between the points; partition contrary to the valves. *Seeds* numerous, oval, corrugated, inſerted into the central column.

Eſſ. Ch. Calyx inferior, in eight permanent ſegments. Petals eight. Capſule inflated, of two cells, with many ſeeds.

1. B. *rubiæfolia.* Madder-leaved Bauera. Saliſb. as above. Ait. n. 1. (B. rubioides; Andr. Repoſ. t. 198. Curt. Mag. t. 715. Venten. Malmaiſ. t. 96.)—Native of New South Wales. Firſt diſcovered in that country by ſir Joſeph Banks. We received ſpecimens and ſeeds from Dr. White, among the firſt communications from the ſettlement there, and this beautiful ſhrub was raiſed by the late marchioneſs of Rockingham, at Hillingdon, in 1793. It requires the ſhelter of a green-houſe, or conſervatory, and flowers during moſt part of the ſummer and autumn. The *ſtem* is five or ſix feet high, much branched, woody, but ſlender and weak; the branches oppoſite, round, leafy, ſomewhat hairy. *Leaves* oppoſite, or ſometimes three together, ternate, nearly ſeſſile, evergreen, widely ſpreading; *leaflets* three-quarters of an inch long, lanceolate, diſtantly ſerrated, their ribs a little hairy beneath; their upper ſurface convex, of a deep ſhining green; under paler. *Flowers* axillary, on ſimple hairy ſtalks, longer than the *leaves*, a little drooping, ſcarcely an inch broad, of a beautiful rich roſe-colour, with yellow anthers, inodorous. The parts of the flower vary occaſionally in number, from ſeven to nine or ten. The *branches*, like the *leaves*, are ſometimes three together, and when young, have, like them, a reddiſh tinge, which the permanent *calyx*, and old *leaves*, likewiſe aſſume. We do not very clearly perceive the reſemblance to Madder in the *leaves*, and ſhould have been glad if the ſpecific name originally propoſed, *formoſa*, had been retained for a plant which ſo well deſerves that appellation.

Another ſpecies is mentioned, by the name of *B. humilis*, in Ait. Epit. 364, as introduced at Kew, from New Holland in 1805, and flowering in June and July. But not a word is ſaid reſpecting the ſpecific differences between the two.

BAYAZID, in *Geography*, one of the Turkiſh pachalics of Armenia: the city of this name lies at the diſtance of two days' journey from Erwan, nine from Erzeroom, and four from Khoi, and occupies the declivity of a mountain, the ſummit of which is ſtrongly fortified. The city is ſurrounded with walls and ramparts: it has two churches and three moſques; and the monaſtery of Karu Killeeſea is famous for the beauty of its architecture, its antiquity, and its grandeur. The inhabitants are reported to amount to about 30,000, and are eſteemed the moſt learned and warlike people in Armenia. The climate is mild, and the city, with the extenſive territory attached to it, is under the government of a pacha of two tails, archbiſhop of Merdin. M'Kinneir's Perſia.

BAYLA, the capital of Lus, a diſtrict of the Perſian empire, in the province of Mekran, and country of the ancient Oritæ, is built on the N.E. bank of the river Pooralee, and contains 1500 houſes, and 6000 inhabitants, of whom 400 are Hindoos. The preſent chief can bring into the field 4000 irregular troops, and enjoys a revenue of 50,000 rupees *per annum*.

BAYOU, a term originally Spaniſh, ſignifies the diminutive of bay; but in Louiſiana, where it frequently occurs, it is ſynonymous with the word *creek*, and conſequently becomes the diminutive of river.

BEAN-GOOSE. See ANAS and DUCK.

BEATTIE, JAMES, &c. l. 2, born Nov. 5; l. 12, latter, by the liberality of a mother, (his father having died when he was ſeven years of age,) by, &c.; l. 18, *dele* at Alloa; and l. 19, *dele* aſſiſtant to the; l. 24, for 1760 *r.* 1761; l. 41, inſert—which was written about the year 1764, though not publiſhed till ſome time after. Col. 2, l. 35, *dele* following; l. 62, for not long afterwards *r.* in 1770; l. 65, for 1777 *r.* 1776, (in conſequence of which he obtained the penſion above-mentioned.) Col. 3, l. 23, inſert—In 1790 he publiſhed a ſummary of his lectures under the title of "Elements of Moral Science;" the firſt volume of which contains a very accurate enumeration and arrangement of the perceptive faculties and active powers of man. He has alſo given a curſory view of what is called natural theology. The ſecond volume, publiſhed in 1793, comprehends much miſcellaneous information on ethics, economics, politics, and logic, including rhetoric. Towards the latter part of his life, his time, &c.

BEAUCAIRE, l. 7, *dele* The part of the Rhine is well conſtructed.

BEAVER, in *Geography*, a county of Pennſylvania, containing 12,168 inhabitants, in which are ſeveral townſhips of the ſame name; ſuch as *North Beaver* with 932, *Big Beaver* with 702, *Little Beaver* with 1379, *Beaver Borough* with 426, and *South Beaver* with 1351 inhabitants.—Alſo, a townſhip of Pennſylvania, in Northumberland county, having 502 inhabitants.—Alſo, a townſhip of Crawford county, with 236 inhabitants.—Alſo, a townſhip of Columbiana county, in the diſtrict of Ohio, having 433 inhabitants.—Alſo, a townſhip of the ſame diſtrict, in Greene county, having 793 inhabitants.

BEAVER *Creek*, a townſhip of Pennſylvania, in Beaver county, with 774 inhabitants.

BEAVER *Kill*, a townſhip of the diſtrict of Maine, in the county of Kennebeck, containing 354 inhabitants.

BEAUFORT, in South Carolina, l. 4, *r.* 25,887, including 20,914 ſlaves.

BEAUFORT, (col. 2, after l. 14,) a county of North Carolina, containing 7204 inhabitants, of whom 2,568, are ſlaves.

BEAUFORTIA, in *Botany*, a truly noble genus, conſecrated, by Mr. Brown, to the memory of Mary ducheſs of Beaufort, who died January 7th, 1714, in the 85th year of her age. Her grace cultivated a number of rare plants in the ſtoves and green-houſes at Badminton, Glouceſterſhire, during the life-time of her huſband, Henry, firſt duke of Beaufort, whoſe death happened in 1699. The plants introduced by her always therefore bear this date in Mr. Aiton's *Hortus Kewenſis*. Numerous ſpecimens from the Badminton garden were communicated to ſir Hans Sloane, and if we are not miſtaken, a ſplendid herbarium in the Britiſh Muſeum, bound in ſeveral large folio volumes, bears the title of "The Ducheſs of Beaufort's Plants."—Brown in Ait. Hort. Kew. v. 4. 418.—Claſs and order, *Polyadelphia Icoſandria*. Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth half ſuperior, of one leaf, turbinate; limb in five deep, awl-ſhaped, deciduous ſegments. *Cor.* Petals five, elliptical, ſeſſile, inſerted into the rim of the calyx, between its ſegments, and of equal length. *Stam.* Filaments very numerous, in five ſets, inſerted into the calyx, oppoſite to the petals, the claw of each ſet linear, hairy at the baſe internally, much longer than the petals, divided at the top into ſeven, eight, or more, capillary ſpreading ſegments about a quarter the length of the claw; anthers terminal, inſerted by the baſe, of two divaricated, conical, deciduous, ſingle-celled lobes. *Piſt.* Germen in the bottom of the calyx, ſmall, roundiſh, hairy at the ſummit; ſtyle thread-ſhaped, ſhorter than the ſtamens, variouſly bent upwards and downwards; ſtigma acute. *Peric.* Capſule coated with the baſe of the calyx, and firmly united to the branch, roundiſh, of three cells. *Seeds* ſolitary.

Eſſ. Ch. Calyx in five ſegments. Petals five. Stamens numerous, very long, in five ſets, oppoſite to the petals; anthers of two deciduous lobes. Capſule clothed with the baſe of the calyx, three-celled, permanent. Seeds ſolitary.

Obſ. Many of the flowers are ſaid to want the *ſtyle*. We are not clear, from the account of the author of this genus, whether more than one *ſeed* is perfected in each *fruit*. The *capſules* remain in maſſes ſurrounding the branches, long after the *ſeeds* are gone, perhaps for ſeveral years, being firmly united to the bark or wood; a character common to many of this natural order in New Holland, as MELALEUCA, (ſee that article,) and others. The very peculiar *anthers* ſeem to afford the moſt eſſential character of *Beaufortia*, and diſtinguiſh it from its near ally CALOTHAMNUS. See that article hereafter.

1. B. *decuſſata*. Splendid Beaufortia. Br. in Ait. n. 1. Sims in Curt. Mag. t. 1733.—Leaves oppoſite, ovate, many-ribbed, croſſing each other in pairs. Claws of the ſtamens very long, their filaments radiating.—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland, and ſent to Kew by Mr. Good, in 1803. A green-houſe ſhrub, flowering in the ſpring, and increaſed by cuttings. The *branches* are angular. *Leaves* ſeſſile, crowded, half or three-quarters of an inch long, recurved, ſmooth, rigid, entire, full of pellucid dots; paler beneath. *Flowers* in denſe tufts, ſurrounding the branches here and there, moſt conſpicuous for their copious ſpreading tufts of *ſtamens*, an inch and a quarter or more in length, all over of a rich ſcarlet, the *petals*, as well as calyx, being green.

2. B. *ſparſa*. Alternate-leaved Beaufortia. Br. in Ait. n. 2.—Leaves ſcattered, elliptical, many-ribbed.—Gathered in the ſame country, by Mr. Brown, from whence it was likewiſe ſent to Kew, by Mr. Good, in 1803, but does not appear to have flowered in 1812, when the fourth volume of Hort. Kew. was printed.

We preſume Mr. Brown's *Prodromus*, when completed, will make us acquainted with more ſpecies of this genus.

BEAUMARIS, col. 2, l. 9, for 1275 *r.* 1295. Col. 3, l. 1, for 37 *r.* 57; l. 37, *r.* Lavan. Add—The borough of Beaumaris contained in 1811, 295 houſes, and 1810 perſons; 809 being males, and 1001 females.

BECKET, in *Geography*, l. 2, for 751 *r.* 1028.

BEDDOES, THOMAS, M.D. in *Biography*, a diſtinguiſhed phyſician and philoſopher, was the ſon of an opulent tanner at Shiffnall in Shropſhire, and born in 1760. Indicating at an early age peculiar talents, and diſpoſed to cultivate them by diligent application, he was deſtined for a learned profeſſion. With this view, after the requiſite previous education, he was entered, in the year 1776, at Pembroke college, Oxford, and in the progreſs of his ſtudies acquired the reputation of a claſſical ſcholar ; connecting with his other purſuits the ſtudy of the French, Italian, and German languages, as well as of pneumatics, chemiſtry, mineralogy, and botany. After having taken his firſt degree of arts, he repaired to London, where he proſecuted the ſtudy of anatomy and phyſiology, and publiſhed tranſlations of Spallanzani's Diſſertations, of Bergman's Eſſay on Elective Attractions, and of Scheele's Chemical Eſſays. At Edinburgh, where at this time he had commenced his ſtudies, he obtained high reputation among his fellow-ſtudents. In 1786 he graduated M.D. at Oxford, and in the following year viſited the continent. Upon his return, he was appointed to occupy the chemical chair at Oxford. At this period he formed an acquaintance with Dr. Darwin, which gradually ripened into the intimacy and confidence of friendſhip. In 1790 he preſented to the public an analytical account of the writings of Mayow, well known for his early diſcoveries in the department of pneumatic chemiſtry. (See his article in the Cyclopædia.) And he alſo communicated ſeveral papers to the Royal Society. As a chemical profeſſor at Oxford, he was a popular lecturer ; and he was much reſpected in the univerſity on account of the rank he occupied in general literature and ſcience : but intereſting himſelf in the party politics of that period, and avowing his oppoſition to ſyſtems which then prevailed with regard both to church and ſtate, he found it expedient to reſign his profeſſorſhip in 1792. He was adverſe, however, to that deteſtable ſpirit which blended itſelf in France with their ſtruggles for liberty. Among other publications which iſſued from the preſs about this time, our limits will only allow the mention of his "Obſervations on the Nature of Demonſtrative Evidence, with Reflections on Language," intended to facilitate the ſtudy of geometry to youthful minds, by ſhewing, in oppoſition to the doctrine of the author of Hermes, that geometry is founded in experiment, and that its elements may be rendered palpable to the ſenſes. The moſt popular of his publications was a ſmall work, which appeared under the title of the "Hiſtory of Iſaac Jenkins," a fictitious narrative, exhibiting the character of a labourer immerſed in the evils of habitual drunkenneſs, but reformed to ſobriety and induſtry ; of which his biographer (*ubi infra*) ſays, that if the author had left no other monument of his ingenuity and benevolence, he would not have lived in vain. Without adverting to his other writings, we ſhall proceed to mention his pneumatic eſtabliſhment in the vicinity of the Briſtol hot-wells, undertaken and for ſome time liberally ſupported for the purpoſe of curing diſeaſes by the judicious application of different kinds of factitious air. For the convenience of ſuperintending this inſtitution he reſided at Clifton, and in 1794 formed a matrimonial connection with a lady of the juſtly celebrated Edgeworth family. From this time his medical publications became numerous, and as a phyſician his advice was in high eſtimation ; and he was conſulted by perſons in diſtant parts, who are ſaid to have derived great benefit from his preſcriptions. Although his pneumatic inſtitution failed with reſpect to the degree of ſucceſs which he might augur, and proved of temporary duration, it ſerved to bring into notice the preſent ſir Humphry Davy, one of the moſt eminent philoſophers of our time, whoſe talents, reſtricted in their exerciſe to a remote town in Cornwall, cauſed him to be engaged as its manager. In the year 1806, Dr. Beddoes was attacked with ſome affection of the liver, which, after ſubſiding for a time, returned with a diſeaſe in the cheſt in 1808, and rapidly increaſing terminated in his death on the 24th of December, before he had completed his 49th year. Although his manner, ſays his biographer, was cold and repulſive, he poſſeſſed kind and tender feelings ; and in the relations of domeſtic and private life his conduct was unexceptionable. Stock's Memoirs of the Life of Thomas Beddoes, M.D.

BEDFORD, col. 3, l. 4, *r.* In 1811, the borough contained 940 houſes, and 4605 perſons ; 2057 being males, and 2548 females.

Bedford, a townſhip of America, &c. l. 2, for 898 *r.* 1296.

Bedford, in Middleſex county, &c. l. 2, for 523 *r.* 592.

Bedford, *New*, l. 2, for 3313 *r.* 5651.

Bedford, in New York, l. 2, for 2470 *r.* 2374, with 241 electors, in 1810. Add—Near the centre of this town is the village of Bedford, where the courts for the county are held one half of the time, and the other half at White Plains. Here are, a court-houſe and priſon, a Preſbyterian church, an academy, and a ſmall number of houſes.

Bedford, a county of Pennſylvania, l. 4, for 13,124, including 46 ſlaves, *r.* 15,746 ; ſubjoin after 1795—it contains 547 inhabitants.

Bedford, a townſhip in the ſame county, includes 1352 inhabitants.

Bedford, a county of Virginia, &c. l. 5 and 6, for 10,531 *r.* 16,148, and for 2754 *r.* 6147.

Bedford, a county of Weſt Tenneſſee, having 8242 inhabitants, including 1180 ſlaves.

BEDFORDSHIRE, col. 2, l. 8 and 9, *r.* The county, in 1811, contained 13,286 houſes, and 70,213 perſons ; 33,171 being males, and 37,042 females : 9431 families employed in agriculture, and 4155 in trade and manufactures.

BEDLIS, or Betlis, a large town, ſituated at the opening of the ſtrongeſt of the paſſes in the road from Diarbekir to Van and Tabriz. The river of Bedlis (the Centrites of Xenophon) is conducted by Hajy Kalifa through the plain to the ſouthward of Sahert, Sard or Sared (the ancient Tigranocerta). Betlis is one of the moſt ancient cities of that part of the kingdom called Kurdiſtan : the caſtle is on the top of a high mountain, which bounds the plain to the weſt : the inhabitants of the town and neighbouring villages amount to about 26,000 Kurds, Turks, Armenians, and Syrians. The Armenians, who enjoy a conſiderable portion of liberty, have four churches and four monaſteries. The lands around Betlis are highly cultivated, and produce grain of ſeveral kinds, cotton, hemp, rice, olives, honey, truffles, and muſhrooms. The neighbourhood abounds with game, and the mountains are infeſted by lions, wolves, and bears. In the vicinity are quarries of red and white marble. See Betlis.

BEDMINSTER, a townſhip of Bucks county, in Pennſylvania, having 1199 inhabitants.

BEDRI, a town of the Perſian empire, in the pachalic of Bagdad, 13 leagues from Mendeli, and four from the foot of the mountains ; is the frontier town, in this quarter, of the Turkiſh empire. It is ſurrounded with a number of fine gardens ; but its diſtricts are damp and marſhy, interſperſed with pools of water, the receptacles of the torrents, which, in the ſpring, are continually ruſhing from the mountains.

BEER, col. 2, l. 4, from the bottom, add—For the exciſe duty on beer, ſee Ale.

BEERING's Straits, l. 7, after Cook, inſert—He afterwards aſcertained, that Cape Prince of Wales was the weſtern extremity of the whole continent of America ; and another cape was obſerved to the northward of this, lying in lat. 67° 45′, and long. 194° 51′. To this cape, captain Cook gave the name of Point Mulgrave.

BEES'-*Bread.* See Pain *des Abeilles.*

BEGA, a land meaſure in Bengal, equal to about the third part of an acre.

BEGARMEE, col. 2, l. 9, for matured *r.* weakened.

BEHABAN, in *Geography*, the capital of the mountainous diſtrict of Khogiloea, in the province of Fars, in the Perſian empire, which diſtrict extends from the valley of Ram Hormuz to the vicinity of Kazeroon. The town is pleaſantly ſituated in the middle of an extenſive valley, three miles E. of the ruins of the ancient city of Aragian, which may be ſeen on the banks of the river Jerahi. It is the reſidence of a beglerbeg, who has a palace in the N.E. corner of the town. The walls are about three miles in circumference, and the population is ſaid to amount to nearly 10,000 ſouls. The plain of Behaban is of conſiderable extent, and highly cultivated. The rivers Tab and Jerahi flow through it. Behaban is 153 miles from Shirauz, ſeparated from it by a mountainous country, almoſt wholly uninhabited, and infeſted by banditti.

BEHRING. See Beering.

BELCHER, l. 2, for 1485 *r.* 2270.

BELENUS. See Bel-tein, and Belus.

BELFAST, in America, l. 5 *r.* 1274. Add—Alſo, a townſhip of Bedford county, in Pennſylvania, having 758 inhabitants.

BELGRADE, in America, l. 2, for Lincoln *r.* Kennebeck ; add—It contains 996 inhabitants.

BELINUS. See Belus.

BELL, col. 4, l. 40, *r.* 7th ; l. 42, *r.* 610.

Bells, *Electrical*, l. 4, *r.* *Plate* V. *fig.* 38.

BELLEFORTE, a townſhip of Centre county, in Pennſylvania, having 303 inhabitants.

BELLENDENA, in *Botany*, is ſo called by Mr. Brown, in honour of John Bellenden Ker, eſq., late Gawler, an ardent and ſcientific botaniſt, whoſe labours reſpecting the natural order of *Enſatæ*, and the Liliaceous tribe, publiſhed chiefly in Curtis's Magazine, and often cited by us, richly entitle him to botanical commemoration. —Brown Tr. of Linn. Soc. v. 10. 166. Prodr. Nov. Holl. v. 1. 374.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juſſ.

Eſſ. Ch. Petals four, regular, ſpreading. Nectariferous glands none. Stamens inſerted into the receptacle. Germen two-ſeeded. Stigma ſimple. Capſule without wings, not burſting. Seeds one or two.

1. B. *montana.* Mountain Bellendena.—The only ſpecies; found by Mr. Brown on the ſummits of mountains in the iſland of Van Diemen, but as yet unknown in our gardens. This is a perfectly ſmooth *ſhrub.* The *leaves* are ſcattered, flat ; three-cleft at the extremity. *Spikes* terminal, racemoſe. *Flowers* ſcattered, rarely in pairs. *Corolla* white, ſoon falling. *Germen* connected by a joint with its ſtalk. *Seed-veſſel* coloured, furrowed along one edge. *Brown.* The inſertion of the *ſtamens* into the *receptacle*, and not into the *petals*, is an unique inſtance in this natural order.

BELLINGHAM, in America, l. 2, for 735 *r.* 766.

BELMONT, in *Geography*, a county of the diſtrict of Ohio, containing 11,097 inhabitants.

BELPRE, a townſhip of Ohio, in the county of Waſhington, having 494 inhabitants.

BELVEDIER, a town of Vermont, in Franklin county, having 217 inhabitants.

BELY Bogue. See Bogue, Bely.

BEMINSTER, l. 32, *r.* the town and pariſh contain 445 houſes, and 2290 perſons ; 1077 being males, and 1213 females.

BEMOL, l. 11, for F *r.* G ; and for G *r.* B *b*.—l. 15, for Feyton *r.* Feytou.

BENDER-*Abaſſi.* See Gambron.

Bender-*Delem*, or *Bunder-Deelum.* Add—This is a ſmall town, containing about 700 inhabitants, who trade with the merchants of Bahrein and Buſſora.

Bender-*Rigk*, or *Bunder-Reig*, (the port of Sand,) a city of Perſia, in the province of Fars, or Farſiſtan, (according to M'Kinneir,) 32 miles N.W. of Buſhire or Buſheer.

BENEDICT, abbot of Peterborough, &c. l. 5, *r.* Richard I.

BENIN, l. 8, *r.* Ardrah.

BENNET, col. 1, l. *ult.* for 1696 *r.* 1646 or 1656.

BENNINGTON, l. 6, for 12,254 *r.* 15,893, and *dele* 16 ſlaves.

Bennington, l. *ult.*, for 2400 *r.* 2524.

BENSALEM, in *Geography*, a townſhip of Bucks county, in Pennſylvania, having 1434 inhabitants.

BENSON, or Bensington, a village of Oxfordſhire, on the road between Henley and Oxford. The pariſh contains 185 houſes, and 825 perſons ; 414 being males, and 411 females.

Benson, l. 4, for 658 *r.* 1561.

BENTOT. See Caltura.

BERA. See Boele-Comba.

BERARDI, l. 8, for Orcani, &c. *r.* Arcani Muſicali Dialogo, &c.

BERBERIDES, in *Botany*, the 78th natural order of Juſſieu's ſyſtem ; the 18th of his 13th claſs : for whoſe characters, ſee Gerania. This order is defined as follows.

Calyx of a determinate number of leaves, or deep ſegments. *Petals* definite alſo, agreeing in number with the diviſions of the calyx, and often oppoſite to them ; ſometimes ſimple ; ſometimes charged at the baſe with an inner petal. *Stamens* definite, as many as the petals, and oppoſite to them ; *anthers* fixed, burſting by a valve from the baſe upwards. *Germen* ſimple ; ſtyle ſolitary or wanting ; *ſtigma* often ſimple. *Berry* or *capſule* of one cell, often with ſeveral *ſeeds*, inſerted into its baſe. *Corculum* deſcending, flat, ſurrounded by a fleſhy *albumen.* *Stem* either ſhrubby or herbaceous. *Leaves* generally alternate, with *ſtipulas*, or more frequently without, ſimple or compound.

The genera are, *Berberis*, *Leontice*, *Epimedium* ; with *Rinorea* and *Conoria*, two ſhrubs in Aublet's work, little known. To theſe are ſubjoined the following, as related to the order in queſtion, *viz.* *Riana* of Aublet ; *Corynocarpus* of Forſter, and Linn. Suppl. ; *Poraqueiba* of Aublet, which is *Barreria* of Schreber's Gen. 598 ; *Hamamelis* of Linnæus ; *Othera* of Thunberg ; and *Rapanea* of Aublet. Theſe genera, ſays Juſſieu, are in ſome of their characters akin, in others foreign, to the *Berberides.*

BERGEN, a county of America, &c. l. 9, for 12,601 *r.* 16,603 ; and for 2301 *r.* 2180.

Bergen. Subjoin—Their number is 2690, of whom 390 are ſlaves.

BERGMANITE. See Mineralogy, *Addenda.*

BERKELEY, col. 5, l. 52, to him, inſert—the leſſon in the burial-ſervice, taken from 1 Cor. xv. ; and he was commenting upon it, &c. Col. 6, l. 43, generally, inſert—but not truly.

BERKHEYA, in *Botany*, (*Berckheya* is an error), a genus of compound flowers, juſtly dedicated to the honour of Dr. John le Francq van Berkhey, whoſe inaugural diſſertation, publiſhed at Leyden, in 1760, is an elaborate and ample illuſtration of this difficult tribe, accompanied by nu-

merous excellent figures.—Ehrh. Beitr. v. 3. 137. Schreb. Gen. 577. Willd. Sp. Pl. v. 3. 2269. Ait. Hort. Kew. v. 5. 138. (Agriphyllum; Juſſ. Gen. 190. Rohria; Thunb. Prodr. n. 52.)—Claſs and order, *Syngeneſia Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. corrected by Mr. Brown. *Common Calyx* of one leaf, clothed with many lanceolate, imbricated leaves, with ſpinous teeth, and ſpreading points; the lower ones ſhorteſt. *Cor.* compound, radiant. Florets of the diſk numerous, perfect, tubular, funnel-ſhaped, deeply five-cleft, glandular below; of the radius fewer, ligulate, lanceolate, four-toothed; glandular below, imperfect. *Stam.* in the florets of the diſk, Filaments five, capillary, very ſhort; anthers forming a tube with five teeth: in thoſe of the radius the anthers are ſhort and incomplete. *Piſt.* in the florets of the diſk, Germen turbinate, ſhort, hairy; ſtyle thread-ſhaped, longer than the ſtamens; ſtigmas two, revolute: in thoſe of the radius, Germen ſmall, with hardly any ſtyle, and no ſtigmas. *Peric.* none, except the permanent calyx. *Seeds* of the diſk ſolitary, turbinate, hairy, crowned with from ten to fifteen chaffy, lanceolate, finely ſerrated, or fringed, ſcales: of the radius none. *Recept.* flat, cellular, the cells membranous, jagged and toothed.

Eſſ. Ch. Receptacle cellular. Seeds hairy. Crown chaffy, ſerrated or fringed. Calyx of one leaf, clothed with imbricated leafy ſcales.

The ſpecies of this genus, twenty-two in Willdenow, are confined to the Cape of Good Hope and its neighbourhood. Four of them occur under this name in Hort. Kew. as green-houſe plants, flowering in ſummer; three others compoſe Mr. Brown's genus Cullumia, to be deſcribed hereafter. They are generally perennial, often ſhrubby. They embrace Thunberg's whole genus of Rohria, (ſee another genus of that name in its proper place,) and ſeveral of them have been referred by Linnæus to *Gorteria*, *Atractylis*, or even *Xeranthemum*. None has yet appeared in any of our Engliſh periodical works. We ſelect a few examples.

B. *incana*. Hoary Shrubby Berkheya. Willd. n. 1. Ait. n. 3. (B. fruticoſa; Ehrh. Beitr. v. 3. 138. ("Rohria incana; Thunb. in Act. Soc. Nat. Scrut. Hafn. v. 3. 106. t. 11." Gorteria aſteroides; Linn. Suppl. 381. Jacq. Ic. Rar. t. 591. G. fruticoſa; Linn. Sp. Pl. 1284. Atractylis fruticoſa; ibid. ed. 1. 829. Carthamus africanus fruteſcens, folio ilicis ſpinoſo, flore aureo; Walth. Hort. 13. t. 7.)—Leaves alternate, ovate, ſpinous-toothed; hoary beneath, like the ſtem. Calyx-ſcales with ſpinous teeth; hoary underneath.—Native of the interior regions of the Cape of Good Hope, in dry ſituations. The *ſtem* is various in height, with ſlender branches. *Leaves* recurved, three-ribbed, an inch and a half long, coarſely toothed; tapering at the baſe. *Flowers* terminal, ſolitary, near three inches in diameter, deep yellow.

B. *obovata*. Smooth Shrubby Berkheya. Willd. n. 2. Ait. n. 2. (Gorteria ſpinoſa; Linn. Suppl. 381. "Baſteria aculeata; Houtt. Nat. Hiſt. v. 6. 158. t. 34. f. 2." *Ait.*)—Leaves alternate, wedgeſhaped-lanceolate, ſpinous-toothed, ſmooth on both ſides. Calyx-ſcales with ſpinous teeth.—Sent from the Cape to Kew Garden, by Mr. Maſſon, in 1794. Akin to the laſt, but with narrower *leaves*, and the whole plant is ſmooth.

B. *grandiflora*. Large-flowered Berkheya. Willd. n. 7. Curt. Mag. t. 1844. (Rohria grandiflora; Thunb. Prodr. 140. "R. ilicifolia; Vahl Act. Soc. Nat. Scrut. Hafn. v. 2. 40. t. 7." Atractylis oppoſitifolia; Linn. Mant. 477. Gorteria fruticoſa; Berg. Cap. 302, but not Linn. Sp. Pl. 1284.)—Leaves oppoſite, lanceolate, three-ribbed, ſpinous-toothed; downy beneath. Calyx-ſcales with ſpinous teeth.—Native of hills about Riet-valley and Buffeljagts river, at the Cape. The *ſtem* is ſhrubby, with downy branches. *Leaves* above an inch long. *Flowers* terminal, ſolitary, large, of a full golden yellow, with a downy *calyx*.

B. *cynaroides*. Artichoke Berkheya. Willd. n. 19. Ait. n. 1. (Rohria cynaroides; Thunb. Prodr. 140. Gorteria herbacea; Linn. Suppl. 381.)—Stem-leaves alternate, claſping, fringed with prickles: radical ones elongated, entire, unarmed; downy beneath. Calyx-ſcales ovate, ſtraight, ſpinous, nearly entire.—Sent to Kew, from the Cape, in 1789, by Mr. Maſſon. The *ſtems* are herbaceous, a foot or more in height, angular, nearly ſmooth. *Leaves* rigid, or ſomewhat coriaceous; the radical ones three or four inches long, tapering at the baſe. *Calyx* ovate, ſmooth, ſtrongly armed; two or three of the lower ſcales only being fringed, like the adjoining *bracteas*.

B. *cernua*. Drooping Berkheya. Br. in Ait. n. 4. (Gorteria cernua; Linn. Suppl. 382. Willd. Sp. Pl. v. 3. 2268.)—Leaves alternate, lanceolate, claſping, ſpinous-toothed, fringed, ſmooth on both ſides. Flowers drooping. Seed-crown briſtly, fringed.—Sent from the Cape, in 1774, by Mr. Maſſon. Biennial, flowering from May to July. *Leaves* ſlightly cottony when young only. *Calyx* ſpinous.

BERKLEY, in Virginia, l. 5, *r.* 11,479, of whom 1529 are ſlaves.

Berkley, in Maſſachuſetts, *r.* 1014.

Berkley, col. 3, l. 16, for townſhip *r.* pariſh; for 90 *r.* 124; and for 658 *r.* 616, 296 being males, and 320 females. L. 18, inſert after act, in 1811; for 3450 *r.* 3808; for 9,148 *r.* 10,144; for 10,074 *r.* 11,248. Add—1711 families employed in agriculture, and 2215 in trade and manufactures; and for 19,222 in l. 21, *r.* 21,362.

BERKS, l. 9, *r.* 43,146, of whom four are ſlaves.

BERKSHIRE, in Maſſachuſetts, l. 6, *r.* 35,907.

Berkshire. After Vermont, add—containing 918 inhabitants.

Berkshire, col. 2, l. 20, *r.* This county contains 22,104 houſes, and 118,297 perſons; 57,380 being males, and 60,917 females: 13,409 families employed in agriculture, and 7584 in trade and manufactures.

Berkshire, a townſhip of Delaware county, in the diſtrict of Ohio, containing 284 inhabitants.

BERLIN, in Vermont, for 134 *r.* 1067.—In Connecticut, add—the number of inhabitants, in 1810, was 2798.—In Worceſter county, for 512 *r.* 591.—In Somerſet county, inſert—the number of inhabitants, in 1810, was 330.

BERNACCHI, l. 13, *r.* when he was paſt his meridian.

BERNARD, St., a pariſh of the territory of Orleans, in the county of Orleans, containing 1020 inhabitants, of whom 382 are ſlaves.

BERNARDSTOWN, l. 2, *r.* 1879; l. 4, *r.* 811.

BERNE, a townſhip of the diſtrict of Ohio, in the county of Fairfield, having 976 inhabitants.

BERNHARDIA, in *Botany*, ſo named by profeſſor Willdenow, in honour of Dr. John James Bernhardi, of Erfurt, a learned writer on Ferns, and in other reſpects an excellent cryptogamic botaniſt.—Willd. in Act. Acad. Erford. for 1802. 11. Sp. Pl. v. 5. 56. Purſh 655. (See Psilotum, under which name we have treated of this genus in due order.) We know not whether any other genus be already dedicated to Dr. Bernhardi, but it is to be preſumed that this act of juſtice will not long be delayed.

BERTIE, l. 5, *r.* 11,218; l. 6, *r.* 6059.

BERVIE, l. *ult.* *r.* The burgh and pariſh contain 193 houſes, and 927 perſons; 415 being males, and 512 females.

BERWICK, North. Add—The burgh and pariſh contain 208 houſes, and 1727 perſons; 759 being males, and 968 females.

Berwick, col. 3, l. 26, inſert—in cruives. Add—The town and county of Berwick-upon-Tweed, by the parliamentary return of 1811, contained 934 houſes, and 7746 perſons; 3325 being males, and 4421 females.

Berwick, a town of Adams county, in Pennſylvania, having 1799 inhabitants.

Berwick, in Maine, l. 2, *r.* 4455 for 3894.

BESANÇON, l. 2 and 3, *r.* capital of Franche Compte, now of the department, &c.

BESANT, l. *ult.* *r.* under Henry.

BESITTOON, a long range of barren mountains, in the province of Irak, in the Perſian empire, bounding the plain of Kermanſhaw to the N. and terminating abruptly on the E. by a high and perpendicular rock, in one place cut to a ſmooth ſurface, and projecting over the road, like a canopy. It receives its name from *ſittoon*, ſignifying, in Perſian, a pillar, and *be*, a negative propoſition. Near its projection, on a high and inacceſſible part of the rock, is a group of figures, in the form of a proceſſion, of the ſame age and character with thoſe of Perſepolis. The ruins at this place reſemble the magnificent ones of that famous city.

BESLICK, a ſmall Turkiſh ſilver coin, equal to 5 paras, the para being 3 aſpers.

BESSARABIA, col. 2, l. 9, for ſouth-eaſt *r.* ſouth-weſt.

BESTIAN, or Bostana, a cape of Lariſtan, in Perſia, which forms one of the moſt ſecure roadſteads in the gulf of Perſia, at the town of Mogoo. The extremity is about N. lat. 26° 30′, bearing from Polior N.N.E. ¾, and W. from the S. end of Kiſhma. Shinaas and Boſtana are ſmall towns that lie between Linga and Cape Boſtana.

BETHEL, in *Geography*, l. 3, *Lowermoſt Bethel* is a townſhip of Northampton county, having 1392 inhabitants; and *Uppermoſt Bethel*, in the ſame county, has 1188 inhabitants.—After Dauphin county, add—having 2091 inhabitants; l. 4, *r.* 1041: at the cloſe, add—a townſhip of Maine, in the county of Oxford, having 975 inhabitants.—Alſo, a townſhip in Bedford county, containing 1095 inhabitants.—Alſo, a townſhip of Ohio, in the county of Miami, having 506 inhabitants.—Alſo, a townſhip of Champaign county, in Ohio, having 484 inhabitants.

BETHLEHEM, col. 4, l. 10, add—Alſo, a town of New Hampſhire, in Grafton county, having 422 inhabitants; l. 13, *r.* 1738; l. 15, add—having 1118 inhabitants; l. 26, add—but by the cenſus of 1810, they are ſtated to be 1436.

Bethlehem, E. and W., two townſhips of Pennſylvania, in Waſhington county; the former has 1806, and the latter 1849 inhabitants.

BETLIS. Subjoin—See Bedlis.

BEVEL Angle, l. 3, *Plate* III. Col. 3, l. 35, *r.* A *p*, B *p*.

BEVERLEY, l. *ult.* In 1811, the borough and liberties of Beverley contained 1457 houſes, and 6731 perſons; 3024 being males, and 3707 females.

BEVERLY, l. 5, *r.* 4608.

BEVERSTONE, l. 7, *r.* Edward.

BEWCASTLE. Add—The townſhip includes 35 houſes, and 198 perſons; 103 being males, and 95 females.

BEWDLEY, l. *ult.* *r.* The borough contained, in 1811, 632 houſes, and 3454 perſons; 1583 being males, and 1871 females.

BEZOZZI, col. 2, l. 8, *r.* The eldeſt, &c.; l. 18, compoſition; l. 26, do.; l. 27, for the *r.* their; after delicacy, inſert—there was; l. 40, inſert—a labour exquiſite in performance.

BIBIENA, Ferdinando-Galli, l. 12, *r.* Alexander; l. 14, *r.* generoſi.

BIBLES, Latin. See *Italic* Version.

BICE. Add—See Cast.

BIDDEFORD, in America, l. 5, *r.* 1563.

Biddeford, col. 3, l. 2, *r.* 634 houſes, and 3244 perſons; 1415 being males, and 1829 females.

BIGELOVIA, in *Botany*, a genus which we here dedicate to our highly intelligent and ſcientific correſpondent, Jacob Bigelow, M.D. of Boſton in New England, Rumford profeſſor of Materia Medica and Botany in Harvard univerſity, author of the *Florula Boſtonienſis*, publiſhed in 1814; and of the American Medical Botany, with coloured plates, now publiſhing periodically; works which, we are confident, will be but the forerunners of more ample and valuable communications from the ſame quarter. We have ſelected for the commemoration of our friend an American genus, to which the name of Borya, (ſee that article hereafter,) has been erroneouſly applied, and which therefore requires a new appellation. We have choſen one as indiſputable as the genus itſelf, whoſe ſynonyms are the following.—(Borya; Willd. Sp. Pl. v. 4. 711. Purſh 22. Ait. Hort. Kew. v. 5. 365. Adelia; Michaux Boreal.-Amer. v. 2. 223. Browne Jam. 361, but not of Linnæus.)—Claſs and order, *Dioecia Diandria.* Nat. Ord. *Sepiariæ*, Linn. *Jaſmineæ*, Juſſ.

Gen. Ch. Male, *Cal.* Perianth minute, in four deep, erect, lanceolate ſegments. *Cor.* none. *Stam.* Filaments two or three, thread-ſhaped, longer than the calyx, inſerted into the receptacle; anthers roundiſh, two-celled.

Female, on a ſeparate plant. *Cal.* Perianth in four deep, oblong, ſlightly ſpreading, deciduous ſegments; two oppoſite ones very minute, and ſometimes wanting. *Cor.* none. *Piſt.* Germen ſuperior, roundiſh-ovate, of two cells; ſtyle ſhort, cylindrical, thickiſh; ſtigma capitate, depreſſed, obſcurely cloven. *Peric.* Berry oval-oblong, of one cell, its internal ſurface cartilaginous and rugged. *Seed* almoſt always ſolitary, oblong, tapering at each end, furrowed and ribbed longitudinally, with a membranous ſkin; its embryo ſtraight, in a horny albumen.

Eſſ. Ch. Male, Calyx deeply four-cleft. Corolla none. Stamens two or three.

Female, Calyx deeply four-cleft; two oppoſite ſegments ſmalleſt. Corolla none. Stigma capitate. Berry with one ſeed.

Obſ. The deſcription of Michaux, and his hint of the affinity of this genus to *Chionanthus*, have helped us to form, we truſt, a correct idea of its characters. Wilidenow had ſeen ſpecimens of Browne's *Adelia*, and he probably had the ſanction of the able M. Richard for uniting it with that of Michaux, the latter having already ſo decided this queſtion; nor do we ſee any reaſon for a different opinion.

The ſpecies are all ſhrubby, with oppoſite, undivided, moſtly entire, ſmooth *leaves*, and minute, tufted, bracteated, *flowers*. The *fruit* is probably not eatable.

1. B. *caſſinoides.* Elliptical Bigelovia. (Borya caſſinoides; Willd. n. 1. Adelia n. 1; Browne Jam. 361. t. 36. f. 3.)—Leaves ſtalked, obovate, obtuſe, coriaceous, revolute; reticulated with veins beneath.—Native of the Weſt Indies. Common on low gravelly hills, eaſtward of Kingſton, in Jamaica. Sometimes eight or ten feet high,

with ſlender leafy *branches*. *Flowers* in little axillary tufts, or cluſters. *Leaves* about an inch and a half long, ſmooth, entire. *Br*.

2. B. *poruloſa*. Pierced Bigelovia. (Borya poruloſa; Willd. n. 2. Purſh n. 1. Ait. n. 1. Adelia poruloſa; Mich. Bor.-Amer. v. 2. 224.)—Leaves ſeſſile, oblong-lanceolate, obtuſe, coriaceous, revolute; dotted beneath.—On the coaſts of Georgia and Florida. The *leaves* are ruſty, and as if pierced with little dots, beneath. *Michaux*.

3. B. *liguſtrina*. Privet-leaved Bigelovia. (Borya liguſtrina; Willd. n. 3. Purſh n. 2. Ait. n. 2. Adelia liguſtrina; Mich. Bor.-Amer. v. 2. 224.)—Leaves oblong-lanceolate, ſomewhat membranous, entire, on ſhort ſtalks. Berry roundiſh-ovate.—Native of thickets and woods about rivers, in the countries of the Illinois, Tenneſſee, &c. flowering in July and Auguſt. This has the habit and foliage of our Privet. *Michaux*.

4. B. *acuminata*. Pointed Bigelovia. (Borya acuminata; Willd. n. 4. Purſh n. 3. Ait. n. 3. Adelia acuminata; Mich. Bor.-Amer. v. 2. 225. t. 48.)—Leaves ovato-lanceolate, membranous, ſtalked, ſlightly ſerrated, acute at each end. Unripe berry oblong, taper-pointed.—On the banks of rivers in Carolina and Georgia. The taper lateral *branches* appear to form ſomething like thorns. The *leaves* are an inch and a half long. *Male flowers* ſeveral together, in ſmall ſeſſile tufts, encompaſſed with ſeveral ovate *bracteas*; *female* ones ſtalked, very ſmall. *Berries* pendulous, elliptic-oblong, near an inch in length.

The three latter ſpecies are recorded by Mr. Aiton, to have been brought into England by Mr. John Lyon; the *poruloſa* in 1806, the two others in 1812. They are hardy ſhrubs, but do not appear to have yet flowered.

BIGNONIÆ, the 45th order in Juſſieu's ſyſtem; the 12th of his 8th claſs, whoſe characters are given at GENTIANÆ. The following is that author's definition of the order before us.

Calyx divided. *Corolla* moſtly irregular, with four or five lobes. *Stamens* uſually five, one of which is, for the moſt part, abortive, or imperfect. *Style* one; *ſtigma* either ſimple or two-lobed. *Fruit* of two cells; ſometimes capſular, with many ſeeds, and with two perfectly ſeparate valves; the ſeed-bearing partition oppoſite or parallel to the valves, and ſeparable therefrom: ſometimes coriaceous or woody, burſting at the top only, with but few ſeeds, the ſeed-bearing partition a continuation of the valves, not ſeparable, and often ſending out a ſlight wing, dividing each cell into two. *Corculum* unattended by *albumen*. *Stem* herbaceous, ſhrubby, or arboreous. *Leaves* oppoſite, rarely alternate.

Sect. 1. *Fruit capſular, bivalve. Stem herbaceous.*

Chelone and *Seſamum*, with Juſſieu's *Incarvillea*, Lamarck Illuſtr. t. 527, compoſe this ſection.

Sect. 2. *Fruit capſular, bivalve. Stem arboreous or ſhrubby.*

Millingtonia of Linnæus; *Jacaranda*, *Catalpa*, and *Tecoma* of Juſſ. with *Bignonia* of Linnæus.

Sect. 3. *Fruit coriaceous, almoſt woody, opening at the top. Stem herbaceous.*

Tourretia of Dombey and Juſſ.; *Martynia*, *Craniolaria*, and *Pedalium* of Linnæus.

Mr. Brown, Prodr. Nov. Holl. v. 1. 470, retains the ſecond ſection only, under the name of *Bignoniaceæ*, to which he adds the genus SPATHODEA. See that article.

BIGONCIA, in *Commerce*, a liquid meaſure in Venice. See AMPHORA.

BILE, *Chemical properties of*. Bile has been lately denied by Berzelius to contain a reſinous or adipocirous matter, as had been maintained by former chemiſts. The ſubſtance peculiar to bile, or, as it is denominated by him, the *biliary principle*, has an exceſſively bitter taſte, followed by ſome ſweetneſs. Its ſmell is peculiar, and the colour in moſt animals varies from green to greeniſh-yellow. It is ſoluble in water, and its ſolubility is not in the leaſt promoted by the alkali of the bile, ſince when the alkali is neutralized by any acid, the peculiar matter does not ſeparate. It likewiſe diſſolves in alcohol in all proportions. Like the albuminous materials of the blood, of which this peculiar matter is compoſed, it will unite with acids producing two compounds of two degrees of ſaturation, and hence of ſolubility. The dilute acetic acid which gives ſoluble compounds with the albumen of the blood, does the ſame with the peculiar matter of the bile; and hence this matter is not precipitated on adding this acid to bile, though it falls down on the addition of the ſulphuric, nitric, or muriatic acids. It is this ſparingly ſoluble compound of biliary matter with a mineral acid which has been miſtaken by many chemiſts for a reſin, ſince it poſſeſſes the external characters of a reſin, melts when heated, diſſolves in alcohol, and is again partly precipitated by water. The alkalies, alkaline earths, and alkaline acetates, decompoſe and diſſolve it; the former by depriving it of its combined acid, the latter by furniſhing it with acetic acid, which renders it ſoluble in water.

The peculiar matter of bile will alſo combine with many of the metallic oxyds. The degree of the ſolubility poſſeſſed by the compound of acid and biliary principle, varies according to the length of time that the bile has been kept, and alſo according to the ſpecies of the animal.

The biliary matter may be obtained in a ſtate of purity by mixing freſh bile with ſulphuric acid diluted with three or four times its weight of water. A yellow precipitate firſt appears, which is to be allowed to ſubſide, and then removed: more acid is then to be added as long as any precipitate is formed; heat the mixture gently for ſome hours, and afterwards decant the fluid part, and thoroughly waſh the green maſs left. This green reſinous-like maſs reddens litmus, and is partially and ſparingly ſoluble in water. It may be deprived of its acid either by the carbonate of barytes, or by the carbonate of potaſh or lime, and thus obtained pure. It is now ſoluble in water, and forms a green ſolution, having all the properties of bile. It is inſoluble in ether, which converts it into an adipocirous maſs. When burnt it yields no ammonia, and conſequently contains no azote.

The following are the reſults of Berzelius's analyſis of bile:

Water - - - - - - -	907.4
Biliary principle deſcribed above -	80.0
Mucus of the gall-bladder, &c. diſſolved in the bile - - - - - -	3.0
Alkalies and ſalts, common to all ſecreted fluids - - - - - - -	9.6
	1000.0

The bile of other animals has been but imperfectly examined. It reſembles in its general characters the human bile above-mentioned.

BILLARDIERA, in *Botany*, ſo named by the writer of this, in honour of his friend James Julian la Billardiere, (or, as it is now written, Labillardiere,) M.D. author of *Icones Plantarum Syriæ Rariorum*, the fruits of his journey to the Levant, in 1786; and ſince much better known by his valuable *Novæ Hollandiæ Plantarum Specimen*, in two volumes folio, with many plates. An account of his voyage to New Holland, in ſearch of the unfortunate Lapeyrouſe, contains alſo much botanical matter, and has been publiſhed in Engliſh, at London, in 1802, with plates. M. Labillardiere has always diſtinguiſhed himſelf as a claſſical botaniſt, of the Linnæan ſchool, preferring the intereſts of ſcience to thoſe of ſyſtem, and following no leader but what he conceives to be truth.—Smith Bot. of New Holl. 1. Labill. Nov. Holl. v. 1. 64. Willd. Sp. Pl. v. 1. 1150. Ait. Hort. Kew. v. 2. 39.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. uncertain. Akin to *Pittoſporum*, and therefore to the *Rhamni* of Juſſieu, as they ſtand at preſent. *Saliſb.*

Gen. Ch. *Cal.* Perianth inferior, of five lanceolate, coloured, equal, deciduous leaves. *Cor.* Petals five, inſerted into the receptacle, alternate with the calyx, and twice as long, linear-lanceolate, erect; their claws more or leſs converging in the form of a tube; border ſpreading, acute, recurved. Nectary none. *Stam.* Filaments five, inſerted into the receptacle, alternate with the petals, the length of the claws, awl-ſhaped; anthers ovate-oblong, attached by the back, of two cells, burſting lengthwiſe, internally. *Piſt.* Germen ſuperior, elliptic-oblong; ſtyle awl-ſhaped, the length of the ſtamens; ſtigma obtuſe. *Peric.* Berry roundiſh-oblong, of two cells. *Seeds* numerous, roundiſh, inſerted into the central column.

Eſſ. Ch. Calyx of five leaves, deciduous. Petals five, alternate with the calyx, converging into a tube. Stigma obtuſe. Berry ſuperior, of two cells, with many ſeeds.

The ſpecies are all ſlender, twining, branched *ſhrubs*, with ſcattered, ſimple, undivided, nearly entire, more or leſs downy, *leaves*, on ſhort footſtalks. *Flowers* and *fruit* pendulous, on terminal ſtalks.

1. B. *ſcandens*. Climbing Billardiera, or Apple-berry. Sm. Bot. of New Holl. 1. t. 1. Willd. n. 1. Ait. n. 1. Curt. Mag. t. 801.—Leaves elliptic-lanceolate. Berry cylindrical, obtuſe, downy.—Native of Port Jackſon, New South Wales, from whence we received ſpecimens and coloured drawings, by the kindneſs of Dr. White. Sir Joſeph Banks ſent ſeeds, or plants, to Kew, in 1790, and we have ſince ſeen flowers and ripe fruit in many conſervatories. A low *ſhrub*, with variouſly twiſted and climbing *branches*. *Leaves* an inch and a half or two inches long, elliptic-oblong, of a dull but not dark green; paler and moſt downy beneath; their edges ſomewhat wavy and reflexed, ſcarcely notched. *Flowers* on hairy ſtalks, pale lemon-coloured, an inch long, with a hairy yellowiſh *calyx*. Germen very hairy. *Berry* above an inch in length, cylindrical, equally obtuſe at each end, yellow, downy all over, full of brown ſeeds, its pulp ſoft, ſweet, but rather inſipid in this country, though ſaid, in a wild ſtate, to reſemble a roaſted apple. The figure in the Botany of New Holland was taken from a drawing made in that country. We readily concur with our friend Dr. Sims, in Curt. Mag. p. 1507, that it is impoſſible to find a name which will contraſt the only known ſpecies of a genus, with all that may hereafter be found, and it happens that all the *Billardieræ* are climbers. The appellation above, therefore, ſerves to ſhew the preſent to have been the originally deſcribed ſpecies. There are ſeveral ſuch inſtances in the hiſtory of Linnæan genera, nor would it be allowable to alter the original ſpecific name on this account.

2. B. *mutabilis*. Changeable-flowered Billardiera. Saliſb. Parad. t. 48. Ait. n. 2. Curt. Mag. t. 1313.—Leaves linear-lanceolate. Berry cylindrical, obtuſe, ſmooth.—Native of New South Wales. Eaſily cultivated in a greenhouſe, and increaſed by cuttings or ſeeds. The *leaves* are narrower and ſmoother than in the foregoing ſpecies. The *flowers*, at firſt of a pale greeniſh-yellow, turn purple before they fall. The *germen* and *fruit* are ſaid to be alway ſmooth, the form of the latter agreeing with *B. ſcandens* *Flower-ſtalks* ſmooth.

3. B. *fuſiformis*. Spindle-ſhaped Billardiera. Labill. Nov. Holl. v. 1. 65. t. 90.—Leaves oblong-lanceolate. Flowers aggregate. Petals ſpreading. Berry ſpindle-ſhaped, pointed, ſilky, dry.—Gathered by M. Labillardiere at the Cape of Van Diemen, in December. The *ſtem* is generally climbing. *Leaves* ſomewhat hairy, larger than in the laſt. *Flowers* from two to ſix at the end of each branch, forming more or leſs of a cluſter, blue, the *petals* more ovate, and ſpreading from the baſe, than in other ſpecies. *Anthers* converging. *Berry* ſmall and tapering, of a membranous texture, ſilky, deſtitute of pulp.

4. B. *longiflora*. Blue-berried Billardiera. Labill. Nov. Holl. v. 1. 64. t. 89. Curt. Mag. t. 1507. Ait. Epit. 364.—Leaves lanceolate. Petals converging. Berry nearly globular, lobed, ſmooth.—Native of the ſame country as the laſt. Raiſed here by Meſſrs. Loddiges. The *flowers* are ſolitary, pale yellow, longer and more tubular than in any of the reſt. *Fruit* remarkably different, being ſhort and roundiſh, of a fine blue. Dr. Sims has well obſerved, that this part affords, in the preſent genus, the beſt ſpecific diſtinctions.

BILLERICA, l. 2, *r.* 1289.

BILLS, Exchequer. See Exchequer-*Bills*.

Bill *of Health*, an account of the health of a crew, given by the captain or maſter of a veſſel.

Bills, *India*, bills drawn in India on the Eaſt India company in London, and payable at the India-houſe.

Bills, *Victualling*. See Navy *and Victualling Bills*.

BILLYMEAD, a town of Vermont, in the county of Caledonia, containing 433 inhabitants.

BILSTON, l. *ult.* for 1305 *r.* 1818; and for 6914 *r.* 9646.

Bilston, l. *ult.* for 121 *r.* 110; and for 744 *r.* 762.

BIR. Add—According to M. d'Anville this place repreſents the ancient Birtha. The caravans travelling from Aleppo to Orfa paſs the Euphrates on a bridge of boats at this place, ſituated 144 miles from Aleppo, and 67 from Orfa, in N. lat. 36° 58′. A tax is paid at this town, which is in a dilapidated ſtate; and all travellers and merchants croſs the Euphrates, which is here deep and rapid, and about 130 yards broad.

BIRDS, *Anatomy of*. The references to the plates to be expunged. Col. 7, l. 33, after another, inſert—a good inſtance of which is found in, &c. ending heron; l. 35, *r.* The bulbus in the oſtrich is a long narrow band lying on the front of the ſtomach. The ſtructure, &c.; l. 53, *dele* like other, &c. to ſecretion. Col. 9, l. 42, for ſuperficial view *r.* ſlight examination. Col. 11, l. 20, after inteſtine *dele* to ventricle, l. 34; and inſert—If the cavity of the ſtomach in the *heron* be diſtended with any tranſparent fluid and held up to the light, the zone of gaſtric glands will be plainly ſeen through its coats. If Spallanzani had employed this expedient, he could not have denied a diſtinct glandular ſtructure to the heron. The inferior part of the ſtomach is chiefly compoſed of muſcular fibres, ſpreading in a radiated manner from a lateral aponeuroſis, which ſupplies the place of the great tendons of the digaſtric muſcle. The ſecond cavity or ſtomach in the heron is a ſmall round bag, furniſhed only with circular muſcular fibres; l. 35, for ſtraight *r.* contracted. Col. 13, l. 14, *dele* ſo; l. 15, after reſpect *dele* to the end of the paragraph. Col. 14, l. 15, *dele* after adjoining to the end of the paragraph. Col. 16, l. 16 from the bottom, after receive, inſert—ſome of. Col. 19, l. 28 from the bottom, inſert after by—one of the ableſt chemiſts, &c. Col. 20, l. 26 from the bottom, *dele* as in mammalia. Col. 31, l. 22 from the bottom, *dele* bronchiæ, &c. to cells, and inſert—and the branches of the air-tubes. Col. 32, l. 28, for ſacks *r.* ſacs. Col. 35, l. 11, for of *r.* off. Col. 36, l. 7 from the bottom, *r.* like the air contained in the ſwimming bladder of fiſhes, with reſpect to the water. Col. 47, l. 17, *r.* quadrupeds. The trunk, &c. Col. 51, l. 13 from the bottom, *dele* from urine to the end of the paragraph.

Bird, in *Geography*, a townſhip of Adams county, in the diſtrict of Ohio, containing 1442 inhabitants.

BIRMINGHAM. Add—In 1811, the town of Birmingham contained 16,653 houſes, and 85,753 perſons; 40,518 being males, and 45,235 females: 589 families employed in agriculture, and 17,294 in trade and manufactures.

Birmingham, a townſhip of Delaware county, in Pennſylvania, having 586 inhabitants.—Alſo, a townſhip in Cheſter county, of the ſame ſtate, having 200 inhabitants.

BISHOP'S Castle, l. *ult.* *r.* The borough, in 1811, contained 288 houſes, and 1367 perſons; 651 being males, and 716 females.

Bishop'*s Stortford*, col. 2, l. 36, *r.* The pariſh contains 479 houſes, and 2630 perſons; 1255 being males, and 1375 females.

BISLEY, l. *ult.* for 922 *r.* 1022; and for 4227 *r.* 4757.

BISMUTH, in *Chemiſtry*. There ſeems to be but one oxyd of this metal. What was formerly termed the *magiſtery of biſmuth*, and conſidered as a peroxyd, has been demonſtrated by Bucholz to be a compound of the oxyd of biſmuth and nitric acid.

Dr. Thomſon has determined 88.75 to be the combining weight or weight of the atom of biſmuth. According to this determination, the oxyd of biſmuth will conſiſt of

Biſmuth	100	or *per cent.* of	89.87
Oxygen	11.2672		10.13

From the above number, and from the known weights of the different acids, the compoſition of all the ſalts of biſmuth can be accurately aſcertained. See Proportions, *Definite*, and Atomic *Theory*, *Addenda*.

BISON, in *Zoology*. See Bos and Urus.

BISSEXTILE, col. 2, l. 22, *r.* 1752.

BISTAM, inſert—or Bistan. Add—See Sumnum and Sharut.

BISTINEAU, in *Geography*, a lake of Louiſiana, formed by the agency of Red river, which has raiſed a bank of earth and ſand acroſs the lower extremity of a valley that ſerves to confine the waters between the hills at all ſeaſons, and to produce this lake. The land along its banks riſes into hills from 100 to 200 feet of elevation, clothed with pine, oak, and various other trees, that afford agreeable proſpects. The eaſtern range, more broken than the weſtern, abounds more with petrifactions; and along the margin of the water, are found the white-thorn, hawthorn, and other dwarf trees, which form an elegant natural border. Many ſmall prairies, eight or ten acres in extent, ſpread themſelves over the projecting banks, and diverſify this wild, uncultivated, but romantic ſcene. This lake furniſhes evidence of the continual change effected in theſe alluvial regions, by the ſlow but unceaſing action of water. The average depth of the water is from fifteen to twenty feet; and in the deepeſt part of the lake preſents to view cypreſs-trees of various ſizes that are dead, and the remains of which, reſiſting the action of air and water, atteſt the ancient ſituation of the country. Darby's Louiſiana.

BIT, in *Commerce*. Add—1 bit being worth $5\frac{5}{12}$ ſterling, as 10 bits and 5*d.* currency make a dollar.

BITTER Principle, *Natural and Artificial*, in *Chemiſtry*. This name has been given by chemiſts, and eſpecially by Dr. Thomſon, to different principles, extracted from various vegetables, particularly from *quaſſia*, *cocculus indicus*, *ſquills*, and ſome others. Though the characteriſtic property of theſe ſubſtances be their bitter taſte, yet this appears to be almoſt the only particular in which they all agree. The bitter principle of quaſſia, according to Dr. Thomſon, is of a browniſh-yellow colour, ſomewhat tranſparent, of an intenſely bitter taſte, ſoluble in water and alcohol, has no effect on vegetable blues, and is little affected by re-agents; the nitrate of ſilver, and acetate of lead, being the only ones that precipitate it from its ſolution. It may be obtained by digeſting quaſſia for ſome time in water, and evaporating the ſolution formed to dryneſs. The bitter principles extracted from *colocynth*, *brionia alba*, and from *wheat-flour*, ſeem to poſſeſs properties analogous to the above. The bitter principle from *cocculus indicus*, which has been named Picrotoxin, is deſcribed under that article.

The bitter principle of ſquills is white and tranſparent. It is ſoluble in water and alcohol, and rapidly attracts moiſture from the atmoſphere. Its taſte is intenſely bitter; though it uſually retains a little ſaccharine matter with great obſtinacy. It was obtained by Vogel by evaporating the juice to dryneſs, and heating it with alcohol; the tannin taken up by the alcohol was ſeparated by the acetate of lead, and thus the bitter principle, obtained in the ſtate above deſcribed, combined with a little ſugar, from which it was found impoſſible to entirely free it. The bitter principle of coffee principally differs from the preceding by the property it poſſeſſes of ſtriking a green colour with iron, and of precipitating that metal from concentrated ſolutions.

According to the experiments of Bouillon la Grange, a ſubſtance not much unlike the above exiſts in the flowers of the *arnica montana*, *abſinthium vulgare*, *juniperus ſabinus*, *ruta graveolens*, *anthemis nobilis*, and *achillea millefolium*.

The *artificial bitter principle* ſeems to have been firſt formed by Hauſſman from indigo, though he miſtook its nature. Welther afterwards obtained it from ſilk, aſcertained its properties, and gave it the name of *yellow bitter principle*. It was afterwards obtained by Bartholdi from the white willow. Mr. Hatchett formed it, during his experiments upon artificial tannin, by heating indigo with nitric acid; and about the ſame time Fourcroy and Vauquelin procured it by the ſame means, and examined its properties. M. Chevreul ſuppoſes it to be a compound of nitric acid and a vegetable ſubſtance, probably of an oily nature. Its colour is deep yellow, and its taſte intenſely bitter. It is ſoluble in water and alcohol. It cryſtallizes in elongated plates, and poſſeſſes many of the properties of an acid, combining with alkaline ſubſtances, and forming cryſtallizable ſalts poſſeſſing peculiar properties.

The *artificial tannin* itſelf is by ſome chemiſts conſidered as little better than a variety of the bitter principle. See Tannin, *Artificial*.

BITTERN. See Water.

BITUMINOUS *Marle Slate*. See Mineralogy, *Addenda*.

BIVOUACKE, Bihouac, or *Bigvac*, Fr. formed from the German *way-wacht*, a double watch or guard, denotes a night-guard, or a detachment of the whole army, which, during a ſiege, or in the preſence of an enemy, marches out every night in ſquadrons or battalions, to line the circumvallations, or to take poſt in front of the camp, for the purpoſe of ſecuring their quarters, preventing ſurpriſes, and obſtructing ſupplies. When an army does not encamp, but lies under arms all night, it is ſaid to "bivouacke."

BLACKBURN, l. 28, for 24 *r.* 23. Col. 2, l. 4, r. Blackburn townſhip contained, in 1811, 2945 houſes, and 15,083 perſons; 6953 being males, and 8130 females: 45 families employed in agriculture, and 2861 in trade and manufactures.

BLACK-LAKE River, in *Geography*, a river of Louiſiana, that riſes in the ſame ridge of hills with the Saline, and uniting with it, joins the Rigolet de bon Dieu, 8 miles N.E. of Natchitochez. Here the ſtate of Louiſiana begins to riſe into elevations of ſome conſiderable note. The features of a mountainous country now preſent themſelves, ledges of a looſe ſand-ſtone rock abound, nodules of iron-ore are every where met with, and petrifactions of the moſt diverſified forms are ſtrewed over every ſlope. Theſe petrifactions generally appear to have undergone their change from ligneous to the ſiliceous ſtate in which they are found, and to have been imboſomed in an argillaceous clay, which, by induration, incloſes them in its maſs. Darby's Louiſiana.

BLACKLICK, a townſhip of Indiana, in the ſtate of Pennſylvania, having 965 inhabitants.

BLACKROD, a townſhip of Bolton pariſh, in the hundred of Salford, and county of Lancaſter, containing 373 houſes, and 2111 perſons; *viz.* 1044 males, and 1065 females. See Wigan.

BLADEN, l. 2, *r.* 5671; l. 3, 1985.

BLAFFERT, in *Commerce*, a ſmall coin at Cologne; 20 blafferts in account being = the rix-dollar ſpecie, and 19½ blafferts being the rix-dollar current; 16 blafferts = a rader florin; 2½ blafferts = a ſhilling; and a blaffert = 4 albuſes. There are ſilver blafferts, and half ditto.

BLAINVILLE, col. 2, l. 19, *r.* Serre.

BLAIR, Robert, in *Biography*, a Scotch divine and poet, was the eldeſt ſon of the Rev. David Blair, one of the miniſters of Edinburgh, and chaplain to the king; and the grandſon of the Rev. Robert Blair, miniſter of the goſpel at Bangor in Ireland, and afterwards at St. Andrew's in Scotland, celebrated for his piety, and for his inflexible adherence to Preſbyterianiſm, in oppoſition to thoſe who endeavoured to eſtabliſh epiſcopacy in Scotland. The ſubject of the preſent article was born in 1699, and after preparatory ſtudies was ordained miniſter of Athelſtaneford, in Eaſt Lothian, where he reſided until his death, Feb. 4, 1747. The late right hon. Robert Blair, preſident of the court of ſeſſion in Scotland, who died in 1811, was one of his ſons, and Dr. Hugh Blair, (ſee his article,) was his couſin. His only literary production, we apprehend, was a poem, intitled "The Grave," which was long diſregarded, and which, though more lately recommended to attention by Hervey, who firſt printed it, and Mr. Pinkerton, in his "Letters of Literature," has no claim on any high degree of commendation. It is deſtitute of plan, unembelliſhed by any of the ingenious graces of poetry, and degraded by ſatirical ſtrokes on phyſicians and undertakers, warm expreſſions, and ill-choſen epithets. Upon being previouſly ſubmitted to Dr. Watts and Dr. Doddridge, the author had no encouragement to publiſh it: however, it was printed at London in 1743, and is peruſed by perſons of a ſerious diſpoſition. Biog. Dict. by Chalmers.

BLAIZE, St., *Cape*, in *Geography*. See Mossel's *Bay*.

BLANDFORD, col. 2, l. 30, *r.* contained, in 1811, 431 houſes, with 2425 inhabitants; 1017 being males, and 1408 females.

Blandford, in America, l. 6, *r.* 1613.

BLANDFORDIA, in *Botany*, received its name from the writer of the preſent article, in honour of his grace George duke of Marlborough, at that time marquis of Blandford, an honorary member of the Linnæan Society, and one of the moſt ardent botaniſts and cultivators that this country ever poſſeſſed in any rank of life. A genus belonging to what Linnæus terms the Patrician order, was judged peculiarly eligible for this purpoſe; nor can any one be more diſtinct, few more beautiful.—Sm. Exot. Bot. v. 1. 5. Brown Prodr. Nov. Holl. v. 1. 295. Ait. Epit. 364.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Narciſſi*, Juſſ. *Hemerocallideæ*, Brown.

Gen. Ch. *Cal.* none. *Cor.* of one petal, inferior, tubular, ſtraight, with ſix marginal lobes, regular, withering. *Stam.* Filaments ſix, thread-ſhaped, inſerted into the middle of the tube, decurrent, ſhorter than the limb; anthers ovate, two-lobed, incumbent, attached by a hood at their baſe. *Piſt.* Germen ſuperior, ſtalked, oblong, with three angles, and three intermediate furrows; ſtyle vertical, awl-ſhaped; ſtigma ſimple. *Peric.* Capſule ſtalked, priſmatic, of three cells, burſting at their inner angles. *Seeds* numerous, oval, inſerted along the margins of each cell, imbricated, clothed with denſe briſtly hairs.

Eſſ. Ch. Corolla inferior, funnel-ſhaped, ſtraight, with ſix marginal ſegments. Filaments inſerted into the tube. Capſule ſtalked, priſmatic, of three cells. Seeds numerous, imbricated, briſtly.

1. B. *nobilis*. Scarlet Blandfordia. Exot. Bot. t. 4. Br. n. 1. Ait. Epit. 364. Curt. Mag. t. 2003.—"Bracteas but half the length of the partial ſtalks while in flower. Leaves narrow-linear." *Br.*—Native of the neighbourhood of Port Jackſon. The *root* is woody and perennial. *Leaves* all radical, four or five inches long, ſcarcely half an inch broad, entire, ſmooth, coriaceous, tapering at the baſe into ſheathing footſtalks. *Flower-ſtalks* radical, two or three feet high, erect, round, each bearing a very handſome corymboſe *cluſter*, of drooping, ſcarlet *flowers*; yellow, and marked with green, at the border; each near an inch and a half long, on a red partial *ſtalk* of the ſame length, at whoſe baſe are two unequal, oppoſite, tapering *bracteas*. *Capſule* pointed, twice the length of the permanent withered *corolla*.

2. B. *grandiflora*. Large-flowered Blandfordia. Br. n. 2. (Aletris punicea; Labill. Nov. Holl. v. 1. 85. t. 111.)—Bracteas nearly as long as the partial ſtalks while in flower; the inner but one-third as large as the outer.—Obſerved at Port Jackſon by Mr. Brown, who is not quite certain of Labillardiere's plant, found at Cape Van Diemen. We have ſeen neither, but we ſhould ſcarcely have thought the latter could be diſtinguiſhed even from *B. nobilis*.

Blandfordia *cordata*, Andr. Repoſ. t. 343. See Galax.

BLATTA, col. 2, l. 29, after *gigantea*, add—called in the Weſt Indies *drummer*, from the noiſe it makes, like a ſmart knocking with the knuckle upon the wainſcot; l. 36, *dele* which ſee reſpectively.

BLAYNEY, Benjamin, D.D. in *Biography*, an eminent Hebrew ſcholar and critic, was educated at Oxford, and graduated M.A. in 1753, at Worceſter college, and becoming afterwards fellow of Hertford college, took the degree of B.D. in 1768, and of D.D. in 1787, in which year he was appointed regius profeſſor of Hebrew. As a Scripture commentator and tranſlator, he acquired very conſiderable reputation. The publications by which he was diſtinguiſhed were, "A Diſſertation on Daniel's Prophecy of Seventy Weeks," &c. 1775, 4to.; "A New Tranſlation of Jeremiah's Lamentations, with Notes, &c." 1784, 8vo.; "The Sign given to Ahaz, a Diſcourſe on Iſaiah, vii. 14—16," &c. 1786, 4to.; "Chriſt the greater Glory of the Temple," 1788, 4to.; "A New Tranſlation of Zechariah, with Notes," &c. 1787, 4to. Dr. Blayney was canon of Chriſtchurch, and rector of Potſhot, where he died Sept. 20, 1801, having previouſly directed by will that his critical papers ſhould be depoſited in the library at Lambeth.

BLEACHING, col. 10, l. 19, *r*. For an account of the progreſs of diſcoveries in the new method of bleaching by the oxygenated muriatic acid, ſee OXYMURIATIC *Acid Gas*.

BLECHINGLEY, col. 2, l. *ult.* *r*. By the returns in 1811, the borough and pariſh contained 184 houſes, and 1116 perſons; 575 being males, and 541 females.

BLECHUM, in *Botany*, βληχων, an old name for *Pulegium*, or Penny-royal, applied gratuitouſly by Dr. Patrick Browne to a Jamaica plant, and retained by Juſſieu. It looks, rather than ſounds, too much like *Blechnum*.—Browne Jam. 261. Juſſ. in Ann. du Muſ. v. 9. 269. Brown in Ait. Hort. Kew. v. 4. 55.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Acanthi*, Juſſ. *Acanthaceæ*, Brown.

Eſſ. Ch. Calyx in five deep equal ſegments. Corolla funnel-ſhaped. Capſule imperfectly two-celled, with two valves, and a contrary partition, at length ſeparating in portions. Seeds ſeveral, with awl-ſhaped props. *Br.*

Theſe characters exclude Juſſieu's *B. aniſophyllum*, which, with *Ruellia imbricata* of Forſkall, and ſeveral Eaſt Indian as well as tropical African ſpecies, compoſe Mr. Brown's new genus of *Aetheilema*, as yet, we believe, merely indicated in his Prodr. Nov. Holl. v. 1. 478. The following are the only ſpecies of *Blechum* there mentioned.

1. B. *Brownei.* Denſe-piked Blechum. Juſſ. as above. Ait. n. 1. (Ruellia Blechum; Linn. Sp. Pl. 884. Willd. Sp. Pl. v. 3. 362. Prunella elatior, flore albo; Sloane Jam. v. 1. 173. t. 109. f. 1.)—Leaves ovate-elliptical, ſlightly toothed. Spikes quadrangular. Bracteas ovate, downy.—Native of the Weſt Indies. Perennial. Herbaceous, decumbent, branched, two or three feet high, with oppoſite *leaves*, and white *flowers* of no great beauty.

2. B. *erectum.* Upright Blechum. (Ruellia blechioides; Swartz Ind. Occ. 1068. Willd. Sp. Pl. v. 3. 362.)—Leaves oblong, ſomewhat toothed, ſmooth. Spikes ovate. Bracteas nearly ſmooth.—Found in ſhady woods, in the weſtern part of Jamaica. *Stem* erect, rather ſhrubby. *Flowers* blue. Willdenow miſquotes the remarks of Swartz, which indeed are not very clearly expreſſed.

3. B. *anguſtifolium.* Narrow-leaved Blechum. (Ruellia anguſtifolia; Swartz Ind. Occ. 1070. Willd. Sp. Pl. v. 3. 363.)—Leaves linear-lanceolate. Spikes oblong. Bracteas ovate, hairy.—Native of the Caribbee iſlands. Herbaceous, a foot high, with tumid joints. *Leaves* ſmooth on both ſides. *Flowers* ſmall, blue.

BLETIA, ſo named by the authors of the Flora Peruviana, after Louis Blet, a Spaniſh apothecary, whoſe botanical merits ought to be very great, to entitle him to ſo fine, if really diſtinct, a genus.—"Ruiz et Pavon Prodr. 119." Brown in Ait. Hort. Kew. v. 5. 205. (Phaius; Loureir. Cochinch. 529.)—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals diſtinct. Lip ſeſſile, hooded. Style unconnected. Anther a terminal deciduous lid. Maſſes of pollen eight or four, two-lobed.

1. B. *Tankervilliæ.* Lady Tankerville's Bletia. Ait. n. 1. Andr. Repoſ. t. 426. Curt. Mag. t. 1924. (Limodorum Tankervilliæ; Redout. Liliac. t. 43. Schneev. Ic. t. 5. See LIMODORUM for more ſynonyms, and a deſcription.)—Lip undivided, with a ſhort ſpur. Leaves radical, elliptic-lanceolate.

2. B. *verecunda.* Tall Bletia. Ait. n. 2. (Cymbidium verecundum; Willd. Sp. Pl. v. 4. 105. Limodorum altum; Jacq. Ic. Rar. t. 602. Curt. Mag. t. 930.)—Petals converging. Lip without a ſpur; the ribs of its diſk branched; middle lobe broader than long; lateral ones contracted upwards. Stalk more or leſs branched.—Native of the Weſt Indies, long known in our ſtoves. *Stalk* three feet high, with ſpreading branches. *Flowers* crimſon, an inch broad. *Petals* forming a hood over the *ſtyle*. *Furrows* of the lip yellow.

3. B. *florida.* Purple Bletia. Ait. n. 2. (Cymbidium floridum; Saliſb. Prodr. 9. Limodorum purpureum; Redout. Liliac. t. 83.)—Petals ſpreading. Lip without a ſpur; the ribs of its diſk ſimple; middle lobe ſomewhat wedge-ſhaped; lateral ones dilated at the ſummit. Stalk ſomewhat branched.—Native of the warmeſt parts of the Weſt Indies. Twelve or eighteen inches high. *Flowers* larger than the laſt, with more oblong, and more uniform, *petals* and *calyx-leaves*. Diſk of the *lip* yellow.

4. B. *hyacinthina.* Hyacinthine Bletia. Ait. n. 4. (Cymbidium hyacinthinum; Sm. Exot. Bot. v. 1. 117. t. 60. Curt. Mag. t. 1492.)—Petals lanceolate, ſpreading. Lip without a ſpur. Maſſes of pollen four, two-lobed. Stem leafy. Flowers racemoſe.—Native of China, according to Mr. Ker. Of rather more humble growth than the laſt, from which it differs in having terminal, not radical, *flower-ſtalks*. The *flowers* too are a little larger, purpliſh rather than crimſon. *Petals* and *calyx* exactly ſimilar. *Lip* with four ſhallow curled lobes in front.

5. B. *capitata.* Capitate Bletia. Ait. n. 5.—"Lip without a ſpur; callous internally near the baſe. Stem leafy. Flowers capitate."—Native of the Weſt Indies, from whence it was procured by ſir Joſeph Banks, in 1795. It flowers in the ſtove in June and July. We have ſeen no ſpecimen nor figure.

Beſides theſe garden ſpecies, and the original Peruvian ones, whatever they may be, there are doubtleſs ſeveral remaining latent in every good herbarium. We have ſome Nepaul *Orchideæ* from Dr. Buchanan, which may probably be referable to this genus.

BLETTERIE, l. 21, after Guyon, add—He alſo edited Maſclef's Hebrew Grammar, vindicating his method in his "Vindiciæ Methodi Maſclefianæ," annexed to his edition of the Grammar in 1731.

BLIGHIA, in *Botany*, ſo named in honour of admiral William Bligh, whoſe ſervices rendered to botanical ſcience, in the tranſportation of rare plants from remote countries, have procured him this compliment, in common with the great captain Cook.—König in Ann. of Bot. v. 2. 569. Ait. Hort. Kew. v. 2. 350.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Trihilatæ*, Linn. *Sapindi*, Juſſ.

Eſſ. Ch. Calyx in five deep ſegments. Petals five, with an internal appendage. Style none. Capſule ſuperior, of three cells and three valves. Seeds ſolitary, each ſubtended by a large fleſhy tunic.

1. B. *ſapida.* Akee-tree. Ait. n. 1. König as above, 571. t. 16, 17. (Akee; Broughton Hort. Eaſt. 1792. 10. "Akeeſia africana; Tuſſac Antill. 66. t. 3.")—Native of Africa, between the tropics, from whence it was tranſported to the Weſt Indies in 1778. The fleſhy tunic, or ſupport, of the ſeed is ſaid to be a delicate article of cookery, reſembling the white fleſh of a chicken or frog, like which it ſerves to make fricaſſées for Weſt Indian epicures. The

tree is large, of handſome growth, with abruptly pinnate, ample, ſmooth, entire *leaves*, and copious, ſmall, white *flowers*, in compound, axillary panicles. Some *flowers* have imperfect *ſtamens*, others an abortive *germen*. *Nectary* a glandular notched ring, ſurrounding the baſe of the germen or its rudiment. *Capſule* elliptic-oblong, three-lobed, fleſhy, variegated with red and yellow, about the ſize of a gooſe egg. *Seeds* globular, as big as cherries, dark brown, poliſhed, each half ſunk in a white, turbinate, lobed and corrugated *tunic*, of the ſubſtance of firm ſuet, larger than the ſeed, and attached laterally to the central partition of each valve.

BLIGHT, l. 25, add—See Aphis.

BLISTERS, *Fluid of*, in *Chemiſtry*. See Fluids, *Animal*.

BLOCKLEY. Add—It contains 1618 inhabitants.

BLOOD, *Chemical Properties of.* The chemical properties of the blood have been lately inveſtigated with conſiderable ſucceſs by Drs. Marcet and Boſtock, Brande, Berzelius, and others; with a ſummary view of whoſe experiments we ſhall here preſent our readers.

Of the ſerum.—The ſpecific gravity of the ſerum of blood has been ſtated to lie between 1028 and 1029.5. The opinion of De Haen that it contains gelatine, was firſt ſhewn to be erroneous by Dr. Boſtock in this country, and about the ſame time by Berzelius in Sweden. The principle formerly termed gelatine has been variouſly repreſented and named by different chemiſts. Thus Dr. Boſtock endeavoured to prove that it was a ſpecies of *mucus*, Mr. Brande that it was merely an *alkaline ſolution* of *albumen*; Dr. Marcet terms it *muco-extractive* matter, Dr. Pearſon an *animal oxyd*, the French chemiſts *ozmazome*, &c.; but it is to Berzelius that we owe the knowledge of its real nature. We inſert, nearly in his own words, the following account of his analyſis of the ſerum of the blood, as an excellent model for the analyſis of all albuminous fluids.

One thouſand parts of ſerum were evaporated to dryneſs till it could be eaſily reduced to powder. In this ſtate the reſiduum weighed 95 parts, and conſiſted of a yellowiſh ſemi-tranſparent maſs, reſembling amber. "Of this maſs," ſays he, "I digeſted 10 grammes in cold water. The albuminous portion became ſoftened and gelatinous. I ſeparated by the filter the liquid from the inſoluble part, and waſhed the latter repeatedly in boiling water. The undiſſolved albumen dried on the filter weighed 6.47 grammes, and did not give up its earthy phoſphate by ſubſequent digeſtion in muriatic acid.

"The ſolution which paſſed the filter was evaporated to dryneſs, during which thick membranes formed at the ſurface of the ſolution, and the ſolution gelatinized before it was perfectly dry. I digeſted this reſidue in alcohol whilſt it was ſtill gelatinous; the ſpirit aſſumed a yellow colour, and on evaporation left an alkaline deliqueſcent maſs, weighing .92 grammes. This conſiſted of ſoda holding albumen in ſolution, of muriate of ſoda and muriate of potaſh, of lactate of ſoda, and of an animal matter which always accompanies the lactate. This animal matter has a browniſh-yellow colour, is eaſily ſoluble both in water and alcohol, and is precipitated by tannin and ſubmuriate of lead. It is conſtantly formed, as has been ſtated, in conjunction with the lactic acid only; and its preſence may be taken as a ſure indication of the preſence of that acid.

"The portion not diſſolved by alcohol, when digeſted with water, left a freſh reſidue of albumen, weighing 1.95 grammes. The watery ſolution could not be made to gelatinize, and did not contain the ſmalleſt quantity of gelatine. Beſides the alkali, it contained an animal matter, eaſily precipitated by tannin and by oxymuriate of mercury, and which appeared to me to be extracted from the albumen by the boiling of the water, and to be analogous to the ſubſtance obtained by boiling fibrin in water." See Fibrin.

Berzelius found only a ſlight trace of the phoſphoric acid, and none of the ſulphuric in the ſerum of ox blood; 1000 parts of which, according to him, conſiſt of

Water		905
Albumen		79·99
Subſtances ſoluble in alcohol, *viz.* lactate of ſoda, and extractive matter	6.175	8.74
Muriate of ſoda and potaſh	2.565	
Soda and animal matter only ſoluble in water		1.52
Loſs		4·75
		1000

One thouſand parts of the ſerum of human blood conſiſt of,

According to Berzelius,

Water		905.0
Albumen		80.0
Subſtances ſoluble in alcohol, *viz.* muriate of potaſh and ſoda	6	10.0
Lactate of ſoda and animal matter	4	
Subſtances ſoluble in water, *viz.* ſoda, phoſphate of ſoda, and a little animal matter		4.1
Loſs		·9
		1000

According to Marcet.

Water	900.0
Albumen	86.8
Muriate of potaſh and ſoda	6.6
Muco-extractive matter	4.0
Subcarbonate of ſoda	1.65
Sulphate of potaſh	·35
Earthy phoſphates	.60
	1000

Berzelius remarks on Dr. Marcet's analyſis, "A more perfect agreement cannot be expected in the analyſis of ſubſtances ſo liable to incidental differences, particularly in the quantity of water, which in the blood depends ſo much on the proportion of liquid taken into the ſtomach. It is clear that Dr. Marcet's *extractive matter* is impure lactate of ſoda; and I muſt alſo obſerve, that the ſulphate of potaſh and earthy phoſphates found by him in the aſhes of ſerum are probably, for the reaſons above-mentioned, formed by the proceſs of combuſtion." See Albumen.

Of the colouring matter or red particles of the blood.—An opinion long prevailed among chemiſts, that blood owed its red colour to iron. Badia appears to have been the firſt who pointed out the exiſtence of this metal in blood; but its preſence was more ſatisfactorily demonſtrated by Menghini, whoſe experiments were repeated and verified by ſubſequent chemiſts. Parmentier and Deyeux ſuppoſed, that the red colour depended upon the union of iron with the oxygen contained in the blood; Fourcroy and Vauquelin, who ſucceeded, denied this, and aſſerted that it depended upon the ſubphoſphate of that metal. Dr. Wells, however, ſo long ago as the year 1797, called this opinion in queſtion, and aſſerted that the moſt delicate teſts of iron did not indicate the preſence of that metal in the blood; that other red ſubſtances do not all contain iron; and that, on the other hand, other ſubſtances that do contain iron are not red. Hence he ſuppoſed, that the red part of the blood was an organized *animal* ſubſtance. This opinion has been lately revived by an eminent modern chemiſt, Mr. Brande; who aſſerts, contrary to almoſt every other chemiſt, that the colouring matter of the blood yields no more iron when burnt than any other conſtituent of the blood, and that conſequently it cannot owe its colour to that principle. Berzelius, however, though he denies the opinion of Fourcroy and Vauquelin, that the red colour depends upon a ſalt of iron, agrees with moſt preceding chemiſts, that its aſhes contain much more of this metal than thoſe of either its other conſtituents, that is to ſay, that they contain 50 *per cent.* of oxyd of iron, while the aſhes of albumen and fibrin do not yield a trace of that metal. Hence he concludes, that iron, ſomehow or other, and in a manner unknown to us at preſent, probably conduces to the colour of the blood. The opinion of Berzelius, and moſt modern chemiſts, reſpecting this principle is, that it cloſely reſembles albumen and fibrin in its properties. According to Berzelius, the mineral acids act upon it nearly in the ſame manner as upon albumen. It is ſoluble alſo in dilute acetic acid, and precipitated by the pruſſiate of potaſh, like that principle; and hence Berzelius is inclined to conſider it as a modification of albumen. Vauquelin has lately given a method by which he thinks the colouring principle may be ſeparated from the other principles of the blood, which is a very difficult taſk; we do not think, however, that he has been ſucceſsful.

Mr. Brande tried to form a lake, by precipitating its acid ſolution by means of different earthy and metallic ſalts. Neither alumina nor oxyd of tin anſwered the purpoſe well. Corroſive ſublimate or nitrate of mercury ſucceeded beſt. Theſe gradually precipitated the colouring matter, and formed with it powders of a good red colour, not altered by expoſure to the air. Mr. B. likewiſe made ſome attempts to employ it as a principle in dyeing, but they were not attended with much ſucceſs.

Some intereſting obſervations have lately been made on the ſize of the colouring particles of the blood by Dr. Young. According to this gentleman, they bear no proportion to the ſize of the animal. Thus,

The particles of bullock's blood from beef meaſured - - -	$\frac{1}{6000}$ inch
Ditto of a mouſe - - -	$\frac{1}{4615}$
Do. of human blood - - -	$\frac{1}{6000}$ to $\frac{1}{4285}$
Do. of blood recently diluted from ſwine - - - - -	$\frac{1}{3750}$
Do. of the ſkate, about - -	$\frac{1}{1875}$.

Of the Fibrin.—The experiments of Berzelius ſhew that this ſubſtance cloſely reſembles albumen in its chemical properties. We do not think it neceſſary therefore to add any thing on the ſubject here, but refer our readers to the article Albumen. The phyſical properties of fibrin have been already deſcribed under Blood in the Cyclopædia. According to the experiments of Gay Luſſac and Thenard, fibrin is compoſed of

Hydrogen - - -	7.021
Carbon - - -	53.360
Oxygen - - -	19.685
Azote - - -	19.934
	100

The *buffy coat* of blood is *fibrin*.

Of the Seroſity.—This term has been generally applied to the ſalts and animal matters exiſting in the ſerum of the blood, with the albuminous principle. See the deſcription of *ſerum* in the preſent article.

With reſpect to the blood as a whole, little has been added to our knowledge. M. Vogel has attempted to ſhew, that when placed in the vacuum of an air-pump, it gives out a conſiderable quantity of carbonic acid: and Dr. Gordon has aſſerted, that during its ſpontaneous coagulation heat is emitted; but this has been denied by other obſervers, and eſpecially by Dr. J. Davy.

The blood of other animals, and the blood of perſons labouring under different diſeaſes, have been but little examined; indeed this extenſive and important field of chemical inveſtigation is almoſt entirely unexplored.

BLOOM, in *Geography*, a townſhip of Pennſylvania, in Northumberland county, having 1285 inhabitants.—Alſo, a townſhip of the county of Fairfield, in the diſtrict of Ohio, having 839 inhabitants.

BLOOMFIELD. Add—Alſo, a townſhip of Pennſylvania, in Crawford county, having 114 inhabitants.

BLOUNT, l. 1, inſert—Eaſt Tenneſſee. Add—containing 8839 inhabitants, of whom 805 are ſlaves.—Alſo, a county of the ſame ſtate, having 3259 inhabitants, including 206 ſlaves.

BLOW-PIPE. We think it proper to notice here the important modification of this uſeful inſtrument, lately contrived by Mr. Brooke, and which, by the intenſity of the heat it excites, has produced ſuch intereſting reſults in the hands of different experimentaliſts, and more eſpecially of Dr. Clarke of Cambridge.

Mr. Brooke's blow-pipe conſiſts merely of a ſtrong copper or iron air-tight box, to which are adapted a condenſing ſyringe and jet-pipe, furniſhed with a ſtop-cock. When uſed, the box is to be filled with condenſed air by means of the ſyringe; the ſtop-cock is then to be turned, and the condenſed air permitted to eſcape through the jet. From the ſmallneſs of the aperture of the jet, a conſtant and uniform blaſt is thus kept up for a conſiderable time, (and by the occaſional uſe of the ſyringe, may be continued for any length of time whatever,) ſimply by means of the elaſticity of the air itſelf.

A great advantage attending the uſe of this blow-pipe is, that the box can be readily filled with any gas, or mixture of gaſes, we chooſe. Accordingly advantage was ſoon taken of this property, and a mixture of oxygen and hydrogen gaſes, when inflamed as they iſſued from the jet, was found to yield a more intenſe heat than any other. From the liability, however, of this mixture to explode, great caution was required in uſing it, and this led to the neceſſity of ſome contrivance for obviating this dangerous circumſtance. Various means were ſoon ſuggeſted, moſt of which were founded on the principle recently diſcovered by ſir H. Davy, that the inflammation of gaſes will not paſs through minute apertures (ſee Wire-gauze): and, at length, we believe the inſtrument has been rendered quite ſafe; and, in this ſtate, may be obtained of any of the philoſophical inſtrument makers.

The public attention was particularly excited towards this inſtrument by the experiments of Dr. Clarke, who ſuppoſed that by its means, and the employment of the gaſeous compound above-mentioned, he had ſucceeded in reducing ſome of the moſt refractory metallic oxyds and ores. The accuracy of many of Dr. C.'s reſults has indeed been ſince called in queſtion; but they nevertheleſs demonſtrate the extraordinary powers and valuable properties of this modification of the blow-pipe.

BLUEHILL, l. 4, *r.* 658.

BLUE-WATER River, a river of America, which riſes among the ſouthern branches of Dock river, and empties into the Tenneſſee.

BLUFF, a term uſed in N.W. America to denote a particular tract of land. The alluvion of the rivers W. of the Alleghanies is conſiderably lower than the ſurrounding country, and is of a breadth correſponding to the magnitude of the rivers; that of the Miſſouri is from 2 to 6 or 8 miles in breadth, and is for the moſt part from 150 to 300 feet below the general level of the country. The aſcent from this valley into the country is precipitous, and is called "the bluff;" and may conſiſt of rock or clay. Betwixt theſe bluffs, the river runs in a very crooked channel, and is perpetually changing its bed, and the permanent beds are called the bluffs.

BOA, col. 3, l. 27, for Constrictor *r.* Serpents.

BOARD *of Agriculture.* See Society.

BOARDMAN, in *Geography*, a townſhip of Ohio, in the county of Trumbull, containing 343 inhabitants.

BOCCA, a term uſed both in the Levant and on the N. coaſt of South America, on the Spaniſh Main, for a *mouth* or *channel* into any port or harbour; or the entrance into a ſound which has a paſſage out by a contrary way.

BOCKFIELD, a town of the diſtrict of Maine, in the county of Oxford, containing 1251 inhabitants.

BODMIN, l. *ult. r.* In 1811, the pariſh and borough contained 315 houſes, and 2383 perſons; 158 in the pariſh and 1008 in the borough being males, and in the former 175 and in the latter 1042 females.

BŒBERA, in *Botany*, ſo named by Willdenow, in compliment to a Ruſſian botaniſt, of the equeſtrian order. —Willd. Sp. Pl. v. 3. 2126. Purſh 559.—Claſs and order, *Syngeneſia Polygamia-ſuperflua.* Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Eſſ. Ch. Receptacle naked. Seed-down of ſimple hairs. Calyx double; the inner of eight leaves; outer of many.

1. B. *chryſanthemoides.* Dwarf Bœbera. Willd. n. 1. Purſh n. 1. (Tagetes pappoſa; Michaux Boreal.-Amer. v. 2. 132. Vent. Hort. Celſ. t. 36. Dyſſodia glanduloſa; Cavan. Leccion. 202.)—Native of the overflowed banks of the Miſſouri and Miſſiſſippi, annual, flowering in Auguſt and September. *Purſh.* A branched *herb*, twelve or eighteen inches high, with the habit of an *Anthemis*, beſprinkled with glandular pellucid dots, full of a fœtid bitter fluid. *Flowers* of a golden yellow, with eight ſmall rays. *Leaves* pinnate, toothed, narrow. Cavanilles ſays this plant grows in every part of America, but eſpecially in the kingdom of Santa Fé, where it is commonly called *Ruda*, on account of its offenſive ſmell. Ventenat ſpeaks of it as a vermifuge, and as affording a tolerably durable yellow dye.

BOERO, *dele.*

BŒUFS, *Rivière aux*, or *Ox River*, in *Geography*, is the laſt and largeſt branch of Ouachitta. It riſes in the angle formed between the Miſſouri and Arkanſaw, and purſues a courſe to the S.W. for ſome diſtance, then turning ſouthward for 70 or 80 miles, enters the ſtate of Louiſiana, and afterwards, at a ſhort diſtance, croſſes the N.E. line of Baſtrop's grant, purſues a S.W. courſe, and then reſumes its direction to the ſouthward, and after running about 60 miles enters Ouachitta, above the weſt point of the iſland of Sicily. The Bœuf, from its ſource in the Arkanſaw lake to the boundary of the ſtate of Louiſiana, is about 120 miles, and from thence to its mouth nearly the ſame diſtance, producing a length of 240 miles, independently of its windings. It is navigable as far as Prairie Mer Rouge. A ſtrong brake of cane ſkirts the Bœuf nearly along its whole courſe, through the ſtate of Louiſiana. Much land near its banks might be cultivated, but is moſtly ſubject to caſual inundation.

BOGAERT, l. 3, *r.* the Netherlands.

BOILING, col. 4, l. 10, after proceſs, add—Under the ordinary preſſure of the atmoſphere, with due allowance for its variable denſity, water does not boil till it is heated to 212° Fahrenheit. However ſir George Shuckburgh found, that when the barometer was at 26 inches, water boiled at leſs than 205°; but when it was at 31 inches it required before it would boil a heat of nearly 214°. Under the common preſſure of the atmoſphere, ether boils at 98°; alcohol at 176°; water at 212°; nitric acid at 248°; ſulphuric acid at 546°; phoſphorus at 554°; and mercury and linſeed-oil at 600°. From the experiments of Dr. Black upon ſeveral liquids in vacuo, it appears that, in general, they all boiled with about 140 degrees of heat leſs than when ſuſtaining the weight of the atmoſphere. Vitriolic ether, if the preſſure of the atmoſphere be removed, will boil when 52 degrees below the cold ſufficient for freezing water.

BOISSEAU, a meaſure for corn, according to the old ſyſtem in France, which varies much in different parts of the country.

BOLAX, in *Botany*, a name of Commerſon's adopted by Juſſieu, Βωλαξ means a *clod*, or *lump of earth*, which this dwarf umbelliferous genus does not ill reſemble.—Juſſ. Gen. 226. Sprengel Prodr. Umbellif. 33. Spec. Umb. 9. (See Chamitis.)—The ſpecies, though not numerous, are far from being, as yet, accurately determined, either with reſpect to their permanent differences, or their ſynonyms.

BOLINGBROKE, l. *ult.* for 72 *r.* 74; and for 283 *r.* 361.

Bolingbroke, *Lord.* See St. John.

BOLIN-GREEN, in *Geography*, a town of Kentucky, in Warren county, containing 154 inhabitants, of whom 51 are ſlaves.

BOLL, a corn meaſure in Scotland, containing 4 firlots, each firlot being = 4 pecks; and 16 bolls = 1 chalder.

BOLOGNINO, a copper coin at Bologna and its neighbourhood.

BOLSOVER, l. *ult.* for 435 *r.* 244; and for 1091 *r.* 1043.

BOLTON, in America, l. 3, *r.* 249; l. 6, add—containing 700 inhabitants; l. 8, for 861 *r.* 1037.

Bolton-*le-Moors*, l. 30, add—In 1811, the townſhip of Great Bolton contained 3120 houſes, and 17,070 perſons; 7988 being males, and 9082 females. Little Bolton townſhip had 1286 houſes, and 7079 inhabitants; 3366 being males, and 3713 females.

BONAVENTURA, l. 2, *r.* Popayan.

BONDS, India, bonds iſſued by the Eaſt India company of 50*l.* and 100*l.* each, bearing intereſt of 5 *per cent.*

per annum, which intereſt is paid at the India-houſe in London.

Bond, *Poſt-Obit*, a bond payable after the death of the perſon whoſe name is therein ſpecified.

BONES, *Analyſis of*, in *Chemiſtry*. The analyſis of bones was omitted under Bone, but will be found under Teeth, contraſted with the analyſis of the teeth.

Vol. V.

BOONE, in *Geography*, a county of Kentucky, containing 3608 inhabitants, of whom 656 are ſlaves.

BOONSBOROUGH, l. 2, *r*. Madiſon; and at the cloſe add—It contains 68 inhabitants, 15 being ſlaves.

BOOROOJIRD, a flouriſhing city of Perſia, in the province of Irak, the capital of a wealthy diſtrict, ſubject to the prince, Mahomed Tukkee Mirza, and containing a population of 12,000 ſouls. The diſtrict attached to its government is peopled by the tribe of Lack, who do not wander far from the ſpot to which they are partial, but ſettle in villages, and employ themſelves in the improvement of their eſtates.

BOOTH Bay, l. 5, *r*. 1582.

BORACITE. See Mineralogy, *Addenda*.

BORAX, in *Chemiſtry*. See Boron, *infra*.

BORBI, or Burbi, in *Commerce*, a copper coin in Egypt, 8 borbi being = 6 forli = 3 aſpers = a medino, and 40 medini = a piaſtre current.

BORELLI, col. 2, l. 6, *r*. 1670.

BORON, or Boracium, in *Chemiſtry*, the peculiar elementary baſis of *boracic acid*. Sir H. Davy, in 1807, firſt decompoſed boracic acid, and obtained this principle by the agency of galvaniſm. Soon afterwards another method of obtaining it was pointed out by Gay Luſſac and Thenard, by means of potaſſium, which was ſoon verified by Davy and others. One part of pure boracic acid, previouſly melted and reduced to powder, is to be mixed with two parts of potaſſium, and the mixture put into a copper or iron tube and gradually heated till it is ſlightly red, and kept in that ſtate for ſome minutes. At the temperature of 300° the decompoſition begins, and the mixture becomes intenſely red hot, as may be perceived by making the experiment in a glaſs tube. When the tube is cold, the matter in it is to be waſhed out with water, the potaſh formed is to be neutralized with muriatic acid, and the whole thrown upon a filter. It may be waſhed and dried at a moderate heat.

Boron thus obtained is a powder of an olive-brown colour, without either taſte or ſmell. In cloſe veſſels, it may be expoſed to the moſt violent heat without being altered, or undergoing any other change than an increaſe of denſity. Its ſpecific gravity, before being heated, is leſs than 1.84, but afterwards greater. It is inſoluble in water, alcohol, ether, and oils, whether cold or hot. It does not decompoſe water even when heated in that fluid. It is a non-conductor of electricity. It undergoes no change when expoſed to common air or oxygen at low temperatures; but when heated to about 600° it takes fire, and burns with great ſplendour; and at the ſame time abſorbs oxygen, and is partly converted into boracic acid. The combuſtion, however, is ſoon ſtopped, from the coating of the boracic acid formed, which prevents the contact of the oxygen. Hence this requires to be frequently removed, by waſhing, before the whole of the boron can be burnt. The nitric acid alſo readily converts boron into boracic acid. Boron, heated with moſt of the neutral ſalts, deprives their acids of the oxygen which they contain: thus, when heated in cloſe veſſels with ſulphate or ſulphite of ſoda, borate of ſoda and ſulphur are formed. When heated with nitre or oxymuriate of potaſh, much deflagration enſues, and borate of potaſh is produced: ſo alſo the carbonate of ſoda is converted into borate of ſoda and charcoal.

There is conſiderable difficulty in fixing the proportion of oxygen with which boron combines to form boracic acid, as the reſults of Gay Luſſac, Davy, and others, differ very much. Dr. Thomſon, guided partly by theſe experiments, but chiefly by the analyſis of borate of ammonia by Berzelius, fixes the weight of the atom of boron at 6.6, and ſuppoſes it combines with two atoms of oxygen to form boracic acid. Upon this ſuppoſition, 100 parts of boron will combine with 300 of oxygen.

Boron, when heated in chlorine, takes fire, and burns with a brilliant white flame. A white ſubſtance coats the veſſel in which the experiment is made, and the boron is alſo covered with a white ſubſtance, which by waſhing is converted into boracic acid. It is probable that this white ſubſtance is a chloride of boron, but it has not been much examined.

Boron combines with *fluorine*, (ſee Fluorine,) and forms with it a powerful acid, which has been named *fluoboracic acid*. (See Fluoboracic *Acid*.) It alſo appears, according to the experiments of Gmelin, to combine with hydrogen. Deſcotils has likewiſe ſhewn that it combines with iron, and Davy with potaſſium; but, as far as it is known, it combines with no other metal. With reſpect to the nature of this ſingular ſubſtance it may be proper to mention, that ſome conſider the boron deſcribed above to be an oxyd of a metallic baſis, to which the name of *boracium* has been given.

BORONIA, in *Botany*. (See Rutaceæ.) Mr. Brown, who could not but be aware of the ill-defined limits of this order, as originally conſtituted by Juſſieu, has, in his General Remarks on the Botany of Terra Auſtralis, 13, propoſed to remove the 1ſt ſection, under the appellation of *Zygophylleæ*, naming the remainder *Dioſmeæ*, the genus *Ruta* not being a good type of the order, ſo limited. This learned Auſtralian botaniſt informs us that near 70 ſpecies have been obſerved, the greater part of them referable to our *Boronia*, *Corræa*, *Erioſtemon*, and *Zieria*, (as alſo we preſume to *Crowea*,) and to *Phebalium* of Ventenat. "Of theſe genera *Boronia* is both the moſt extenſive and the moſt widely diffuſed, exiſting within the tropic, and extending to the ſouth end of Van Diemen's iſland. Like the others, however, its maximum is in the principal parallel, at both extremities of which it is equally abundant."

BOROUGH, col. 3, l. 19 from the bottom, after London, *r*. by a writ bearing date the 12th of December, 1264, in the 49th year of the reign of Henry III.

BOROUGH-BRIDGE, l. 23, *r*. The borough and townſhip of Borough-bridge contain 131 houſes, and 747 inhabitants; 373 being males, and 374 females.

BORRAGINEÆ, in *Botany*, the 42d order in Juſſieu's ſyſtem, the 9th of his 8th claſs; for whoſe characters, ſee Gentianæ.

This order, equivalent to the Linnæan Asperifoliæ, (ſee that article,) is thus characterized.

Calyx in five deep ſegments, permanent. *Corolla* moſtly regular. *Stamens* generally five. *Germen* either ſimple or four-lobed; ſtyle one; ſtigma either cloven, or furrowed, or ſimple. *Seeds* generally four; ſometimes encloſed in a capſular or pulpy ſeed-veſſel; ſometimes naked, obliquely attached to the bottom of the ſtyle, and for the moſt part ſurrounded by the permanent calyx. *Corculum* without albumen. *Stem* in the greater number herbaceous; in a few ſhrubby or arboreous. *Leaves* alternate, often harſh or rough.

Sect. 1. *Fruit pulpy.* Stem ſhrubby or arboreous.

Patagonula, *Cordia*, *Ehretia*, *Menais*, *Varronia*, and *Tournefortia.*

Sect. 2. *Fruit of one or two capſules.*

Hydrophyllum, *Phacelia* of Juſſieu, *Elliſia*, *Dichondra*, *Meſſerſchmidia*, and *Cerinthe.* DICHONDRA (ſee that article) is erroneouſly placed here.

Sect. 3. *Fruit of four naked ſeeds. Throat of the corolla naked.* Plants moſtly herbaceous and rough.

Coldenia, *Heliotropium*, *Echium*, *Lithoſpermum*, *Pulmonaria*, and *Onoſma.*

Sect. 4. *Fruit of four naked ſeeds. Throat of the corolla furniſhed with five ſcales, hollow like ſpurs, ſlightly projecting out of the corolla, at the baſe of its ſegments, gaping above.* Herbs generally with rough leaves.

Symphytum, *Lycopſis*, *Myoſotis*, *Anchuſa*, *Borago*, *Aſperugo*, and *Cynogloſſum.*

Sect. 5. *Genera allied to the Borragineæ.*

Nolana, *Siphonanthus*, and *Falkia.*

BORRERA, is dedicated by profeſſor Acharius, to the honour of Mr. William Borrer, F.L.S., one of the moſt eminent Britiſh cryptogamiſts, whoſe ſtudies have been particularly directed to the Lichen tribe, and who is alſo critically verſed, as well as ſingularly accurate, in every department of Britiſh botany.—Achar. Lichenogr. 93. t. 9. f. 3—9. Syn. 220. Sm. Prodr. Fl. Græc. Sibth. v. 2. 313.—Claſs and order, *Cryptogamia Algæ.* Nat. Ord. *Lichenes.*

Eſſ. Ch. Shields ſtalked, coloured, with an elevated, inflexed border, of the ſubſtance of the leafy, cartilaginous, elevated, linear frond.

This genus is very natural in habit, compriſing the well-known *Lichen ciliaris* of Linnæus and its allies. Acharius defines ſeventeen ſpecies, among which ſeveral are very elegant, ſuch as *B. Trulla* from Peru, figured in Ach. Meth. t. 4. f. 6; *leucomela*, (ſee Engl. Bot. t. 2548,) and *chryſophthalma*, t. 1088.

We have ventured in Prodr. Fl. Græc. to remove hither the *Evernia prunaſtri*, Ach. Syn. 245, *Lichen prunaſtri* of Linnæus; and feel much inclined to aſſociate the whole of that genus with *Borrera*, there being only two ſpecies beſides, which are *Lichen divaricatus* and *vulpinus* of Linnæus. We really cannot perceive any diſtinctive character to keep *Evernia* ſeparate.

BORROWSTONNESS. Add—The pariſh contains 352 houſes, and 2704 inhabitants; 1102 being males, and 1602 females.

BORYA, in *Botany*, a New Holland genus, thus named by M. Labillardiere, in honour of the diſtinguiſhed botanical traveller, M. Bory de St. Vincent. This genus was firſt made public by its author in 1804. A year or two afterwards, profeſſor Willdenow publiſhed a different *Borya*, in his Sp. Pl. v. 4. 711. The former is adopted, in his *Prodromus*, by Mr. Brown, who, neverthelefs, has admitted the latter into Ait. Hort. Kew. v. 5. 365. This can only have ariſen from the profeſſed plan of the Hort. Kew. being in general to copy Willdenow, and we truſt Mr. Brown no more intended to give his ſanction to this error, than to the adoption of ARAUCARIA, to the prejudice of the rightful DOMBEYA. (See thoſe articles.) However that may be, we feel it incumbent on us to admit the original *Borya*, againſt which no valid objection can be raiſed, having already endeavoured to find a ſuitable name (ſee BIGELOVIA) for the other.—Labill. Nov. Holl. v. 1. 81. Brown Prodr. Nov. Holl. v. 1. 286.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Aſphodeleæ*, Brown.

Eſſ. Ch. Spatha of two unequal, ſheathing, permanent valves. Corolla of one petal, funnel-ſhaped, withering; limb in ſix deep equal ſegments. Stamens inſerted into its contracted throat. Style thread-ſhaped. Stigma obtuſe. Capſule ſuperior, of three cells, and three valves, with central partitions. Seeds ſeveral.

Mr. Brown conceives the preſent genus to be not very nearly related to any, except perhaps XANTHORRHŒA, (ſee that article,) and his own *Johnſonia.* In habit it approaches ſome of the *Junceæ*, but differs in the black cruſtaceous integument of the *ſeed*, and in the ſoft, fleſhy, ſomewhat oily, *albumen.*

It conſiſts of perennial herbs, of a harſh dry texture. *Roots* compoſed of long, tough, ſomewhat ſhining fibres. *Stems* either ſimple, or divided and creeping, clothed with very crowded, aceroſe, pointed *leaves;* dilated and half-ſheathing at their baſe. *Flower-ſtalks* ſolitary, terminal, ſimple. *Head* nearly globular, encompaſſed with a few ſhort leafy *bracteas.* Scales of the *calyx* ſmooth, membranous, the outer one ſheathing the inner, which is narrower, and embraces the tube of the *corolla.*

1. B. *nitida.* Shining Borya. Labill. Nov. Holl. v. 1. 81. t. 107. Br. n. 1.—Stem much branched, taking root below, with ſimple poliſhed fibres. Flower-ſtalks ſhorter than the aſcending branches. Head ovate.—Gathered by both the diſtinguiſhed botaniſts above cited, on the ſouth coaſts of New Holland, and the adjacent iſlands, in ſandy ground. The plant is about a ſpan high, and, except the want of downy radicles, ſeems calculated to confine the blowing ſands of its dreary country, like our *Carex arenaria*, *Elymus arenarius*, &c.

2. B. *ſphærocephala.* Round-headed Borya. Br. n. 2. —"Stems ſimple, nearly erect, ſhorter than the flower-ſtalks. Head globoſe."—Gathered by Mr. Brown, in the ſame neighbourhood.

BOS, in *Zoology*, l. 13, after *ferus*, inſert — See URUS.

BOSCAWEN, l. 4, *r.* 1829.

BOSSIÆA, in *Botany*, a fine papilionaceous genus, conſecrated by Ventenat, to the memory of his countryman M. Boiſſieu-Lamartinière, who accompanied La Pérouſe in his voyage round the world, the account of which, publiſhed at Paris, atteſts the merit of this unfortunate botaniſt. —Venten. Jard. de Cels 7. Willd. Sp. Pl. v. 3. 972. Sm. Tr. of Linn. Soc. v. 9. 302. Brown in Ait. Hort. Kew. v. 4. 266.—Claſs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coriaceous, bell-ſhaped, two-lipped; upper lip largeſt, in two rounded, obtuſe ſegments; lower in three deep, lanceolate, equal ſegments. *Cor.* papilionaceous. Standard heart-ſhaped, aſcending, twice as long as the upper lip of the calyx, with a linear, convex claw. Wings half the length of the ſtandard, obovate, each with a tooth at one ſide. Keel the length of the wings, of two hatchet-ſhaped, concave, converging petals, each with a lateral tooth, and a prominence on the diſk, near the baſe. *Stam.* Filaments ten, united about half way into one ſet, ſeparate only along the upper edge; anthers uniform, ſimple, roundiſh. *Piſt.* Germen ſtalked, linear, compreſſed; ſtyle recurved; ſtigma ſimple. *Peric.* Legume ſtalked, oblong, compreſſed, nearly flat; its valves rigid, thickened at each margin; ſometimes internally ſpongy, and of many cells. *Seeds* ſeveral, oval, compreſſed, ſtalked, each with a tumid appendage.

Eſſ. Ch. Calyx two-lipped; upper lip largeſt, cloven, obtuſe. Stamens all connected. Legume ſtalked, compreſſed, thickened at each edge, with many ſeeds.

1. B. *ſcolopendria.* Yellow Flat Boſſiæa, or Plank-plant. Sm. as above n. 2. Sims in Curt. Mag. t. 1235. (B. Scolopendrium; Br. in Ait. n. 1. Platylobium ſcolopendrum; Andr. Repoſ. t. 191. P. ſcolopendrium; Ven. Malmaiſ. t. 55.)—Branches compreſſed, winged, toothed, leafleſs; flowering at the teeth. Stem erect. Keel naked. Upper bracteas permanent, imbricated, equal to the footſtalk. Calyx very ſmooth.—Native of New South Wales, from whence it was introduced, in 1792, by Lee and Kennedy. A green-houſe ſhrub, flowering early in ſummer. The winged *branches*, in a manner proliferous, and bearing handſome, red and yellow, ſtalked, ſolitary *flowers*, from their numerous alternate teeth, give this ſhrub a very ſingular aſpect. The ſeedling plants only bear ſimple, alternate, ſtalked, ovate, entire *leaves*. The *legume* of this ſpecies, (and perhaps the following,) is ſaid by Dr. Sims to want that internal ſpongineſs, which, in thoſe firſt deſcribed by botaniſts, ſeemed to yield a good generic character. The texture of the *legume*, its thick edges, and the want of a dorſal membranous wing, are ſtill abundantly ſufficient to keep the genus diſtinct from PLATYLOBIUM. (See that article.) With reſpect to the ſpecific name, we muſt beg leave, like Ventenat and Sims, to conſider it as an adjective, comparing this ſingular plant's branches to the inſect called a *Scolopendra*, or Centipede. It has no connection with the vegetable genus *Scolopendrium*, and ſtill leſs has it ever been ſo called.

2. B. *rufa.* Red Flat Boſſiæa. Br. in Ait. n. 2.—"Branches compreſſed, winged, toothed, leafleſs; flowering at the teeth. Keel fringed. Upper bracteas deciduous, remote from the lower. Calyx very ſmooth."—Gathered by Mr. Brown on the ſouth-weſt coaſt of New Holland. Sent to Kew, by Mr. Good, in 1803. A green-houſe ſhrub, flowering from June to September.

3. B. *heterophylla.* Various leaved Boſſiæa. Venten. Jard. de Cels t. 7. Willd. n. 1. Sm. n. 1. Br. in Ait. n. 3. (B. lanceolata; Curt. Mag. t. 1144. Platylobium lanceolatum; Andr. Repoſ. t. 205. P. ovatum; ibid. t. 266, (not 276,) according to Mr. Brown.)—Branches leafy, compreſſed. Leaves elliptical, obovate, or linear, flat. Legume of many cells, with ſpongy partitions.—Native of New South Wales. Imported by Lee and Kennedy in 1792. A branched buſhy ſhrub, flowering moſt part of the ſummer. The *branches*, though nearly flat, are not dilated like the foregoing, nor are they either toothed, or denudated. The *leaves* are variable in figure, but on full-grown plants uſually linear, alternate, on ſhort ſtalks. *Flowers* axillary, ſolitary, ſtalked, large, yellow with a crimſon keel, very ornamental.

4. B. *linophylla.* Narrow-leaved Boſſiæa. Br. in Ait. n. 4.—"Branches leafy, compreſſed. Leaves linear; recurved at the margin. Legume of one cell."—Obſerved by Mr. Brown, on the ſouth-weſt coaſt of New Holland. Sent by Mr. Good to Kew, in 1803, where it is ſaid to flower from July to September.

5. B. *proſtrata.* Procumbent Boſſiæa. Br. in Ait. n. 5. (B. ovata; Sm. n. 3, excluding the ſynonyms.)—Branches round, leafy. Stem procumbent. Leaves oval, ſmooth. Stipulas ſhorter than the footſtalks. Legume of a ſingle cell.—Sent from Port Jackſon, by Dr. White, in 1793. Mr. Good is mentioned as having ſent it to Kew in 1803. The *ſtems* are a ſpan long. *Leaves* nearly uniform, a quarter of an inch long, their edges thickened, wavy, and ſomewhat crenate. We had miſtaken this for the *Platylobium ovatum* of Andrews, t. 266, but Mr. Brown has convinced us of our error.

6. B. *cinerea.* Downy Sharp-leaved Boſſiæa. Br. in Ait. n. 6.—"Branches round, leafy. Stem erect, much branched. Leaves ovato-lanceolate; rough above; downy beneath; recurved at the margin."—Found by Mr. Brown in Van Diemen's iſland, and ſent in 1805 to Kew, where it flowers from May to July.

7. B. *microphylla.* Little-heart-leaved Boſſiæa. Sm. n. 5. Br. in Ait. n. 7. (Platylobium microphyllum; Sims in Curt. Mag. t. 863.)—Branches round, leafy, ſpinous-pointed. Leaves inverſely-heartſhaped, or wedge-ſhaped.—Native of New South Wales, from whence Dr. White ſent us ſpecimens in 1793. Mr. Caley ſent ſeeds to ſir Joſeph Banks in 1803. This ſpecies is ſaid to have flowered at the preſent duke of Marlborough's, at White Knights, in 1805. The *flowers*, though ſmaller than in ſome other ſpecies, are ſo numerous, and ſo prettily variegated with yellow, purple, and red, as to render this a very ornamental plant. The *leaves* are ſhorter than the flowers, veiny, ſmooth and entire, very abundant. The tips of the branches finally become ſpinous.

Mr. Brown is probably furniſhed with more ſpecies of this handſome genus, which have not yet made their appearance in the gardens.

BOSSINEY. Add—The pariſh of Tintagel, in which this borough is ſituated, contained, in 1811, 141 houſes, and 730 perſons; 339 being males, and 391 females.

BOSTANA. See BESTIAN.

BOSTON. At the cloſe, *r.* the pariſh of Boſton, in 1811, contained 1772 houſes, and 8180 perſons; 3805 being males, and 4375 females.

BOSTON, in Maſſachuſetts, l. 17, after augmented, inſert—By the cenſus of 1810, Boſton, Chelſea, and the iſlands within and without the juriſdiction of Boſton, included a population of 34,381 ſouls. The former iſlands are, Noddle's, Hog, Apple, Deer, Long, Spectacle, Governor's including Fort Warren, and Fort Independence: the latter are, Greene, Thompſon's, Rainford's, George's, Great Brewſter, Outer Brewſter, Lighthouſe, and Calf iſland. Boſton itſelf is ſtated as containing 33,250 inhabitants.

BOSTON, a town of the diſtrict of Ohio, in the county of Champaign, having 616 inhabitants.

BOSTON, *New*, l. 12, for 1202 *r.* 1619.

BOSWELLIA, in *Botany*, "in memory of the late Dr. John Boſwell, of Edinburgh."—Roxb. Coromand. v. 3, 4.—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Meliis*, Juſſ. *affine.*

Eſſ. Ch. Calyx inferior, five-toothed. Petals five. Nectary a crenate ring ſurrounding the baſe of the germen. Capſule triangular, of three cells and three valves. Seeds ſolitary, winged.

1. B. *glabra.* Smooth Boſwellia. Roxb. as above, t. 207. (Canarium odoriferum; Rumph. Amboin. v. 2. 156. t. 50. Gugulapootſchittoo of the Telingas.)—Leaflets ſmooth, with ſhallow ſerratures.—Native of the higheſt mountains on the coaſt of Coromandel, flowering in the cool ſeaſon, and caſting its leaves in October. This is one of the largeſt trees of that country; its *wood* hard, heavy, and durable. The wounded *bark* yields a ſort of pitch. *Leaves* crowded at the ends of the branches, a ſpan long, pinnate with an odd one; *leaflets* all uniform, oppoſite, ovate-oblong, an inch and a quarter in length. *Flowers* white, in aggregate, terminal, interrupted, ſpreading cluſters, ſhorter than the leaves, and coming before them. *Nectary* red. *Anthers* oblong, yellow. *Capſule* oval, about half an inch long.

2. B. *hirſuta.* Hairy Boſwellia. (Canarium odori-

ferum hirſutum; Rumph. Amboin. v. 2. 157. t. 51, according to Dr. Roxburgh; but the leaflets are repreſented entire.)—Leaflets downy, deeply ſerrated.—On the Ballagaut mountains. The *ſtamens* of this are inſerted on the exterior margin of the *nectary*. *Roxburgh.*

BOTETOURT. Add—By the cenſus of 1810, it contained 13,301 inhabitants, of which 2275 are ſlaves.

BOTRYCHIUM, in *Botany*, a name derived from βοτρυς, *a bunch of grapes*, which the fructification of this genus imitates in miniature.—Swartz Syn. Fil. 171. Willd. Sp. Pl. v. 5. 61. Brown Prodr. Nov. Holl. v. 1. 164. Ait. Hort. Kew. v. 5. 496. Sm. Compend. 155. Purſh 655. (Botrypus; Mich. Bor.-Amer. v. 2. 274. Oſmunda; Lamarck Illuſtr. t. 865. f. 1.)—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices*, Linn. Juſſ.

Eſſ. Ch. Capſules nearly globoſe, naked, ſmooth, without a ring, united to the ſtalk of a compound ſpike, diſtinct, each of one cell, and two valves connected behind, burſting tranſverſely in front.

We have already alluded to this genus under OSMUNDA, from which it was firſt ſeparated by profeſſor Swartz. Ten ſpecies are deſcribed in Willdenow, to which we have two to add.

1. B. *Lunaria*. Common Moonwort. Sw. n. 1. Willd. n. 1. Fl. Brit. n. 1. (Oſmunda Lunaria; Linn. Sp. Pl. 1519. Sm. Fl. Brit. 1107. Engl. Bot. t. 318. Bolt. Fil. 4. t. 4. Fl. Dan. t. 18. f. 1. Lunaria minor; Ger. Em. 405. Matth. Valgr. 254. Camer. Epit. 643.)

B. Lunaria minor ramoſa; Camer. Epit. 644.

Frond ſimply pinnate; leaflets creſcent-ſhaped.—Native of dry hillocks, or open heaths, throughout the cooler parts of Europe, bearing capſules in June. *Root* perennial, with many ſtout ſimple fibres. *Frond* ſolitary, from a torn membranous ſheath, erect, three to ſix inches high, ſmooth, pale green, conſiſting of a ſimply pinnate *leaf*, two inches long, with ſix or ſeven pair of obliquely imbricated, fan-ſhaped, entire or notched, *leaflets*. From the baſe of the *leaf* ſprings a ſtout *ſtalk*, about the ſame length, bearing a twice or thrice compound, unilateral, ſmooth *ſpike* of *capſules*, each about half the ſize of a muſtard-ſeed; all firmly united, in two ſeſſile rows, with the linear flat rib, or common *receptacle*.

2. B. *rutaceum*. Rue-leaved Moonwort. Sw. n. 2. Willd. n. 2. (O. Lunaria; Fl. Dan. t. 18. f. 3. Fl. Brit. γ. Lunaria racemoſa minor, matricariæ folio; Breyn. Cent. 184. t. 94. Moriſ. ſect. 14. t. 5. f. 3.)—Frond doubly pinnatifid; ſegments obtuſe, notched at the extremity. Fruitſtalk from the baſe of the leaf.—Native of dry open ſituations, in ſeveral parts of Europe. We are not ſure of having ſeen a Britiſh ſpecimen; nor is it impoſſible that a jagged variety of *B. Lunaria*, ſuch as is repreſented in Breyn. Cent. t. 93, and in Moriſon as above, f. 2, may have been confounded herewith. *B. rutaceum* is certainly near akin to the *Lunaria*, differing only in the compound diviſion of its *leaf*, and ſometimes of its *ſpike*.

3. B. *matricarianum*. Feverfew-leaved Moonwort. (B. matricarioides; Willd. n. 3. Lunaria racemoſa, multifido folio; Bauh. Pin. 355. Breyn. Cent. t. 95. Fl. Dan. t. 18. f. 2, media. Moriſ. ſect. 14. t. 5. f. 26.)—Frond doubly pinnate, pinnatifid; ſegments oblong, obtuſe, toothed. Fruitſtalk from the baſe of the footſtalk.—Native of ſhady ſituations in Pruſſia, Denmark, and Bavaria. *Willdenow.* Extremely abundant about Peterſburgh, according to the Linnæan herbarium, where are three ſpecimens from thence. The more compound *leaf*, not always ſolitary, and eſpecially the inſertion of the *fruitſtalk* near the root, not at the top of the *leafſtalk*, ſurely mark this as a diſtinct ſpecies; which is confirmed by the plant not being of occaſional occurrence, amongſt the *Lunaria*, as might be expected of any variety, but plentiful in the countries where it grows at all. We have not heard of this ſpecies in Britain. The ſpecific name in Willdenow is a barbarous compound of Greek and Latin, ſuch as we wiſh botaniſts, not altogether illiterate, would avoid.

4. B. *fumarianum*. Fumitory-leaved Moonwort. (B. fumarioides; Willd. n. 4. Ait. n. 1. Purſh n. 1. B. lunarioides; Sw. n. 5. "Schkuhr Crypt. 158. t. 157." Botrypus lunarioides; Mich. Boreal.-Amer. v. 2. 274. Oſmunda biternata; Lamarck Dict. v. 4. 650.)—Frond ternate; doubly pinnate; leaflets creſcent-ſhaped, crenate. Fruitſtalk radical.—In paſtures and open woods, from New York to Carolina, bearing capſules in June. *Purſh.* Like the laſt, eſpecially in the inſertion of its *fruitſtalk*, at or near the *root*, but the *leaflets* exactly reſemble thoſe of *B. Lunaria*, which, with profeſſor Willdenow's leave, are by no means uniformly entire.

5. B. *obliquum*. Oblique-leaved Moonwort. Willd. n. 5. Muhlenb. Cat. 98.—Frond nearly twice ternate; leaflets oblong-lanceolate, finely ſerrated, unequally heart-ſhaped at the baſe. Fruitſtalk towards the baſe of the footſtalk.—In open woods of Pennſylvania and Virginia, in June and July. Reſembles the preceding very much, and is probably only a variety. *Purſh.* This author deſcribes the *ſpikes* as doubly pinnate; thoſe of the laſt only *pinnate*.

6. B. *auſtrale*. Southern Moonwort. Brown n. 1.—Frond ternate; doubly pinnate; leaflets confluent, cut. Fruitſtalk from the baſe of the footſtalk.—Sent by Dr. White, from Port Jackſon, New South Wales; where, as well as in Van Diemen's iſland, it was gathered by Mr. Brown. *Leaflets* bluntly toothed. *Fruitſtalk* pale, a ſpan high, being thrice as tall as the *leaf*, into whoſe darker-coloured *footſtalk* it is inſerted, a little above the root. The *ſpike* is twice or thrice compound, ſpreading; the ſtalks pale. *Capſules* dark brown.

7. B. *ternatum*. Ternate Japan Moonwort. Sw. n. 6. Willd. n. 6. (Oſmunda ternata; Thunb. Jap. 329. t. 32.)—Fronds in pairs, triply pinnate; leaflets notched and ſerrated. Fruitſtalk from the middle of the common footſtalk. Spike pinnate.—Gathered by Thunberg once only, near Nagaſaki in Japan, in November. A foot high, with two large, oppoſite, ſpreading, ternate, then twice pinnate, *leaves*, half the height of the *fruitſtalk*.

8. B. *diſſectum*. Cut-leaved Moonwort. Willd. n. 7. Muhlenb. Cat. 98. Ait. n. 3. Purſh n. 3. Sprengel Crypt. engl. ed. 187. "Schkuhr Crypt. 159. t. 158." (Lunaria botryites ramoſa, geranii moſchati foliis, floridana; Pluk. Amalth. 134. t. 427. f. 5.)—Frond ternate, thrice pinnate; leaflets decurrent, linear-wedgeſhaped, ſharply toothed at the end. Fruitſtalk at the baſe of the leaf.—In paſtures of open dry woods, from New York to Florida, in June. *Purſh.* We have Pennſylvania ſpecimens from the late Dr. Muhlenberg, very much like Plukenet's figure, but we can diſcover no eſſential difference between this plant and the following.

9. B. *virginianum*. Virginian Moonwort. Sw. n. 3. Willd. n. 8. Ait. n. 4. Purſh n. 4. "Schkuhr Crypt. 157. t. 156." (Oſmunda virginiana; Linn. Sp. Pl. 1519, excluding Plumier's ſynonym. Lunaria americana, foliis cicutariæ modo elegantèr diviſis; Moriſ. ſect. 14. t. 4. f. 5. L. multifido folio craſſo, &c.; Pluk. Mant. 120. t. 427. f. 8.)—Frond ſomewhat ternate, twice pinnate; leaflets decurrent, obovate-wedgeſhaped, ſharply toothed. Fruitſtalk at the baſe of the leaf.—In ſhady woods, on a rich vegetable ſoil, from Canada to Carolina, in June and

July. *Purſh.* That author obſerves, "this is the largeſt of the ſpecies here deſcribed. It is known by the name of Rattle-ſnake Fern, probably from growing near the places where thoſe venomous animals are generally found." Our ſpecimens, one of which was gathered by Clayton, the other by Kalm, are ſcarcely ſo large as the laſt-deſcribed, from which they differ chiefly in having rather leſs compound *leaves.* The *infloreſcence* is ſomewhat hairy, as in that. Willdenow, negligently as it ſeems, changed the termination of the ſpecific name to *virginicum,* which could only cauſe trouble, and we have therefore reſtored the original.

10. B. *gracile.* Slender Moonwort. Purſh n. 5. Frond ternate, doubly pinnatifid, ſmooth; ſegments cut, acute. Spikes ſlender, pinnate, erect.—In ſhady fertile woods of Virginia, in June. This ſpecies approaches nearly, at firſt ſight, to the preceding, but is much ſmaller and more ſlender, beſides the other diſtinctions. *Purſh.* We have from Dr. Muhlenberg what anſwers to the above account, but ſhould ſcarcely have thought it diſtinct. The *infloreſcence* indeed is ſmooth, and ſimply pinnate, but this correſponds with the ſmaller ſize of every part.

11. B. *cicutarium.* Hemlock Moonwort. Sw. n. 4. Willd. n. 9. (Oſmunda cicutaria; Lam. Dict. v. 4. 650. O. aſphodeli radice; Plum. Fil. 136. t. 159. Petiv. Fil. n. 168. t. 9. f. 2.)—Frond triply pinnate; leaflets pinnatifid; terminal ones pointed. Fruitſtalk from near the baſe of the footſtalk.—Gathered by Plumier in the foreſts of Hiſpaniola. The *root* conſiſts of oblong tapering fleſhy knobs. *Frond* much larger than either of the three laſt, and eſſentially different in the nearly radical inſertion of the *fruitſtalk.* The *ſpike* is twice pinnate. Plumier records, that the Indians give the name of Serpent-herb to this, and to the *Anemia adiantifolia,* thinking them uſeful applications for the bite of a ſerpent. This may account for the appellation of Rattle-ſnake Fern given to n. 9.

12. B. *zeylanicum.* Great Ceylon Moonwort. Sw. n. 7. Willd. n. 10. (Oſmunda zeylanica; Linn. Sp. Pl. 1519. O. n. 373; Linn. Zeyl. 178. Ophiogloſſum laciniatum; Rumph. Amboin. v. 6. 153. t. 68. f. 3.)—Frond ternate; leaflets ternate or ſomewhat pinnate, lanceolate, pointed, finely crenate. Spike cylindrical, denſe; ſpikelets capitate. —Native of Ceylon and Amboyna, on the ſides of hills, in the borders of woods and thickets. The *root* is long and creeping, very deep in the ground, with numerous long fibres. *Fronds* a foot and a half or two feet high, naked, except at the very top of the *ſtalk,* from whence proceed three ſlightly-ſtalked *branches,* each of two, three, or more, equal, uniform ſmooth *leaflets,* five or ſix inches long, and one broad, partly decurrent, light green, with many fine tranſverſe veins. From the ſame point ſprings a fruitſtalk, with a denſe cylindrical compound *ſpike,* riſing rather above the leaflets, the *capſules* about three together, capitate, at the end of each ſhort partial branch.

BOTRYOLITE. See Mineralogy, *Addenda.*

BOTRYTIS, in *Botany,* ſo called from βοτρυς, *a bunch of grapes,* in alluſion to the cluſters of little globular ſeeds, or ſeed-veſſels.—Mich. Nov. Gen. 212. t. 91. Perſ. Diſp. Meth. 40. Syn. Fung. 690.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eſſ. Ch. Erect, capillary, forked. Seeds in terminal aggregate globules.

1. B. *cinerea.* Aſh-coloured Cluſter-mould. Perſ. n. 1. Diſp. Meth. 40. t. 3. f. 9, 10.—Aſh-coloured, branching, in broad denſe patches.—On rotten gourds, pumpkins, and cabbage-ſtalks, reſembling a common *Mucor,* till examined with a magnifier. The *globules* are diſpoſed in irregular oblong maſſes, and diſcharge powdery *ſeeds.*

2. B. *ramoſa.* Croſs-headed Cluſter-mould. Perſ. n. 2. (B. ramoſa cinerea, ſeminibus rotundis; Mich. n. 3. f. 2.) B. alba. (B. non ramoſa alba, ſeminibus rotundis; Mich. n. 2. f. 3.) —Aſh-coloured, branching, with four-rayed ſpikes.—Very common in all kinds of corrupting ſubſtances. *Micheli.* The minute *ſtems* are more or leſs branched and forked, each *branch* terminating in a croſs, compoſed of four denſe ovate maſſes of *globules,* on ſhort horizontal ſtalks.

3. B. *ſimplex.* Simple Cluſter-mould. Perſ. n. 3. (B. comata griſea, caule ſimplici craſſiore, ſeminibus rotundis; Mich. n. 1. f. 1.)—Grey, ſimple. Spikes radiating.—On half-rotten wood, or wheat-ſtraw, in winter, not unfrequent about Florence. *Micheli.* Each plant conſiſts of a ſimple, rather firm, *ſtem,* a line or two in height, crowned with from three to ſix ovate maſſes of *globules,* on horizontal radiating ſtalks.

4. B. *ſpicata.* Oblong-ſpiked Cluſter-mould. Perſ. n. 4. (B. ſpicata griſea, ſeminibus rotundis; Mich. n. 4. f. 4.)—Grey, much branched. Spikes ovate-oblong, ſtalked, ſcattered, erect.—Found in September on the ſhady walks of the botanic garden at Florence. *Micheli.* The *ſtems* are repeatedly and irregularly branched, each branch terminating in a little oblong *ſpike* of *globules.*

5. B. *diffuſa.* Great White Cluſter-mould. Albert. and Schwein. Fung. Niſk. 362.—White, with extenſive diffuſe branches, and terminal cluſters, of about four globules each.—Found once only on half-rotten ſtalks of potatoes in November, compoſing denſe, white, cottony, fugacious maſſes, two inches or more in diameter. The *globules* diſcharge abundance of powdery *ſeeds* like ſmoke.

BOTTOMRY, col. 4, l. 23, for courſe *r.* courts.

BOVISTA, in *Botany,* a name of barbarous origin, being formed by Dillenius from the German *Boſiſt.* It is adopted by Perſoon for a genus ſeparated from Lycoperdon. (See that article.)—Perſ. Diſp. Meth. 6. Syn. Fung. 136.—Claſs and order, *Cryptogamia Fungi.* Nat. Ord. *Fungi.*

Eſſ. Ch. Caſe ſmooth, ſeſſile, burſting irregularly at the top; its white external coat (or wrapper?) at length ſeparating in fragments. (Powder or ſeed browniſh-purple.) *Perſoon.*

The author defines four ſpecies.

1. B. *nigreſcens,* which is *Lycoperdon globoſum,* Bolt. Fung. t. 118. With. v. 4. 382, and *L. arrhizon* of Batſch, t. 29.

2. B. *plumbea,* figured in Sowerby's Fungi, t. 331, as *L. Boviſta,* and judged by that author to be but a variety of the former.

3. B. *puſilla,* "Batſch, t. 41. f. 228;" akin to the firſt, but only three lines in diameter.

4. B. *furfuracea,* figured by Micheli, Nov. Gen. t. 97. f. 6, who ſays it is common on heaths, and ſold with other fungi of this tribe, in the market, at Florence. Perſoon is doubtful of the genus of this laſt, and we ſhould ſuſpect it to belong poſſibly to *Tuber.*

Boviſta differs from *Lycoperdon* in not being elongated at the baſe into a ſort of ſtalk; but ſurely they might, without violence to nature, be united, eſpecially as the ſpecies of the preſent genus are ſo few and ſo diſputable.

BOURBON, in Kentucky, l. 2, *r.* 11,869; l. 3, *r.* 2307.

BOURN, col. 2, l. 21, *r.* In 1811, the pariſh of Bourn contained 308 houſes, and 1591 perſons; 779 being males, and 812 females.

BOURSIPPA, in *Geography,* a town of Babylonia, according to Strabo; to which Alexander retired when warned by the Chaldæans not to enter Babylon. This is ſuppoſed to be the preſent village of Bourſa, two leagues to the S.E. of Hilleh, the ſcite, as it is conjectured, of ancient Babylon. On the road from hence to Meſked Ali, or Nejiff, is the tomb of the prophet Ezekiel, where they pretend to ſhew the fiery furnace of Shadrach, Meſhech, and Abednego. It is a large clumſy building, without beauty or ornament; and, like the tomb of Ezra, on the banks of the Tigris, a ſhort way above Korna, is much frequented by Jewiſh pilgrims.

BOUVARDIA, in *Botany*, ſo named by Mr. Saliſbury, in memory of Charles Bouvard, M. D. formerly ſuperintendant of the garden at Paris.—Saliſb. Parad. 88. Ait. Hort. Kew. v. 1. 245.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juſſ.

Eſſ. Ch. Calyx in four deep ſegments, with intermediate teeth. Corolla tubular. Anthers within the tube. Capſule of two ſeparable cells, with numerous bordered ſeeds.

1. B. *triphylla*. Three-leaved Bouvardia. Ait. n. 1. Saliſb. Parad. t. 88. (Houſtonia coccinea; Andr. Repoſ. t. 106. Ixora americana; Jacq. Hort. Schoenbr. v. 3. 4. t. 257. I. ternifolia; Cavan. Ic. v. 4. 3. t. 305.)—Native of Mexico. Introduced by ſir Joſeph Banks in 1794, and now become common in the Engliſh gardens, where, if planted againſt the front of a green-houſe, it will ſtand our ordinary winters, flowering from Midſummer till the end of autumn. The *ſtem* is from one to two feet high, ſhrubby, branched, downy when young. *Leaves* uſually three in a whorl, ovato-lanceolate, varying in breadth, entire, rough-edged, nearly ſeſſile. *Flowers* an inch long, bright ſcarlet, in denſe, terminal, forked *panicles*, very abundant, and extremely ſhowy, though deſtitute of ſcent.

BOW, l. *ult.*, *r.* The pariſh contains 149 houſes, and 727 perſons; 329 being males, and 398 females.

Bow, in America, l. 4, *r.* 729.

BOWDOIN, l. *ult.*, for 983 *r.* 1649.

BOWDOINHAM, l. *ult.*, for 455 *r.* 1412.

BOWLESIA, in *Botany*, ſo named by the authors of the Flora Peruviana, in honour of Mr. William Bowles, a native of Ireland, who publiſhed at Madrid, in 1775, an Introduction to the Natural Hiſtory of Spain, making a 4to. volume of 529 pages, in the Spaniſh language. This work has been tranſlated into French and Italian. The author died in Spain in 1780.—Sprengel Prodr. 24. Spec, Umbell. 13.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbelliferæ*.

Eſſ. Ch. Fruit ovate, quadrangular, briſtly; concave at the back. Umbel ſimple.

The author enumerates three certain ſpecies in his *Prodromus*.

1. B. *palmata*, of Ruiz and Pavon, of which he gives no character or deſcription.

2. B. *lobata*, of the ſame, "Fl. Peruv. v. 3. t. 251, B." Spreng. Sp. Umb. 13.—Somewhat hairy. Leaves lobed, ribbed; abrupt at the baſe; lobes entire, pointed. Footſtalks elongated. Flower-ſtalks axillary, moſtly ſolitary. Tendrils none.—Native of the loftieſt mountains of Peru. *Herb* ſlender, green, with ſome ſcattered ſtarry pubeſcence. *Leaves* oppoſite, an inch broad, half an inch long, five-ribbed, on ſlender zigzag *footſtalks* about a finger's length. *Stipulas* membranous, linear, in pairs. *Flower-ſtalks* about two lines long, reflexed after flowering, the *ſtipulas* ſerving as an *involucrum*. *Petals* five, cream-coloured. *Fruit* in pairs, ſolid, ribbed at the back, clothed with ſtarry hairs.

3. B. *incana*, of the ſame, "Fl. Peruv. v. 3. t. 268, A." Spreng. Spec. Umb. 13. t. 5. f. 10.—Hoary. Leaves kidney-ſhaped, lobed, notched; heart-ſhaped at the baſe. Flower-ſtalks axillary, aggregate. Tendrils axillary.—Native of Peru and Brazil. Our ſpecimen was gathered in the laſt-mentioned country, by Commerſon, and is larger than Sprengel's figure, being a foot long, though incomplete. This ſpecies ſeems nearly allied to the laſt. We diſcover no *tendrils* in our ſpecimen.

4. B. *geniculata*. Spreng. Spec. Umb. 14. t. 5. f. 11. (Peucedanum geniculatum; Forſt. Prodr. 22. Willd. Sp. Pl. v. 1. 1408.)—Smooth. Leaves nearly orbicular, crenate; wedge-ſhaped and entire at the baſe. Umbels terminal, many-flowered.—Native of New Zealand. *Stem* proſtrate, branched. *Leaves* not half an inch broad. *Umbels* compound. *Fruit* unknown. This ſeems to us a very doubtful *Bowleſia*, and is referred hither merely on account of ſome reſemblance of habit.

BOWLING-*Green*, in *Geography*. Add—Alſo, a townſhip of Ohio, in the county of Licking, having 379 inhabitants.

BOXBOROUGH, l. 2, for 412 *r.* 388.

BOXFORD, l. *ult.*, for 925 *r.* 880.

BOYLSTON, l. *ult.*, for 839 *r.* 802.

Boylston, *Weſt*, a town of the ſame ſtate and county, having 632 inhabitants.

BOZRAH. Add—It contains 960 inhabitants.

BRACCIO, plur. Bracci, a meaſure for cloth in Italy.

BRACHIONUS. Add—See Vermes and Wheel-*Animals*.

BRACHYSEMA, in *Botany*, ſo named by Mr. Brown, from βραχυς, *ſhort*, and σημα, *a ſtandard*, alluding to a ſtriking part of the generic character.—Brown in Ait. Hort. Kew. v. 3. 10.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx nearly equally five-cleft; with a ſwelling tube. Corolla papilionaceous; ſtandard ſhorter than the compreſſed keel, which is equal to the wings. Stalk of the germen minutely ſheathed. Style thread-ſhaped, elongated. Legume tumid, with many ſeeds.

1. B. *latifolium*. Broad-leaved Brachyſema. Ait. n. 1. Curt. Mag. t. 2008.—"Leaves ovate, flat. Standard oblong-obovate."—Sent by Mr. Good, in 1803, from the ſouth-weſt coaſt of New Holland, where it was alſo gathered by Mr. Brown. A hardy green-houſe procumbent or pendulous *ſhrub*, eaſily propagated by cuttings, and flowering in the ſpring. *Flowers* ſcarlet, very handſome, axillary, nearly ſeſſile, ſolitary, ſometimes two or three together, their ſmall acute *ſtandard* yellow at the baſe; *wings* and *keel* full an inch long.

There appear to be other ſpecies, not yet introduced into the gardens.

BRACKEN, in *Geography*, a county of Kentucky, having 3451 inhabitants, of whom 295 are ſlaves.

BRADFORD, col. 2, l. 11, *r.* In 1811, the houſes in the hundred of Bradford were 1766, and the number of perſons was 9435; 4269 being males, and 5166 females. The pariſh of Great Bradford contained 548 houſes, and 2989 perſons.

Bradford, in Yorkſhire, l. 12. The pariſh of Bradford contains 13 townſhips, and in 1811 the townſhip of Eaſt and Weſt Bradford contained 1574 houſes, and 7767 perſons: Eaſt Bradford having 725 houſes, and 3559 perſons; 1663 being males, and 1896 females: and Weſt Bradford having 849 houſes, and 4208 perſons; 1986 being males, and 2222 being females.

Bradford, *Eaſt and Weſt*. Add—the former contained, in 1810, 1003, and the latter 1219 inhabitants.

Bradford, l. 4, *r.* 1369; l. 9, *r.* 1034; l. 12, *r.* 1302.

BRADYPUS, l. 16, for ſloth *r.* bear; l. 20, after megatherium, add—(which ſee).

BRAIN, *Chemical Analyſis of*. For ADIPOCIÆ *r.* ADIPOCIRE.

A new and elaborate analyſis of the brain has been lately made by Vauquelin; but it muſt be confeſſed that his reſults throw no light whatever upon the manner in which its conſtituents are combined, or to what its peculiar appearance is owing. The following are the reſults: 100 parts contain,

Water - - - -	80.
White fatty matter -	4.53
Reddiſh fatty matter -	.70
Albumen - - - -	7.
Oſmazome - -	1.12
Phoſphorus - -	1.50
Acids, ſalts, and ſulphur	5.15
	100

BRAINTREE, in *Geography*. In 1811, the pariſh of Braintree contained 508 houſes, and 2298 perſons; 1082 being males, and 1216 females. The pariſh of Bocking contained 537 houſes, and 2544 perſons; 1134 being males, and 1410 females.

BRAINTREE, in America, l. 4, *r.* 850; l. 12, The inhabitants, in 1810, were 1351.

BRAMPTON, l. 20, *r.* In 1811, the number of houſes was ſtated to be 265, and of inhabitants 2043; 920 being males, and 1123 females: 52 families being employed in agriculture, and 394 in trade and manufactures.

BRANDON, l. *ult. r.* In 1811, Brandon pariſh contained 206 houſes, and 1360 perſons; 646 being males, and 714 females.

BRANDON, in America, l. 2, *r.* 1375.

BRANDYWINE. Add—containing 1257 inhabitants. —Alſo, a hundred in the diſtrict of Delaware, and county of New-Caſtle, containing 2257 inhabitants.

BRANFORD. Add—It contains 1932 inhabitants.

BRANTRIM, a townſhip of Luzerne county, in Pennſylvania, containing 904 inhabitants.

BRASAVOLA, in *Botany*, has received its name from Mr. Brown, in memory of Antonius Muſa Braſavolus, or Braſavolo, an Italian phyſician and botaniſt, born at Ferrara in 1500. Haller, who inaccurately ſpells his name *Braſſavolus*, ſpeaks of him as not unlearned in books or languages, or in the plants of his own country. His works, which have been often republiſhed, relate chiefly to the *Materia Medica*. Their author viſited France in 1528, and died in 1555.—Brown in Ait. Hort. Kew. v. 5. 216.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals diſtinct, ſpreading. Lip undivided, with a ſimple claw. Anther a terminal lid. Maſſes of pollen eight or more.

We do not feel competent to form an opinion of this genus, having no knowledge but of one ſpecies. Mr. Brown, who has more in contemplation, conſiders the maſſes of pollen being ſometimes more than eight a very remarkable character.

1. B. *cucullata*. Single-flowered Braſavola. Ait. n. 1. (Cymbidium cucullatum; Swartz in Act. Nov. Upſ. v. 6. 73. Willd. Sp. Pl. v. 4. 100. Epidendrum cucullatum; Linn. Sp. Pl. 1350. Curt. Mag. t. 543. Helleborine floribus albis cucullatis; Plum. Ic. 173. t. 179. f. 1.)—Stem nearly ſingle-flowered. Lip fringed.—Native of the Weſt Indies. Brought to Kew by admiral Bligh, in 1793. It flowers in the ſtove, from June to September. The *ſtem* is ſimple, about a ſpan high, ſheathed with a few ſcales, and crowned with one, rarely two, long, very narrow, keeled, fleſhy *leaves*, and as many large, white, long-ſtalked, nearly ſcentleſs, but very elegant, *flowers*; their drooping *calyx* and *petals*, two or three inches long, ſurrounding the long, pointed, curiouſly fringed *lip*.

BRASSIA, thus named by Mr. Brown, in due commemoration of the late Mr. Braſs, a ſkilful botanical traveller and draughtſman, who collected ſeeds, plants, and dried ſpecimens, on the Guinea coaſt, for ſir J. Banks, Dr. Fothergill, and Dr. Pitcairn, and whoſe ſketches, being moſt liberally lent by ſir Joſeph Banks to Dr. Afzelius, in his viſit to Sierra Leone, were maliciouſly damaged, and partly deſtroyed, out of characteriſtic and wanton brutality, by ſome piratical ſlave-mongers, under the French flag, during the late war, who ſtruck the firſt blow towards the ruin of the colony. (See SIERRA LEONE.)—Brown in Ait. Hort. Kew. v. 5. 215.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals ſpreading, diſtinct. Lip dilated, undivided, nearly flat. Column ſimple. Anther a moveable lid. Maſſes of pollen two; divided behind; attached by their middle to a common proceſs of the ſtigma.

1. B. *maculata*. Spotted-flowered Braſſia.—Native of the Weſt Indies. Imported by ſir Joſeph Banks in 1806. A large and very handſome plant, with broad ſheathing coriaceous *leaves*, and a cluſter of large *flowers*, whoſe *calyx* and *petals* are green, the broad *lip* white; all beautifully and variouſly ſpotted with purple.

BRATTLEBOROUGH, l. 3, *r.* 1891.

BREAD *of Bees*. See PAIN *des Abeilles*.

BREAD *of Wood*. See WOOD.

BREAST, *Inflammation of*, in *Surgery*. The diagnoſis of this diſorder is ſufficiently obvious, from the preſence of ſuch ſymptoms as are characteriſtic of inflammation in general, and which are detailed in our account of this ſubject in a former volume. Inflammation may be confined to the ſkin and cellular ſubſtance of the breaſt; or it may affect more particularly the glandular part of this organ. According to uſually-received opinions, either of theſe caſes may originate from a ſuppreſſion or obſtruction of the ſecretion of milk, rough handling of the breaſt, external violence, ſtoppage of the menſes, impediment to the diſcharge of the lochia, &c. When the inflammation is moderate, it generally terminates in reſolution; but when more ſevere, or improperly treated, an abſceſs is the conſequence. Though conſiderable indurations are often produced in the breaſt by attacks of common inflammation, it is but in a limited proportion of caſes that ſuch hardneſs partakes of the true ſcirrhous or cancerous nature.

The treatment of inflammation of the breaſt is to be regulated in a great meaſure by the kind of cauſe that has given origin to the complaint; a ſubject which cannot be duly underſtood without adverting to what has been ſaid in the various medical and ſurgical articles of this work on the different ſpecies of inflammation. Inflammation of the breaſt is moſt frequent in women within the firſt three months after delivery; and the beſt means of preventing the diſorder conſiſts in having the milk drawn or ſucked out of the nipple ſome weeks previouſly to delivery. But when the inflammation already exiſts, or threatens to begin, the ſame plan of drawing or ſucking the breaſt ſhould be purſued; and, together with general antiphlogiſtic remedies, the ſurgeon may have recourſe to emollient applications, leeches, fomentations, and when the acute ſtage of the inflammation is over, to gentle friction with liniments, or to the employment of reſolvent plaſters. Abſceſſes are to be treated on the principles explained in the article SUPPURATION.

BRECHIN, in *Geography*. In 1811, the burgh and pariſh of Brechin contained 769 houſes, and 5559 perſons; 2514 being males, and 3045 females.

BRECKENRIDGE, a county of Kentucky, containing 3430 inhabitants, of whom 505 are ſlaves.

BRECKNOCK, l. 1, for Lancaſter *r.* Berks; and add—containing 723 inhabitants.

BRECKNOCK, col. 3, l. 4, after pariſhes, add — and in 1811 contained 718 houſes, and 3196 inhabitants; 1433 being males, and 1763 females: 205 families employed in agriculture, and 375 in trade, manufactures, and handicraft.

BRECKNOCKSHIRE, l. 17, *r.* Theſe, with the hamlets, were peopled in 1811 by 37,735 perſons, and contained 7555 houſes; 4667 families being employed in agriculture, and 2239 in trade and manufactures.—L. 35. The other rivers are, the Irvon, which falls into the Wye above the town of Builth; the Tawe, which diſcharges its waters into the Briſtol Channel at Swanſea; the Taaf; the Llyfni, which paſſes through Langorſe Mere or Llynſavaddan, and runs into the Wye at Glaſbury; the Melltie or Ifilté, remarkable for its ſubterraneous paſſage in one part of its courſe; the Hapſte, celebrated for its beautiful caſcade; and the Honddy at Brecknock. The principal lake in this county is *Llynſavaddan;* which ſee.—L. 41. The iron-works of this county are objects of great importance, in connection with its commerce and proſperity. The firſt of theſe is at Llangrwyne, in the pariſh of Llangenau, now forming an appendage to the works at Sirhowy in Monmouthſhire: the next works are thoſe in the vale of Clydach, in the pariſh of Llanelly: there is another in the pariſh of Llangattock; others are ſituated near the ſource of the Rumney river, on the borders of Glamorganſhire; and thoſe of Hirwaun, in the pariſh of Pendergn, at the ſouthern extremity of the county.

BRENTA, in *Commerce*, a liquid meaſure in ſome parts of Italy, as at Bergamo.

BRENTFORD. Add—Old Brentford forms a part of Ealing pariſh, which in 1811 contained 922 houſes, and 5361 inhabitants; 2509 being males, and 2852 females. New Brentford is a diſtinct pariſh, and contained 297 houſes, and 1733 inhabitants; 809 being males, and 924 females.

BRENTWOOD. In 1811, Brentwood contained 218 houſes, and 1238 perſons; 575 being males, and 663 females.

BRENTWOOD, in America, l. 2, *r.* 905.

BRETON, CAPE, l. 6, for 34 *r.* 84.

BREWER. Add—By 43 Geo. III. c. 69. every common brewer of ſtrong beer ſhall take out a licence, for which he ſhall pay according to the quantity of beer brewed by him within the year, as ſpecified in the act, ending 5th July every year: but every perſon who ſhall firſt become a brewer of ſtrong beer, for every ſuch licence 1*l.* 10*s.*, and within ten days after the 5th of July, after taking out ſuch licence, ſuch further additional ſum as with the ſaid 1*l.* 10*s.* ſhall amount to the duty hereinbefore directed to be paid, according to the number of barrels of ſtrong beer brewed within the preceding year. If he neglect to take out ſuch licence, and to renew it annually, ten days at leaſt before the end of the year, he ſhall forfeit 50*l.* 24 Geo. III. c. 41. And every common brewer of table beer, not being a common brewer of ſtrong beer, ſhall take out a licence and pay for the ſame yearly 1*l.*, to be renewed annually. By 42 Geo. III. c. 38. no perſon not being a common brewer ſhall be allowed to retail beer at any higher price than 1½*d.* the quart without entering into a recogniſance and obtaining a licence as an ale-houſe keeper, under pain of forfeiting for each offence 50*l.* over and above the penalty impoſed upon ſelling beer without a licence. By 15 C. II. c. 11. notices of brewing beer or ale ſhall be given, and alſo of erecting or altering any implements for this purpoſe, on pain of 50*l.* By 5 Geo. III. c. 43. the poſition of any tun, cooler, copper, &c. ſhall not be altered without notice, under penalty of 20*l.* The officer of exciſe ſhall enter and examine ſuſpected places; and if any perſon oppoſe him, he incurs a forfeiture of 20*l.* 7 & 8 W. c. 30. No common brewer ſhall uſe any pipes or other private conveyances from any copper in his brew-houſe, &c. on pain of 200*l.* 8 & 9 W. c. 19. 42 Geo. III. c. 38. Search ſhall be made by the officer, and the penalty of oppoſing him is 50*l.* No common brewer, innkeeper, victualler, or other retailer of beer or ale, ſhall keep any private ſtorehouſe or cellar for laying any beer or ale, or worts in caſk, on pain of 50*l.* 15 C. II. c. 11. 1 W. ſt. 1. c. 24. By 42 Geo. III. c. 38. every common brewer who ſhall lay off any beer, ale, or worts contrary to the 8 & 9 W. III. ſhall for every ſuch offence forfeit 100*l.* Perſons inhabiting a market-town, city or town corporate, or parts adjoining to a city or town corporate, in which there is a common brew-houſe, who ſhall ſuffer liquors to be brewed in their houſes, otherwiſe than for their own families or for purpoſes of charity or hoſpitality, and who ſhall lend out brewing veſſels, ſhall forfeit 50*l.* 22 & 23 C. II. c. 5. Gaugers ſhall take an account, and obſtructing them in the exerciſe of their office incurs a penalty of 10*l.* and forfeiture of double value for beer, ale, or other ſpecified liquors that have been ſold or delivered out, without payment of duty. If any brewer ſhall bribe the gauger to make a falſe return he ſhall forfeit 10*l.*, and the officer ſo bribed ſhall forfeit the ſame ſum; 5 C. II. c. 11. By 42 Geo. III. c. 38. the penalty on mixing liquors to imitate beer, and to be mixed with or uſed as beer made from malt and hops, or ſelling ſuch liquors, is 200*l.* and forfeiture of liquor and utenſils; and the penalty on a brewer's receiving ſtale beer-grounds, and mixing any liquor with beer, except malt and hops, is 100*l.* Exciſe officers are authoriſed to take ſamples of ſuſpected liquors, ſearch ſuſpected places, and ſeize forbidden liquors, ingredients, and utenſils; and the perſon in whoſe cuſtody they are found ſhall forfeit 100*l.* No common brewer ſhall carry out any ale or beer to his cuſtomers in any city or market-town, before notice given to an officer of exciſe, but between three in the morning and nine in the evening from March 25 to September 29; and between five in the morning and ſeven in the evening from September 29 to March 25, on pain of 20*s.* a barrel; 15 C. II. c. 11.

And whereas it is expedient that the quantities to be returned as and for a barrel of beer or ale brewed by the common brewer and the allowances for waſte ſhould be in all places the ſame, it is enacted that after the 5th day of July 1803 every 36 gallons of beer or ale brewed by the common brewers in Great Britain, whether within the weekly bills of mortality or without the ſame, taken according to the ſtandard of the ale quart four thereof to the gallon in the exchequer, ſhall be reckoned and returned by the gauger or other officer of exciſe for a barrel of beer or ale; and the allowances to be made in Great Britain to the common brewer not ſelling beer, ale, or worts in any leſs quantity than a whole caſk containing 4½ gallons, whether within or without the ſaid limits, for waſte by fillings and leakage, or otherwiſe, out of the returns by the gaugers, or other officers, ſhall be three barrels upon every 36 barrels, both of ſtrong beer or table beer and ale, and after that rate for any greater or leſs quantity; 43 Geo. III. c. 69. A common brewer who ſhall ſell beer, ale, or worts in any leſs quantity than in a whole caſk containing 4½ gallons, ſhall forfeit 50*l.* for every ſuch offence. And if any perſon, not being a common brewer, ſhall retail beer at a higher price than after the rate of 1½*d.* the quart, ale-houſe meaſure, without obtaining a licence as a common ale-houſe keeper, he ſhall forfeit 50*l.* over and above any other penalty for ſelling beer or ale without ſuch licence; 42 Geo. III. c. 38. Entries ſhall be made by common brewers once a week, under penalty of 10*l.*; and by innkeepers once a month on pain of 5*l.*; and alſo ale-houſe keepers, victuallers, and other retailers, ſhall do the ſame on penalty of 20*s.* Beer and ale above 18*s.* *per* barrel ſhall be deemed ſtrong, and at 18*s.* and under, table beer; 43 Geo. III. c. 81. The 42 Geo. III. c. 38. regulates the price, &c. of table beer, and repeals as to this beer 22 Geo. III. c. 68. The penalty for ſelling table beer at more than the barrel price, excluſive of duty, is 100*l.*

BREWERIA, in *Botany*, ſo named by Mr. Brown, in memory of Mr. Samuel Brewer, a Wiltſhire botaniſt, the companion of Dillenius in a botanical viſit to Wales, Angleſea, and the Iſle of Man, in 1726, and ſubſequently one of his moſt valuable correſpondents, eſpecially for the Cryptogamic department. Mr. Brewer ſpent the latter part of his life at Bradford, under the patronage of Dr. Richardſon, and, according to Dr. Pulteney, was living in 1742.—Brown Prodr. Nov. Holl. v. 1. 487.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Campanaceæ*, Linn. *Convolvuli*, or *Convolvulaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx in five deep ſegments. Corolla funnel-ſhaped, plaited. Style deeply divided. Stigmas capitate. Capſule of two cells, valvular, ſurrounded by the permanent calyx. Seeds two in each cell.

Theſe are diffuſe *herbs*, not milky; their *leaves* undivided; *flowers* axillary, moſtly ſolitary. The genus appears moſt akin to *Porana*, differing in habit, and in the unaltered *calyx* of the fruit.

1. B. *linearis*. Linear Breweria. Br. n. 1.—Villous. Leaves linear-lanceolate, folded. Style equally divided nearly to the baſe.—Gathered by Mr. Brown, in the tropical part of New Holland.

2. B. *media*. Intermediate Breweria. Br. n. 2.—Slightly villous. Leaves lanceolate; obtuſe and ſomewhat heart-ſhaped at the baſe. Style divided half way, into two unequal ſegments.—From the ſame country. *Br.*

3. B. *pannoſa*. Woolly Breweria. Br. n. 3.—Downy. Leaves ovate, ſomewhat heart-ſhaped, denſely woolly. Calyx unequal; its outer ſegments ovate, ſomewhat pointed. Style in two deep unequal diviſions. — From the ſame country. *Br.*

We know not whether there be any more ſpecies in other parts of the globe.

BREWSTER, in *Geography*, a town of Barnſtable county, in the Maſſachuſetts, containing 1812 inhabitants.

BRIBIESCA, *dele.*

BRIDELIA, in *Botany*, a genus ſeparated from *Cluytia* by Willdenow, and dedicated by him to the honour of the great ſyſtematic muſcologiſt, Dr. Samuel El. Bridel. — Willd. Sp. Pl. v. 4. 978. Ait. Hort. Kew. v. 5. 444. — Claſs and order, *Polygamia Monoecia*, or rather *Monadelphia Pentandria*. Nat. Ord. *Tricoccæ*, Linn.? *Euphorbiæ*, Juſſ.?

Eſſ. Ch. Calyx inferior, in five deep ſegments. Petals five, inſerted into the calyx. Stamens with a tubular, columnar baſe. Styles two, divided. Berry with two ſeeds. Some flowers want the ſtamens, ſome others the germen.

The fruit diſtinguiſhes this genus from CLUYTIA. (See that article.) Three ſpecies only are deſcribed, all Eaſt Indian.

1. B. *montana*. Mountain Bridelia. Willd. n. 1. (Cluytia montana; Roxb. Corom. v. 2. 38. t. 171.)—Stem erect, without thorns. Leaves obovate-elliptical, entire, ſmooth.—Native of Coromandel. On the interior mountains it grows to a tree, but on the lower lands is only found of a ſmall ſize. The Telingas call it *Pantinga*. *Roxb.* The *wood* is reddiſh, very hard. *Stem* ſhort and thick. *Branches* ſlender, ſpreading. *Leaves* numerous, alternate, two-ranked, an inch and a half long, on ſhort ſtalks. *Flowers* ſmall, crowded, axillary. *Berry* purple, globular, ſucculent, the ſize of a pea.

2. B. *ſcandens*. Climbing Bridelia. Willd. n. 2. Ait. n. 1. (Cluytia ſcandens; Roxb. Corom. v. 2. 39. t. 173.)—Stem ſhrubby, climbing, without thorns. Leaves oblong-ovate, entire, acute; Downy beneath.—Common on the banks of rivers and water-courſes, on the coaſt of Coromandel, flowering in November and December, and called by the Telingas *Doonkyboora*. *Roxb.* *Stem* climbing; its *branches* leafy, flowering at their pendulous extremities. *Leaves* three inches long; thoſe which accompany ſome of the flowers diminiſhed almoſt to *bracteas*. *Berry* oval, of a ruſty black, the ſize of a horſe-bean. This ſpecies was ſent to Kew in 1804, by colonel Hardwicke, F.L.S., ſo well known by his various communications, illuſtrative of the natural hiſtory of India.

3. B. *ſpinoſa*. Thorny Bridelia. Willd. n. 3. (Cluytia ſpinoſa; Roxb. Corom. v. 2. 38. t. 172.)—Stem arboreous, erect, thorny. Leaves ovate, acute, entire, ſmooth.—A tree of conſiderable ſize found on the mountains along with the firſt ſpecies, and called by the Telingas *Cora-maun*. The *bark* is a ſtrong aſtringent; *wood* hard and durable, dark-coloured; *leaves* eaten greedily by cattle, and ſaid to deſtroy worms in their bowels. *Roxb.* The *leaves* are three or four inches long. *Flowers* in terminal, or axillary, interrupted *ſpikes*. *Berry* black, the ſize of a pea.

BRIDGEND, l. *ult.* *r.* The pariſh of Newcaſtle, higher and lower, contains 157 houſes, the former having 40, and the latter 117; and 640 inhabitants, the former including 171, and the latter 469. In the higher, the males are 84, and females 87; in the lower, the males are 210, and females 259.

BRIDGENORTH, col. 2, l. 9, add — In 1811 the borough of Bridgenorth contained 978 houſes, and 4386 perſons; 2006 being males, and 2380 females: 81 families employed in agriculture, and 870 in trade and manufactures.

BRIDGEPORT, a townſhip of Pennſylvania, in Fayette county, having 280 inhabitants.

BRIDGESTOWN, a town of the diſtrict of Maine, in the county of Kennebeck, containing 214 inhabitants.

BRIDGE-TOWN, l. 5, *r.* 882.

BRIDGEWATER, col. 2, l. 26, add — In 1811 the borough of Bridgewater contained 857 houſes, and 4911 perſons; 2241 being males, and 2670 females: 87 families employed in agriculture, and 570 in trade and manufactures.

BRIDGEWATER, in America, l. 3, *r.* 1104; l. 4, *r.* 2906; l. 5, *r.* 391; l. 6, *r.* 5157; l. 10, *r.* 1154. Add—Alſo, a townſhip of Luzerne county, in Pennſylvania, having 1418 inhabitants.

BRIDLINGTON, l. *ult.* *r.* In 1811 Bridlington contained 849 houſes, and 3741 inhabitants; 1706 being males, and 2035 females.

BRIDPORT, l. 39, add—In 1811 the borough of Bridport contained 512 houſes, and 3567 perſons; 1532 being males, and 2035 females: 20 families employed in agriculture, and 600 in trade and manufactures.

BRIDPORT, in America, l. 3, *r.* 1520.

BRIGHTHELMSTON, l. *ult.* *r.* In 1811 Brighton contained 2077 houſes, and 12,012 perſons; 5069 being males, and 6043 females.

BRIGHTON, a town of Maſſachuſetts, in Middleſex county, having 608 inhabitants.

BRIMFIELD, l. 3, *r.* 1325.

BRISTOL. Add—In 1811, this city, with Barton Regis hundred, contained 11,940 houſes, and 76,433 perſons; 32,842 being males, and 43,591 females.

Bristol, in America, l. 2, *r.* 2753; l. 8, *r.* 37,168; l. 13, *r.* 5072; l. 23, *r.* 2693; l. 29, add—It contains 1428 inhabitants; l. 33, after houſes, add—The number of inhabitants, by the cenſus of 1810, was 628; l. 36, after county—having 965 inhabitants; l. 39, *r.* 1179, add—Alſo, a townſhip of Pennſylvania, in Berks county, having 1608 inhabitants.—Alſo, a townſhip of Ohio, in the county of Trumbull, having 202 inhabitants.

BRITAIN, Little, a townſhip of Pennſylvania, in Lancaſter county, containing 1708 inhabitants.

Britain, *London*, a townſhip of Luzerne county, having 404 inhabitants.

BROAD Creek, a hundred of Delaware, in the county of Suſſex, having 3789 inhabitants.

BROCKLESBY, l. 10, after Ballytore, add—(which ſee,) and *dele* the remaining part of the ſentence.

BRODIÆA, in *Botany*, ſo named by the writer of the preſent article, after James Brodie, eſq. F.L.S., of Brodie in North Britain, an experienced and liberal Britiſh botaniſt, whoſe name often occurs in the *Engliſh Botany*, and to whom a genus of the patrician order is with great propriety inſcribed.—Sm. Tr. of Linn. Soc. v. 10. 1. Purſh 223. (Hookera; Saliſ. Parad. 98.)—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narciſſi*, Juſſ.

Gen. Ch. *Cal.* none, unleſs the bracteas be ſo called. *Cor.* of one petal, bell-ſhaped, cut half way down into ſix nearly equal, oblong, rather ſpreading ſegments; throat crowned with three erect ſcales, ſhorter than the limb, oppoſite to three alternate ſegments. *Stam.* Filaments three, inſerted into the tube between the ſcales, and oppoſite to the other three ſegments, awl-ſhaped, erect; anthers vertical, linear, ſhorter than the ſcales, cloven at each end. *Piſt.* Germen ſuperior, elliptic-oblong, triangular; ſtyle cylindrical, nearly the length of the ſtamens; ſtigma triangular, three-lobed. *Peric.* Capſule of three cells and three valves, with central partitions. *Seeds* numerous, elliptic-oblong, inſerted into the inner margin of each partition in two rows.

Eſſ. Ch. Corolla inferior, tubular; limb regular, in ſix deep ſegments; throat crowned with three ſcales, alternate with the ſtamens. Capſule of three cells, with numerous ſeeds.

1. B. *grandiflora*. Large-flowered Brodiæa, or Miſſouri Hyacinth. Sm. n. 1. Purſh n. 1. (Hookera coronaria; Saliſ. Parad. t. 98.)—Scales of the corolla undivided. Partial ſtalks longer than the flowers.—Diſcovered by Mr. Menzies in 1792, in New Georgia, on the weſt coaſt of North America. Governor Lewis is recorded to have gathered this plant on the plains of the Columbia and Miſſouri rivers, flowering in April and May. It is reported to have bloomed in Mr. Saliſbury's garden, but is not admitted into Hort. Kew. or the Addenda to that work. The *root* is bulbous, ſolid. *Leaves* two, radical, linear, channelled, near a foot long. *Flower-ſtalk* ſolitary, bearing an unequal, bracteated *umbel*, of upright, handſome, blue *flowers*, each near an inch long, with yellowiſh *ſcales*, and yellow *anthers*.

2. B. *congeſta*. Crowded Brodiæa. Sm. n. 2. t. 1.—Scales of the corolla cloven. Partial ſtalks much ſhorter than the flowers.—Brought by Mr. Menzies, with a coloured drawing, from New Georgia. The *flowers* are rather numerous, ſmaller than the foregoing, and form a denſe head, ſubtended by pointed *bracteas*.

BROKENSTRAW, a townſhip of Warren county, in Pennſylvania, having 379 inhabitants.

BROMELIÆ, in *Botany*, the 15th order in Juſſieu's ſyſtem, the 5th of his third claſs. See Junci.

The *Bromeliæ* are thus defined. *Calyx* (*Corolla* of Linnæus) in ſix, more or leſs deep, ſegments, either ſuperior or inferior, equal, or moſtly unequal, the three alternate diviſions being largeſt. *Stam.* ſix, inſerted into the bottom or middle of that part, or ſometimes into calycine glands, lying over the germen. *Germen* ſimple, ſuperior or inferior; ſtyle one; ſtigma three-cleft. *Fruit* of three cells, either pulpy and not burſting, or capſular and of three valves; each cell containing one or many *ſeeds*. The *leaves* are ſheathing, all for the moſt part radical. *Flowers* ſpiked, panicled, or more rarely corymboſe, each accompanied by a *ſpatha*.

Sect. 1. *Germen ſuperior*.

Burmannia and *Tillandſia*, with *Puya* of Molina, Juſſ. append. 447.

Sect. 2. *Germen inferior*.

Xerophyta, *Bromelia*, and *Agave*.

BROMSGROVE, in *Geography*. In 1811, the pariſh of Bromſgrove contained 1378 houſes, and 6932 perſons; 3349 being males, and 3583 females: 357 families employed in agriculture, and 1085 in trade and manufactures.

BRONZITE. See Mineralogy, *Addenda*.

BROOK, *Honey*, in *Geography*, a townſhip of Pennſylvania, in Cheſter county, with 1073 inhabitants.

BROOKE, a county of Virginia, containing 5843 inhabitants, including 332 ſlaves.

BROOKFIELD, l. 4, *r.* 3170; l. 11, for 421 *r.* 1384; l. *ult.*, add—containing 1037 inhabitants.

BROOKLIME, a town of New Hampſhire, in Hilſborough county, having 538 inhabitants.—Alſo, a town of Vermont, in Windham county, having 431 inhabitants.—Alſo, a town in Strafford county, in New Hampſhire, with 657 inhabitants.—Alſo, a townſhip of Ohio, in the county of Trumbull, having 345 inhabitants.

BROOKLYN, l. 2, 704 inhabitants; l. *ult.* containing 1200 inhabitants.

BROOME, a county of New York, including 8130 inhabitants.

BROSELEY. In 1811 this pariſh contained 1025 houſes, and 4850 perſons; 2448 being males, and 2402 females: 48 families employed in agriculture, and 856 in trade and manufactures.

BROTERA, in *Botany*, a name applied to two very different plants, in due commemoration of the Rev. Father Felix Avellar Brotero, profeſſor of botany at Coimbra in Portugal, author of the *Flora Luſitanica*, and ſeveral other learned works. The *Brotera* of the late profeſſor Willdenow, Sp. Pl. v. 3. 2399, *Carthamus corymboſus* of Linnæus, appears to us founded on a total miſconception of the ſtructure of the flower, in which we can find no character whatever different from *Carthamus*. This genus is, however, adopted in Ait. Hort. Kew. v. 5. 186, according to the general plan of that work, where the editors had no particular object of reformation or illuſtration in view. The other *Brotera* is publiſhed by profeſſor Sprengel, in Tr. of Linn. Soc. v. 6. 151. Its only ſpecies is *B. perſica*, brought by Olivier and Bruguiere from Perſia. We regret to obſerve that this is manifeſtly a Hyptis (ſee that article); and we lament that it was, from full confidence in its learned and diſtinguiſhed author, too incautiouſly admitted into the Linnæan Tranſactions, for which the writer of this acknowledges himſelf entitled to a ſhare of the blame.

BROTHERS' VALLEY, in *Geography*, a townſhip of Pennſylvania, in Somerſet county, having 1314 inhabitants.

BROUGH. In 1811 this townſhip contained 131 houſes, and 758 perſons; 369 being males, and 389 females.

BROUGHTONIA, in *Botany*, ſo called by Mr. Brown, in memory of the late Mr. Arthur Broughton, of Briſtol, author of an "*Enchiridion*," or ſyſtematic manual, of Britiſh plants, publiſhed in 1782; and, after his removal to Jamaica, of the *Hortus Eaſtenſis*, and of a Catalogue of the Botanic garden in the mountains of Liguanea.—Brown in Ait. Hort. Kew. v. 5. 217.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eff. Ch. Calyx and petals ſpreading. Column unconnected, or attached at the baſe only to the ſtalked lip. Anther a moveable lid. Maſſes of pollen four, parallel, divided by complete permanent partitions, and extending at the baſe into an elaſtic granulated thread.

Obſ. In ſome inſtances the baſe of the lip is elongated into a little tube, attached to the germen.

1. B. *ſanguinea*. Blood-red Broughtonia. Ait. n. 1. (Dendrobium ſanguineum; Swartz Nov. Act. Upſ. v. 6. 82. Ind. Occ. 1529. Willd. Sp. Pl. v. 4. 132. Viſcum radice bulboſâ minus, delphinii flore rubro ſpecioſo; Sloane Jam. v. 1. 250. t. 121. f. 2.)—Leaves oblong, in pairs from the top of a bulb. Flower-ſtalk divided.—This grows on trees and paliſades in the woods of Jamaica, forming tufts of leaf-bearing *bulbs*, the *leaves* light green, two inches long. *Stalks* radical, a foot high, with a few handſome, corymboſe, dark crimſon *flowers*.

This is the only ſpecies yet known in our ſtoves, nor have we an account of any other.

BROUSSONETIA, in *Botany*, (ſee PAPYRIUS,) where the hiſtory and deſcription of this curious tree are given.

BROWN SPAR, or *Bitter Spar*. See MINERALOGY, *Addenda*.

BROWNFIELD, l. 2, for York *r.* Oxford; l. 3, *r.* 398.

BROWNINGTON, a town of Vermont, in Orleans county, having 236 inhabitants.

BROWNSVILLE. Add—It contains 698 inhabitants.

BRUCHUS, l. 8, *dele* which ſee reſpectively, and inſert—the inſects of this genus are, in general, of a ſmall kind. The B. *granarius* is found among leaves, vetches, and other ſeeds, the lobes of which it devours. It is about two lines long, of a black colour, and its wing-ſhells are freckled with white ſpecks; the two fore-legs are reddiſh, and the thighs of the hind-legs armed with a tooth and forceps. The B. *ſeminarius* is rather ſmaller than the preceding, but like it, without the denticle of the hinder thighs. The exotic ſpecies are chiefly natives of America.

BRUNNERSTOWN, in *Geography*, a town of Kentucky, in Jefferſon county, with 92 inhabitants, of whom four are ſlaves.

BRUNONIA, in *Botany*, ſo named by the writer of this, after his highly-valued friend Mr. Robert Brown, F.R.S. librarian to the Linnæan ſociety, no leſs eminent for acuteneſs of obſervation, than for deep botanical ſcience, whoſe diſcoveries in New Holland have ſo often been brought before our readers, and who met with this new and ſingular genus in that country. The memory of Dr. Patrick Browne, the natural-hiſtorian of Jamaica, being already preſerved in the BROWNÆA, (ſee that article,) it has been found neceſſary to adopt the above conſtruction, authoriſed by precedent, to avoid ambiguity.—Sm. Tr. of Linn. Soc. v. 10. 365. Brown Prodr. Nov. Holl. v. 1. 589.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Aggregatæ*, or perhaps *Campanaceæ*, Linn. *Dipſaceæ*, Juſſ.? *Goodenoviæ*? Brown.

Gen. Ch. *Cal.* Perianth double, both inferior; outer of four membranous, nearly equal, erect, concave, obtuſe leaves; inner of one leaf, rather the longeſt, turbinate, permanent, with five feathery teeth. *Cor.* of one petal, funnel-ſhaped, longer than the calyx; limb in five deep, ſpreading, nearly equal ſegments, the two upper ones moſt deeply divided; tube ſeparable into five narrow claws. *Stam.* Filaments five, capillary, weak, inſerted into the receptacle; anthers linear, united into a cylinder, the length of the tube of the corolla. *Piſt.* Germen ſuperior, roundiſh; ſtyle club-ſhaped, about twice the length of the ſtamens; ſtigma turbinate, obtuſe, concealed by two vertical, equal, orbicular, concave, membranous, converging valves. *Peric.* none, except the inner perianth, lined with the membranous baſe of the corolla, both together enlarged and hardened, and crowned with the five feathery teeth elongated and divaricated, ſo as to form a ſeed-crown. *Seed* ſolitary, covered, ovate, deſtitute of albumen, with an erect embryo.

Eff. Ch. Corolla funnel-ſhaped, five-cleft, irregular. Anthers combined. Stigma with a bivalve ſheath. Seed one, clothed with the feathery-crowned inner calyx.

The generic diſtinctions of *Brunonia* are abundantly eaſy; but to determine its natural order, or affinities, is very difficult, the latter being ſo many, and ſo remote from each other, that the plant reſembles Horace's imaginary feathered monſter, with a horſe's neck and human head. Mr. Brown, in the lateſt view he has taken of the ſubject, in a moſt invaluable paper on the natural order of *Compoſitæ*, Tr. of Linn. Soc. v. 12. 132, has pointed out *Brunonia* as a connecting link between that family and the *Goodenoviæ*; nor are various other links between theſe very different tribes wanting. With great candour he nevertheleſs admits whatever favours our idea of its relationſhip to *Dipſaceæ* and *Globulariæ*, and moreover adverts to circumſtances approaching it to the *Stylideæ*, near allies of *Goodenoviæ*. Two ſpecies only have been detected.

1. B. *auſtralis*. Auſtralian Brunonia. Sm. as above, 367. t. 28. Br. n. 2.—Leaves clothed with ſpreading hairs. Segments of the calyx feathery all over.—Native of the ſandy coaſts of the ſouth part of New Holland. Abundant in Van Diemen's iſland, and obſerved alſo on the oppoſite ſhore of New Holland, at Port Phillip, flowering in January 1804. *Mr. Brown*. *Herb* apparently annual, without a ſtem, hairy all over, much reſembling in habit, colour, and pubeſcence, the Linnæan *Scabioſa cretica*. *Root* ſimple, ſlender. *Leaves* radical, numerous, ſpathulate, pointed, ſingle-ribbed, entire, tapering at the baſe, two or three inches long, very hairy. *Flower-ſtalks* radical, ſolitary, ſimple, hairy, eſpecially the lower part, a foot high, each bearing a head of numerous blue *flowers*, not unlike the Sheep's Scabious, *Jaſione montana*, but rather larger, and looſely hairy. The *head* is ſubtended by numerous, nearly equal, ſpreading, permanent, hairy *bracteas*, ſhorter than the flowers; the inner ones ſmalleſt, ſolitary under each flower.

2. B. *ſericea*. Silky Brunonia. Sm. as above, 367. t. 29. Br. n. 1.—Leaves ſilky with cloſe-preſſed hairs. Segments of the calyx with naked coloured tips.—Gathered by Mr. Brown, on the ſandy ſea-ſhore at Pine Port, on the eaſt coaſt of New Holland, juſt within the tropic, flowering in Auguſt 1802. The aſpect and pubeſcence of this

ſpecies exactly anſwer to *Scabioſa graminifolia*. It differs from the foregoing in having narrower, more numerous, ſilky *leaves*, and the *flowers* differ remarkably in the blunt, coloured, naked points of their inner *calyx*.

BRUNSVIGIA, ſo named in 1753, by Heiſter, in compliment to his patron Charles duke of Brunſwick Lunenburg. What were his ſerene highneſs's claims to this honour, we know not, nor is Heister any authority in ſuch a caſe (ſee his biographical article); but we hope all Engliſhmen will ever have reaſon to hail the name of Brunſwick, wherever it appears, and the genus in queſtion, long confounded with *Amaryllis*, being now reſtored, the name of *Brunſvigia* appears with peculiar propriety in the royal garden of England.—Heiſt. Brunſv. 2. Ait. Hort. Kew. v. 2. 230. Ker in Curt. Mag. under p. 923*.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narciſſi*, Juſſ.

Gen. Ch. *Cal.* an oblong, obtuſe, compreſſed, leafy ſheath, of two valves, withering. *Cor.* ſuperior, in ſix deep, lanceolate, recurved, nearly equal ſegments. *Stam.* Filaments ſix, awl-ſhaped, about the length of the corolla; anthers oblong, incumbent. *Piſt.* Germen inferior, obovate, with three furrows and as many rounded angles; ſtyle thread-ſhaped, the length and poſition of the ſtamens; ſtigma bluntiſh. *Peric.* Capſule turbinate, abrupt, with three rounded wings, membranous, ſomewhat tranſparent, of three cells and three valves. *Seeds* ſeveral, ovate, acute; curved and compreſſed at the point.

Eſſ. Ch. Corolla ſuperior, in ſix deep ſegments. Capſule turbinate, membranous, with three wings. Seeds ſeveral, pointed.

1. B. *multiflora*. Broad-leaved Brunſvigia. Ait. n. 1. (Brunſvigia; Heiſt. as above, t. 1—3. Amaryllis orientalis; Linn. Sp. Pl. 422. Willd. Sp. Pl. v. 2. 58. Jacq. Hort. Schoenbr. v. 1. 38. t. 74. Narciſſus indicus ſphæricus; Moriſ. ſect. 4. t. 10. f. 35. N. indicus, flore liliaceo, ſphæricus; Ferrar. Fl. 125. t. 129. 131. 133.)—Leaves tongue-ſhaped, depreſſed, ſmooth. Flowers ſomewhat irregular, with aſcending ſtamens and ſtyle.—Native of the Cape of Good Hope. The *bulb* is not uncommon in our ſtoves, but we never heard of its flowering. That deſirable event however happened in the imperial garden at Schoenbrun, and has enabled the late profeſſor Jacquin to adorn his Hort. Schoenbr. with one of the moſt ſplendid botanical figures extant. This is perhaps the moſt ſtately of its ſtately tribe. The large ſcaly *bulb* bears five or ſix obovate-oblong, dark green *leaves*, lying over each other in two ranks, and uſually a foot long, near three inches broad. *Flower-ſtalk* earlier than the leaves, erect, round, a foot high, crowned with a broad *ſheath*, of two coloured valves, unequal in breadth, accompanying a very large *umbel*, of about thirty-five rays, ſpreading in all directions, each ſix inches long, bearing a ſolitary erect *flower*. All the ſtalks are more or leſs of a blood red. *Corolla* richly varied with crimſon and a kind of orange ſcarlet; its ſegments an inch and a half long, acute, converging into a tubular form at the baſe, ſpreading in the upper part, and reflexed. *Capſule* two to four inches long, and one broad, pale brown, ſhining; tapering very much at the baſe.

2. B. *marginata*. Red-edged Brunſvigia. Ait. n. 2. (Amaryllis marginata; Jacq. Hort. Schoenbr. v. 1. 34. t. 65. Willd. Sp. Pl. v. 2. 59.)—Leaves tongue-ſhaped, depreſſed, ſmooth, with cartilaginous edges. Flowers regular, with erect ſtamens and ſtyle.—Native of the Cape, from whence Mr. Maſſon ſent bulbs in 1795. *Leaves* rather narrower than the former, with a hard red border. *Umbel* erect, denſe, of many ſcarlet *flowers*, with upright *ſtamens* and *ſtyle*, riſing high above the reflexed *corolla*. *Anthers* purple.

3. B. *Radula*. Raſp-leaved Brunſvigia. Ait. n. 3. (Amaryllis Radula; Jacq. Hort. Schoenbr. v. 1. 35. t. 68. Willd. Sp. Pl. v. 2. 61.)—Leaves elliptical, depreſſed, rough with briſtly tubercles. Flowers ringent, with declining ſtamens and ſtyle.—From the ſame country, introduced by Mr. Maſſon, in 1790. *Leaves* two, ſcarcely more, three inches long, rough-edged, covered on the upper ſide with briſtle-pointed warts. *Stalks* three or four inches high, ſometimes in pairs. *Umbels* of only four or five pink and white *flowers*, five of whoſe ſegments are directed upwards, the fifth deflexed, along with the *ſtamens* and *ſtyle*.

4. B. *ſtriata*. Striated Brunſvigia. Ait. n. 4. (Amaryllis ſtriata; Jacq. Hort. Schoenbr. v. 1. 36. t. 70. Willd. Sp. Pl. v. 2. 61.)—Leaves elliptic-obovate, erect; denſely ſtriated beneath. Flowers nearly regular, with declining ſtamens and ſtyle.—From the ſame country as all the reſt, introduced by Mr. Maſſon in 1795. Larger than the laſt, and diſtinguiſhed by its upright red-edged *leaves*. *Umbel* of many *flowers*, whoſe outſide is roſe-coloured, inner paler, or whitiſh, the ſegments narrow, nearly or quite regular.

BRUNSWICK, in Virginia, l. 3, *r.* 15,411 inhabitants, including 9368 ſlaves; l. 5, *r.* 4378; l. 6, *r.* 2254; l. 19, add—containing 143 inhabitants.

Brunswick, *North*, contains 3980 inhabitants.

Brunswick, *South*, contains 2332 inhabitants.

Brunswick, in Maine, l. 5, *r.* 2682.

Brunswick, a townſhip in Berks county, in Pennſylvania, having 1770 inhabitants.

BRUSH Creek, a townſhip of Ohio, in the county of Highland, containing 551 inhabitants.

BRUSSELS, *Roger of*, *r.* Bruges, *Roger of.*

BRUTON, col. 2, l. 2, *r.* In 1811, the pariſh of Bruton contained 353 houſes, and 1536 perſons; 658 being males, and 878 females.

BRUTUS, l. 5, *r.* Cayuga. Subjoin—This is an excellent townſhip of Cayuga county, about 10 miles long, N. and S., by 5 to 6½ E. and W. The ſoil is rich and fertile, and well watered: it contains about 330 families, and 182 ſenatorial electors. It was erected in 1802, from the N.E. part of Aurelius. In 1810 the population was 2030, and the taxable property amounted to 84,514 dollars.

BRYAN, l. 3, add—containing 2827 inhabitants, of whom 2264 are ſlaves.

BUBALIS. See Antelope.

BUBASTUS, *dele* ſee Didyma.

BUCCO, col. 2, l. 1, after cinereus, *dele* which ſee, and add—Theſe are all inhabitants of Africa, and the warmer parts of Aſia and America. Their head is very long, their bills ſtrong and nearly ſtraight, almoſt covered with briſtles; tail-feathers generally ten. They are a ſolitary ſtupid race, living in ſequeſtered foreſts, and ſubſiſting principally on inſects.

BUCEROS. Add—Several other ſpecies are mentioned by Dr. Shaw.

BUCHANAN, l. 7, inſert—in 1520. Col. 3, l. 9, inſert—in 1532; l. 10, *r.* Caſſilis; l. 15, *r.* 1533; l. 18—this happened probably in the year 1537; l. 43, after ſaid—(but without ſufficient evidence); l. *ult.* but one, inſert after admired—The next in merit is the 137th, in elegiac verſe. Col. 3, l. 19, after country, inſert—In 1562, he officiated as claſſical tutor to the queen, who was then in the 20th year of her age, and who many afternoons peruſed with him a portion of Livy. About the year 1566, &c.: l. 30, after York, inſert—in 1568; l. 35, after VI., inſert—

—in 1570, when the young prince was only four years of age; l. 43, after reading, inſert—when the counteſs of Mar, hearing him wailing, hurried and took him up in her arms, reproaching the tutor for having laid his hand upon the Lord's anointed. Buchanan is ſaid to have replied in terms that contained a very unceremonious antitheſis relative to the part which had received the chaſtiſement. Col. 4, l. 9, after motives, inſert—and it likewiſe evinces his anxiety for forming a patriot king; l. 15, for 5th of December *r.* 28th of September; l. 23, after Edinburgh—in the cemetery of the Grey Friars. Col. 5, l. 10, after unequal, add—although he maintains the unſcientific notion that the earth does not revolve round the ſun, he ſupports his opinion by arguments which muſt at leaſt be allowed to be plauſible; l. 9, from the bottom, after great man, inſert—neglected by his ungrateful country, which never afforded his grave the common tribute of a monumental ſtone. Subjoin—See Irving's Life of Buchanan.

BUCKENHAM. In 1811, the pariſh of New Buckenham contained 127 houſes, and 656 inhabitants; 315 being males, and 341 females. The pariſh of Old Buckenham contained 200 houſes, and 1024 perſons; 491 being males, and 533 females.

BUCKINGHAM. In 1811, the borough of Buckingham contained 572 houſes, and 2987 perſons; 1313 being males, and 1674 females: 232 families employed in agriculture, and 466 in trade and manufactures.

Buckingham, a county of America, l. 3 and 4, for 1790 *r.* 1810; for 9779 *r.* 20,059; for 4168 *r.* 11,675.—Alſo, a townſhip of Bucks county, in Pennſylvania, having 1715 inhabitants.—Alſo, a townſhip in Wayne county, in the ſame ſtate, having 153 inhabitants.

BUCKINGHAMSHIRE, l. 19 and 20, *r.* In 1811, this county contained 21,929 houſes, and 117,650 perſons; 13,933 families employed in agriculture, and 8424 in trade and manufactures.

BUCKLAND, l. 2, for 718 *r.* 1097.

BUCKS, l. 5, for 25,401 *r.* 32,371; for 114 *r.* 11; l. 7, for 27 *r.* 29.

BUCKSTOWN, a townſhip of Roſs county, in the diſtrict of Ohio, containing 781 inhabitants.

Buckstown, l. 3, for 316 *r.* 4403.

BUENA, in *Botany*, Cavan. Ic. v. 6. 49. t. 571, is a genus of the natural order of *Rubiaceæ*, ſo named by that author, in honour of Dr. Coſmo Bueno, an eminent writer on the natural hiſtory and topography of Peru. There is no certain proof of this genus being diſtinct from what Ruiz and Pavon had already called *Gonzalagunia*. We are equally unacquainted with both.

BUFFALOE. Add—*Eaſt Buffaloe* contains 2869, and *Weſt Buffaloe* 2523 inhabitants.—Alſo, a townſhip of Pennſylvania, in Waſhington county, having 1416 inhabitants.—Alſo, a townſhip in Armſtrong county, in the ſame ſtate, having 1150 inhabitants.—Alſo, a townſhip of Butler county, with 375 inhabitants.—Alſo, a townſhip of Ohio, in the county of Guernſey, having 285 inhabitants.—Alſo, a townſhip of Ohio, in the county of Jefferſon, having 696 inhabitants.

BUFFY *Coat of the Blood, Chemical Properties of.* See Blood, ſection *Fibrin.*

BUILDING, col. 10, l. 47, for 42d *r.* 14th.

BUILTH, or Buallt, derived from *Bu*, an ox, and *allt*, an eminence, *i. e.* a wooded eminence, bearing reference to the adjacent country. Col. 2, l. 13, for two weekly *r.* one good market on Monday; for three *r.* five; after contains, *r.* by returns of 1811, 182 houſes, and 815 inhabitants; 384 being males, and 431 females. The hundred of Builth included 1086 houſes, and 5788 perſons; 2698 being males, and 3090 females: 833 employed in agriculture, and 284 in trade, manufactures, and handicraft.

BULLET, a county of Kentucky, having 4311 inhabitants, including 976 ſlaves.

BULLOCK, a county of Georgia, in America, containing 2305 inhabitants, 420 being ſlaves.

BULLSKIN. Add—containing 1439 inhabitants.

BUMCOMBE, a county of North Carolina, containing 9277 inhabitants, of whom 695 are ſlaves.

BUMEN. See Regan.

BUMGALOW, a term uſed in Bengal for a kind of country-houſe erected by Europeans.

BUNIUM, col. 2, l. 20, for They *r.* Ray.

BUPHAGA, l. 6, for legs *r.* feet.

BUPRESTIS. At the cloſe, *dele* which ſee reſpectively; and add—The *B. gigantea* is the largeſt of this genus hitherto diſcovered, being two and a half inches long; a native of India, China, and many other parts of Aſia; and found alſo in South America. The European inſects of this genus fall far ſhort of the Indian or American ſpecies both in ſize and ſplendour.

BURCHARDIA, in *Botany*, is thus named by Mr. Brown, in commemoration of Dr. John Henry Burchard, author of a letter to Leibnitz, in 1702, in which the ſoundeſt principles of botany are developed; the excluſive importance of the parts of fructification, in forming characters, are eſpecially inſiſted on, and the claſſification of Linnæus, by the ſtamens and piſtils, is anticipated. Heiſter publiſhed this letter, for the firſt time, in 1750, probably to depreciate the honour of Linnæus. But as the latter could have heard nothing of Burchard's ſentiments, he has all the merit of originality, and the attempt to deprive him of this credit, ſerves only to ſhew the high eſtimation in which his performance was held. Heiſter has named a plant *Burchardia*, but this is *Callicarpa* of Linnæus, ſo called many years before.—Brown Prodr. Nov. Holl. v. 1. 272.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Melanthaceæ*, Br.

Eſſ. Ch. Petals ſix, equal, ſpreading, with a nectariferous cell in the claw of each, deciduous. Stamens inſerted into the baſe of the petals. Anthers peltate, poſterior. Germen triangular. Stigmas acute. Capſule of three ſeparable boat-like cells, burſting at the inner edge. Seeds numerous, in two rows.

1. B. *umbellata*. Umbellate Burchardia. Br. n. 1.—Native of Port Jackſon, New South Wales. *Root* of ſeveral thick cluſtered fibres. *Herb* ſmooth. *Stem* ſimple, leafy. *Leaves* linear, with entire ſheaths; the upper one half embracing the ſtem. *Umbel* ſimple; its ſtalks without a joint, and with a ſingle *bractea* at the baſe of each. *Flowers* white. *Anthers* purple. *Brown.*

BURGH *upon the Sands*, l. 4, *r.* as he was preparing for an expedition againſt the Scots. Hume.

BURICH. For Buderich *r.* Budelich.

BURKE, in *Geography*, l. 2, *r.* 11,007; l. 3, *r.* 1433; l. 5, *r.* 10,747 and 4691; l. 9, add—containing 460 inhabitants.

BURKSVILLE, a town of Kentucky, in Cumberland county, containing 106 inhabitants, of whom 20 are ſlaves.

BURLINGTON, l. 6 and 7, for 18,095 *r.* 24,979, and for 227 *r.* 93; add—It contains 12 townſhips; l. 13, *r.* 2419, and 4 ſlaves.

Burlington, a townſhip of America, &c. l. 3, add—This townſhip is well watered, and abounds with mill-ſeats; its ſituation is elevated, and the air ſalubrious: the population is 3196; the ſenatorial electors 294, and the taxable property, in 1810, amounted to 178,783 dollars. It has two Baptiſt meeting-houſes, one for Congregationaliſts, and one for Quakers. The inhabitants are principally farmers.

Burlington, a town of Maſſachuſetts, in Middleſex county, containing 471 inhabitants.—Alſo, a town of Hartford county, in Connecticut, having 1467 inhabitants.—Alſo, a townſhip of Lycoming county, in Pennſylvania, having 661 inhabitants.

BURNING, *Extraordinary Caſes of.* Col. 3, l. 11, for of the head *r.* and the head; l. 5, for 332 *r.* 1690.

BURNLEY, l. *ult.* after contains, add—by the return of 1811, 807 houſes, and 4368 inhabitants; 2129 being males, and 2239 females.

BURRILLVILLE, a town of Rhode iſland, in the county of Providence, containing 1834 inhabitants.

BURSARIA, in *Botany*, ſo denominated by Cavanilles, from *burſa*, a purſe; becauſe the ſeed-veſſel reſembles that of the common weed called Shepherd's-purſe.—Cavan. Ic. v. 4. 30. Ait. Hort. Kew. v. 2. 36.—Claſs and order, *Pentandria Monogynia.* Nat. Ord.........

Eſſ. Ch. Petals five, inſerted into the receptacle. Capſule ſuperior, compreſſed, of one cell, with four valves. Seeds two, winged.

1. B. *ſpinoſa.* Thorny Burſaria. Cavan. Ic. v. 4. 30. t. 350. Ait. n. 1. (Itea ſpinoſa; Andr. Repoſ. t. 314.)—Native of New South Wales; firſt raiſed in 1793, by the late marchioneſs of Rockingham. This is a thorny, buſhy, green-houſe ſhrub, flowering from Auguſt to December. The *leaves* are ſcattered, ſeſſile, narrow-wedgeſhaped, emarginate, ſmooth, entire. *Flowers* numerous, white, ſmall, in copious, aggregate, terminal cluſters, of conſiderable elegance.

BURTON *in Kendal*, l. *ult.* after contains, add—by the return of 1811, 94 houſes, and 574 perſons; 274 being males, and 300 females. There is another townſhip, named Holme, in the ſame pariſh, containing 43 houſes, and 283 perſons; 137 being males, and 146 females.

Burton-*upon-Trent*, l. 4 from the cloſe, add—By the return of 1811, contains 785 houſes, and 3979 perſons; 1844 being males, and 2135 females.

Burton, l. 1, for Grafton *r.* Strafford; for 143 *r.* 194. Add—Alſo, a townſhip of Ohio, in the county of Geauga, having 517 inhabitants.

BURTONIA, in *Botany*, ſo named by Mr. Brown, in memory of the late Mr. David Burton, a celebrated collector of plants for the Kew garden, under the patronage of ſir Joſeph Banks. He died after a ſhort ſtay in New South Wales; but Mr. Aiton's work evinces the great diligence of this unfortunate traveller. Mr. Saliſbury's original *Burtonia* proved an Hibbertia. (See that article.)—Brown in Ait. Hort. Kew. v. 3. 12.—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx deeply five-cleft. Corolla papilionaceous, deciduous; petals nearly of equal length. Germen two-ſeeded. Style awl-ſhaped, dilated at the baſe. Stigma obtuſe, beardleſs. Lgeume roundiſh, ſomewhat tumid. Seeds without any appendage. *Br.*

1. B. *ſcabra.* Rough-leaved Burtonia. Ait. n. 1. (Gompholobium ſcabrum; Sm. Tr. of Linn. Soc. v. 9. 250.)—Leaves ternate. Calyx ſmooth. Style bearded beyond the middle.—Found by Mr. Menzies, on the ſouth-weſt coaſt of New Holland; and ſent to Kew by Mr. Good, in 1803. A green-houſe ſhrub, flowering from May to July. The *leaves* are ternate, ſeſſile, linear, revolute, rough to the touch. *Flowers* about the ends of the branches, axillary, dull purple when dried. There is no account of their natural colour. We do not perceive any important difference in character, and there is none in habit, between this plant and Gompholobium (ſee that article); but the unpubliſhed ſpecies may be more diſtinct.

BURY, l. 10, after Peele, add—created a baronet in 1800, who, about the year 1773; l. 15, add—In the courſe of his proſperity he purchaſed a ſeat at Chamber-hall, in the neighbourhood, which he afterwards ſold; l. 18, for Bolton in Yorkſhire *r.* Bolton-le-Moors in Lancaſhire; l. 23, *r.* the wheel or fly-ſhuttle, invented about one hundred years ago by Mr. John Kay, who, on account of the perſecution he ſuffered on this account, was obliged to remove to France, where he died; and the card-making machine, for making ſeveral cards at once, invented by Mr. Robert Kay, the ſon of the former, who died about the year 1804. This machine ſtraightens, &c.; l. 29, after ſhaft, add—and touching neither the wire nor the leather. The woollen manufactures, conſiſting of flannels, blankets, and a variety of other articles, were eſtabliſhed in this town long before the introduction of the cotton trade, and contributed in no ſmall degree to its proſperity; l. 47, *r.* in 1811, the number of houſes in this townſhip was 1562, and the number of inhabitants was 8762; 4219 being males, and 4543 females. The pariſh of Bury includes ſix townſhips, *viz.* Bury, Elton, Heap, Higher and Lower Tottington, and Walmerſley.

Bury *St. Edmund's*, col. 3, l. 3, *r.* In 1811 this borough had 1474 houſes, and 7986 inhabitants; 3539 being males, and 4447 females: 164 families employed in agriculture, and 966 in trade and manufactures.

BUSHEL. Add—See Coal-*Buſhel* and Weight.

BUTE. The ſhire of Bute, by the parliamentary return in 1811, contains 2047 houſes, and 12,033 perſons; 5545 being males, and 6488 females: 1216 families employed in agriculture, and 530 in trade, manufactures, and handicraft.

BUTLER, *r.* Butter, William.

Butler, in *Geography*, a county of Pennſylvania, containing 7346 inhabitants.—Alſo, a townſhip of this county, having 458 inhabitants.—Alſo, a townſhip of Ohio, in the county of Columbiana, having 316 inhabitants.—Alſo, a county of Kentucky, containing 2181 inhabitants, of whom 274 are ſlaves.

BUTTER, *Chemical Properties of.* See Milk.

BUXTON. In 1811 the townſhip contained 180 houſes, and 934 inhabitants; 447 being males, and 487 females.

Buxton, a townſhip of America, l. 5, *r.* 2324.

BYRAM, a town of New Jerſey, in the county of Eſſex, having 1224 inhabitants.

C.

CABAL, l. *ult.* after Shaftſbury, inſert—lord Aſhley.

CABARRAS, in *Geography*, a county of N. Carolina, with 6150 inhabitants, of whom 1234 are ſlaves.

CABELL, a county of Virginia, with 2717 inhabitants, of whom 221 are ſlaves.

CABINET, col. 2, l. 47, *r.* whether they be.

CABOS. Add—The former contains 974, and the latter 1003 inhabitants.

Cabos, in *Geography*, a town of Caledonia, in the diſtrict of Vermont, having 886 inhabitants.

CACHOLONG. See Mineralogy, *Addenda*.

CADIZ, in *Geography*, a town of Jefferſon county, in Ohio, with 1374 inhabitants.

CADMIUM, in *Chemiſtry*, the name of a metal. This metal was diſcovered by M. Stromeyer in the autumn of 1817, while he was officially examining the apothecaries' ſhops in Hanover.

Cadmium reſembles tin in its colour, luſtre, ſoftneſs, ductility, and the ſound it produces when bent. Its ſp. gr. is 8.6359. It melts and volatilizes at a temperature a little lower than zinc. It preſerves its ſplendour in the air, but by heat it is changed into a yellow oxyd, which is not volatile, and which is very eaſily reduced. This oxyd does not colour borax; it diſſolves very readily in acids, and forms colourleſs ſalts, from which it is precipitated white by alkalies. The hydroſulphuric acid (ſolution of ſulphuretted hydrogen) precipitates it yellow, like arſenic. Zinc precipitates it in the metallic ſtate.

This is all which at preſent we know of this metal, except that it was firſt obtained from the ſublimate which concretes in the chimnies of the zinc furnaces of Saxony; and, conſequently, that it exiſts in the ores of zinc there employed. We underſtand alſo that it has been detected in ſome ſimilar ores of zinc in this country.

CAERFILLY, &c. col. 2, l. 49, add—It has a market on Thurſday, and ſix fairs in the year. By the parliamentary returns of 1811, the number of houſes in this hamlet of Eglwyſilan pariſh was 196, and of inhabitants 1013, *viz.* 462 males, and 551 females.

CAERLEON, col. 3, l. 18 from bottom, *r.* The town conſiſts, by the return of 1811, of 170 houſes, and 593 inhabitants.

CAERMARTHEN, col. 3, l. 17, after it contains, add—by the parliamentary returns in 1811, 1189 houſes, and 7275 inhabitants. The charter allows three markets, *viz.* on Wedneſday, Friday, and Saturday, but the latter is the only one numerouſly attended by the farmers. It has four fairs in the year, and, &c.

CAERMARTHENSHIRE, l. 7,—others reckon its length 50, and breadth 25 miles. Cary eſtimates its ſuperficial contents at 512,000 acres; l. 23, The Towy is much celebrated for its fiſh; its ſalmon is highly eſteemed; as is alſo its ſewin. The other rivers, not above enumerated, are, the Llougher, Lloghor, or Lycher, which ſeparates this county for ſome diſtance from Glamorganſhire, receiving in its courſe the Amman, which united ſtreams diſcharge themſelves into Caermarthen bay, by a wide eſtuary called the Bury river, navigable for ſmall veſſels as high as the town of Lloghor. Another river, denominated Gwendraeth vawr, or great, has its ſource in a lake at the upper extremity of Mynudd mawr, and joins the ſea below Kidwelly: this is joined by Gwendraeth vaeh, or the leſs. Other rivers are the Pycottwr, which falls into the Dethia, and the Camdwer, which augments the Towy. The river Bran unites with the Towy below Llandovery; the other tributary ſtreams are, the Sawddy, proceeding from a lake in the Black mountain, and the Cennen, which join the Towy, as well as the Cothy and Gwilly, already mentioned. The Corwen and the Taf unite at the village of St. Clears, and run into the Caermarthen bay at Laugharne. The lakes of this county are Llyn Tagwyn, or pwll yr Eſcob, or the Biſhop's pool, ſituated at the northern extremity, and on the higheſt elevation of Mynudd mawr, an extenſive bleak common, W. of Llandybie, and occupying a ſurface about half a mile in diameter. Another lake is ſituated on the Black mountain, at the foot of the almoſt perpendicular declivity of the Caermarthenſhire Fan, or beacon, and extending in form of a parallelogram about one mile in its greateſt length. The other lakes are two, which communicate by a ſtrait, and appear like one, ſituated on the banks of the river Cothy, and near the ruins of the abbey of Talley. The mountains are part of Plinlimmon, and on the E. the long chain called the Black mountain, the ſummit of which, called y Fan, or Ban Sir Gaer, the Caermarthenſhire beacon, is the higheſt ground in the county. The height of this peak has been eſtimated at about 2600 feet above the level of the ſea. It is ſeparated by a chaſm from another eminence, of ſuperior altitude, in Brecknockſhire. Both are denominated Bannau Sir Gaer, or Caermarthenſhire beacons, in the plural, to diſtinguiſh them from thoſe called Bannau Brecheinog, or the Brecknockſhire beacons. Another mountain lies on the borders of Glamorganſhire, called Bettws mountain; it is a chain diverging from the Black mountain, at the upper end of the valley of Tawe, and ſtretching along the eaſtern ſhore of the Amman and Lloghor nearly to the ſea:—l. 37—The number of pariſhes has been variouſly eſtimated; ſome having reckoned them at 76, others at 85, and others at 78, beſides 12 chapelries. The number of market-towns is ſtated at eight. This county, by the laſt return in 1811, contained 14,856 houſes, and 77,217 inhabitants; 9878 families employed in agriculture, and 5256 in trade and manufactures.

CAERNARVON. Add—In 1811 the pariſh of Llanbeblig, in which it is ſituated, contained 1000 houſes, and 4595 perſons; *viz.* 1982 males, and 2613 females.

CAERNARVON, a townſhip of America, &c. l. 2, add—containing 1084 inhabitants.—Alſo, a townſhip of Berks county, in Pennſylvania, having 723 inhabitants.

CAERNARVONSHIRE, l. 17, *r.* In 1811 this county contained 9369 houſes, and 49,336 perſons; *viz.* 23,379 males, and 25,957 females: 6667 families employed in agriculture, and 2687 in trade and manufactures.

CAERWENT. Add—The pariſh of Caerwent, in 1811, contained 60 houſes, and 375 perſons; *viz.* 206 males, and 169 females.

CAERWYS. Add—In 1811, the pariſh of Caerwys contained 209 houſes, and 863 perſons; *viz.* 416 males, and 447 females.

CÆSARIA, *r.* COHAWZY.

CÆSIA, in *Botany*, dedicated by Mr. Brown to the memory of Frederico Cæſio, a young Roman nobleman, illuſtrious for the patronage and cultivation of ſcience, eſpecially of natural hiſtory, who founded the academy of the *Lyncæi* at Rome in 1603. This was the firſt inſtitution of the kind, and is celebrated in various authors of that day. The great Galileo was among its members, as well as that indefatigable botaniſt Fabio Colonna, better known by his Latin appellation, Columna. This inſtitution died with its noble founder, in 1630; but the ſcientific aſſociations of Italy, and thence of all Europe, have ſprung from its aſhes. — Brown Prodr. Nov. Holl. v. 1. 277. — Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Coronariæ*, Linn. *Aſphodeli*, Juſſ. *Aſphodeleæ*, Br.

Eſſ. Ch. Corolla in ſix deep, equal, ſpreading ſegments, deciduous. Filaments beardleſs, contracted at each end. Anthers attached by their cloven baſe. Germen of three cells, with two ſeeds in each. Style thread-ſhaped. Stigma one. Capſule ſcarcely valvular; tumid and lobed at the ſummit; or club-ſhaped. Seeds tumid, with an appendage to the ſcar.

Herbs generally annual, ſmooth. *Root* of cluſtered, thick fibres, or oblong knobs. *Leaves* graſſy. *Cluſters* either divided or ſimple, with aggregate or ſolitary flower-ſtalks, jointed under the corolla. *Flowers* whitiſh, or blue, erect, rarely drooping. *Corolla* becoming ſpiral after flowering, and ſoon falling off entire. *Anthers* yellow.

This genus approaches the *Phalangium* of Juſſieu, but differs abundantly in the ſtructure of the *germen* and *ſeeds*.

1. C. *vittata.* Striped Cæſia. Br. n. 1.—Flowers drooping. Stamens pendulous, with parti-coloured filaments. Cluſters divided or ſimple. Leaves flattiſh. Bulbs faſciculated.—Gathered by Mr. Brown at Port Jackſon, and Van Diemen's land.

2. C. *parviflora.* Small-flowered Cæſia. Br. n. 2.—Flowers erect. Filaments ſimple-coloured. Cluſters panicled. Root fibrous.—From the ſame countries.

3. C. *occidentalis.* Weſt-coaſt Cæſia. Br. n. 3.—Flowers erect. Filaments ſimple-coloured. Cluſters ſcarcely divided. Leaves thread-ſhaped, channelled.—Found by Mr. Brown, in the ſouth-weſt part of New Holland.

4. C. *corymboſa.* Unbranched Cæſia. Br. n. 4.—Common flower-ſtalk radical, unbranched. Corymb of few flowers. Leaves flattiſh.—Native of the ſouth coaſt of New Holland, and of Van Diemen's land.

5. C. *lateriflora.* Lateral-flowered Cæſia. Br. n. 5.—Stem much branched, ſcaly. Flowers lateral, drooping, moſtly ſolitary. Capſule club-ſhaped, pendulous, generally ſingle-ſeeded.—Gathered by Mr. Brown, in the tropical part of New Holland. The *filaments* are roughiſh, and the habit, infloreſcence, and capſule differ greatly from all the other ſpecies. *Brown.*

CAFFISE, or CAHIZ, in *Commerce*, a meaſure for corn in Spain, containing 12 fanegas. See FANEGA.

CAFFISO, a meaſure for oil in Sicily, weighing 12½ rotoli, or about 24 lbs. avoirdupois.

CAHOKIA, in *Geography*, a townſhip of St. Clair county, in the Illinois country, with 711 inhabitants.

CAJEPUT OIL, l. 2,—leaves of a ſpecies of the Melaleuca, a tree, &c.

CAITHNESS. By the parliamentary returns of 1811, the ſhire of Caithneſs contained 4301 houſes, and 23,419 perſons; *viz.* 10,608 males, and 12,811 females: 3270 families employed in agriculture, and 838 in trade and manufactures.

CAKILE, in *Botany*, an Arabic name, uſed by Serapio.—Tourn. Cor. 43. t. 483. Gærtn. v. 2. 287. t. 141. Willd. Sp. Pl. v. 3. 416. Brown in Ait. Hort. Kew. v. 4. 71.—Claſs and order, *Tetradynamia Siliculoſa.* Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch of two ſingle-ſeeded joints; ſeed of the uppermoſt erect, ſeſſile; of the lower pendulous.

Obſ. The lower joint is occaſionally abortive.

This genus is the real *Bunias* of Linnæus, nor can we ſee why that name ſhould be changed for the barbarous *Cakile*, though we agree with Mr. Brown in removing hither ſeveral ſpecies of *Myagrum*, as in the Prodr. Fl. Græc.

CALABOSO, in *Geography*, a town of South America, in Venezuela, ſituated between two rivers, *viz.* Guarico to the W. and Orituco to the E. which unite their waters four or five leagues below the town. It is ſituated in a hot climate, in N. lat. 8° 40′, 52 leagues S. of Caraccas, and at about the ſame diſtance N. of the Oronoko, and in the year 1804 its population amounted to 4800 perſons.

CALADENIA, in *Botany*, from καλος, *handſome*, and αδην, *a gland*, alluding to the beautiful rows of glands on the lip.—Brown Prodr. Nov. Holl. v. 1. 323. Ait. Hort. Kew. v. 5. 203. (Arethuſa; Sm. Exot. Bot. v. 2. t. 104.) — Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Upper calyx-leaf rather flattened; two lower, with the petals, deflexed under the lip, flat; all glandular at the back. Lip ſomewhat ſtalked, with rows of glands on its diſk. Style winged. Anther a moveable lid. Pollen powdery.

An elegant tribe of ſmall herbaceous plants, clothed with glandular, intermixed with ſimple, hairs. *Bulbs* undivided, terminating the deſcending baſe of the ſtem, incloſed in a ſcaly coat. *Leaf* ſolitary, nearly radical, moſtly linear, encloſed by a ſheath at the baſe. *Stalk* bearing one *bractea*, beſides thoſe immediately accompanying the one, two, or three inodorous, variouſly-coloured, *flowers.* *Anther* moſt frequently pointed.

Mr. Brown defines thirteen genuine ſpecies, from various parts of New Holland. Theſe have, as it were, ringent *flowers*, the *petals* nearly equal to the two lower *calyx-leaves*, and forming with them an under lip, while the upper conſiſts of the upper leaf of the *calyx*, not quite ſo flat as the reſt. To theſe are ſubjoined two ſpecies, whoſe *petals* are very long, narrow, and directed upwards; and to theſe, as poſſibly a diſtinct genus, the name of *Leptoceras* is given.

Of the true *Caladeniæ*, the firſt only, *C. alba*, has been brought alive to England, by Mr. Geo. Caley in 1810, and is marked by Mr. Aiton as a green-houſe plant, flowering in July and Auguſt.—The fifth ſpecies, *C. alata*, is probably *Arethuſa catenata*, Sm. Exot. Bot. v. 2. 89. t. 104.

CALADIUM, a name uſed by Rumphius, for ſome kinds of *Arum*, and therefore retained by Ventenat for this genus, which is extracted from that. — Venten. Jard. de Cels, 30. Brown Prodr. Nov. Holl. v. 1. 336. Willd. Sp. Pl. v. 4. 487. Ait. Hort. Kew. v. 5. 310.—Claſs and order, *Monoecia Polyandria*. Nat. Ord. *Piperitæ*, Linn. *Aroideæ*, Juſſ. Br.

Eſſ. Ch. Sheath of one leaf; convolute at the baſe. Spadix covered at the ſummit with peltate many-celled anthers; glandular in the middle; covered with germens at the baſe. Stigma umbilicated. Berries of one cell, with many ſeeds.

This genus, differing from *Arum* chiefly in the *ſpadix* being covered in all its upper part with *ſtamens*, except, in ſome inſtances, a ſmall naked point, is divided like that, (ſee Arum,) into three ſections, ſimilarly diſtinguiſhed. Willdenow has fifteen ſpecies in all.

Sect. 1. *Stem none. Leaves compound.* One ſpecies.

1. C. *helleborifolium.* Hellebore-leaved Caladium. Willd. n. 1. Ait. n. 1. (Arum helleborifolium; Jacq. Coll. v. 3. 217. Ic. Rar. t. 613.)—Leaves radical, pedate, entire. —Native of woods in Martinico and the Caraccas. The *flowers* are greeniſh-white, on radical ſtalks. *Leaves* a foot in breadth, of eleven elliptic, acute *leaflets*.

Sect. 2. *Stem none. Leaves ſimple.* Six ſpecies, to which we add one.

2. C. *pinnatifidum.* Pinnatifid Caladium. Willd. n. 2. (Arum pinnatifidum; Jacq. Hort. Schoenbr. v. 2. 31. t. 187.)—Stem none. Leaves pinnatifid.—Native of woods at the Caraccas, where this large ſpecies grows on rocks and trees. The *leaves* are two feet long, and nearly as broad, deeply pinnatifid, with great red ribs. *Flowers* almoſt ſeſſile; blood-red in their lower half; white, like the *ſpadix*, above. The reſt are,

3. C. *ovatum.* Ovate Caladium. (Arum ovatum; ſee our n. 22. Linn. Sp. Pl. 1371. Karin pola; Rheede H. Mal. v. 11. 45. t. 23.)

4. C. *bicolor.* Two-coloured Caladium. Vent. Cels, t. 30. Ait. n. 2. (A. bicolor; n. 10. Curt. Mag. t. 820. Jacq. Hort. Schoenbr. v. 2. 30. t. 186.)—This was long miſtaken for *Arum pictum*, Linn. Suppl. 410.

5. C. *nymphæifolium.* Water-lily-leaved Caladium. Willd. n. 5. Ait. n. 3. (Weli-ila; Rheede H. Mal. v. 11. 43. t. 22.) — Stem none. Leaves peltate, ovate-arrowſhaped. Sheath cylindrical, with a lanceolate point, ſhorter than the ſpadix.—Native of the Eaſt Indies.

6. C. *eſculentum.* Eatable Caladium, or Indian Kale. Ait. n. 4. (Arum eſculentum; n. 11. A. minus, nymphææ foliis, eſculentum; Sloane Jam. v. 1. 167. t. 106. f. 1.)

7. C. *acre.* Acrid Caladium. Br. n. 1.—Stem none. Leaves peltate, heart-ſhaped. Spadix obtuſe, with a very ſhort, occaſional, naked point. Sheath lanceolate, twice as long as the ſpadix.—Gathered in the tropical part of New Holland by Mr. Brown, who remarks that it ſcarcely differs, except in having *anthers* to the ſummit of the *ſpadix*, from the laſt, which has a manifeſt acute naked point, and he does not ſee how the latter is diſtinguiſhed from *Arum Colocaſia*.

8. C. *ſagittifolium.* Arrow-leaved Caladium. Willd. n. 7. Ait. n. 5. (Arum ſagittifolium; n. 16. Jacq. Hort. Vind. v. 2. 73. t. 157.)

Sect. 3. *With leafy ſtems.* Eight ſpecies.

9. C. *ſcandens.* Climbing Caladium. Willd. n. 8. ("Culcaſia ſcandens; Beauv. Fl. Ov. et Ben. 4. t. 3.") —Climbing. Leaves ovate-oblong, pointed. Spadix longer than the hooded ſpatha.—Native of Benin, on the coaſt of Africa.

10. C. *ſeguinum.* Dumb-Cane Caladium. Willd. n. 9. Ait. n. 6. (Arum ſeguinum; n. 26. Linn. Sp. Pl. 1371.)

11. C. *xanthorrhizon.* Yellow-rooted Caladium. Willd. n. 10. (Arum xanthorrhizon; Jacq. Hort. Schoenbr. v. 2. 32. t. 188.)—Stem erect. Leaves heart-arrowſhaped. Sheath hooded, contracted in the middle, longer than the ſpadix.

12. C. *grandifolium.* Great-leaved Caladium. Willd. n. 11. Ait. n. 7. (Arum grandifolium; Jacq. Hort. Schoenbr. v. 2. 32. t. 189.) — Stem taking root. Leaves heart-arrowſhaped. Spatha with an ovate hood, not longer than the ſpadix.—On rocks and trees at the Caraccas.

13. C. *arboreſcens.* Tree Caladium. Willd. n. 12. Ait. n. 8. (Arum arboreſcens; n. 25. Linn. Sp. Pl. 1371.)

14. C. *lacerum.* Jagged Caladium. Willd. n. 13.— "Stem taking root. Leaves heart-ſhaped, ſinuated."— Paraſitical on trees at the Caraccas. Sent by Jacquin, under the above name, to Willdenow.

15. C. *tripartitum.* Three-leaved Caladium. Willd. n. 14. (Arum tripartitum; Jacq. Hort. Schoenbr. v. 2. 33. t. 190.)—Stem taking root. Leaves ternate. Footſtalks naked. Spadix the length of the ovate-hooded ſheath. —From the Caraccas.

16. C. *auritum.* Ear-leaved Caladium. Willd. n. 15. Ait. n. 9. (A. auritum; n. 29. Linn. Sp. Pl. 1371. Jacq. Hort. Schoenbr. v. 2. 33. t. 191.

CALAIS, l. 3, for 43 *r.* 41, a town of Waſhington county, in the diſtrict of Maine, which by the cenſus of 1810 contained 372 inhabitants.—Alſo, a town of Caledonia county, in Vermont, containing 841 inhabitants.

CALCIUM, in *Chemiſtry*, the metallic baſis of lime. See Lime.

CALDARA DA CARAVAGGIO, Polidoro, in *Biography*, an eminent painter, was born in the Milaneſe, and from the humble ſtation of a labourer became an aſſiſtant of Raphael in the works of the Vatican, and at length acquired unrivalled celebrity in his imitation of the antique baſſo-relievos, which he executed in chiaro-oſcuro. His ſtyle was in ſo peculiar a ſenſe his own, that, having formed it, it alſo periſhed with him. His deſign was without manner, compact, and correct. He had the art of tranſporting himſelf, ſays his biographer, into the times of which he repreſented, the tranſactions, the coſtume and rites, ſo that nothing modern is diſcerned in his works. Numerous as his performances once were at Rome, ſcarcely a fragment remains, if we except the fable of Niobe, left in ruins by time and the rage of barbarians. For theſe loſſes we are compenſated merely by the prints of Cherubino Alberti, and Henry Golzius, who engraved his gods, the Niobe, and the Brennus; and alſo by the etchings of Santes Bartoli and Galleſtruzzi. On occaſion of the pillage of Rome by Bourbon in 1527, Polidoro fled to Naples, where he was patronized by Andrea da Salerno, and gained ſuch reputation that he began to form a ſchool; but declining the proſecution of this undertaking, he removed to Sicily. Having exchanged chiaro-oſcuro for colour, he painted at Meſſina a numerous compoſition of Chriſt led to Calvary, which has been highly extolled by Vaſari; and not long after the completion of this work, he was ſtrangled in bed by a ſervant, who wiſhed to get poſſeſſion of his property. His manner, as a colouriſt, is ſaid to have been dim and pallid. He died in 1543, at the age of 51 years. Pilkington's Dict. of Painters by Fuſeli.

CALDWELL, in *Geography*, a town of Eſſex county, in New Jersey, containing 2235 inhabitants, of whom 54 are ſlaves.—Alſo, a county of Kentucky, with 4268 inhabitants, including 579 ſlaves.

CALECTASIA, in *Botany*, from καλος, *beautiful*, and εκτασις, *an extenſion*, or *dilatation*, alluding to the elegant ſtar-like expanſion of the corolla.—Brown Prodr. Nov. Holl.

v. 1. 263.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Junci*, Juſſ. *Junceæ*, Br.

Eſſ. Ch. Calyx inferior, tubular, ſalver-ſhaped; limb coloured, in ſix deep ſegments. Stamens inſerted into the mouth of the tube. Anthers linear, converging, attached by the baſe. Germen of one cell, with rudiments of three erect ſeeds. Style thread-ſhaped. Stigma ſimple. Capſule membranous, ſingle-ſeeded, encloſed in the hardened tube of the calyx.

1. C. *cyanea*. Blue Calectaſia. Br. n. 1. Bot. of Terra Auſtr. 77. t. 9.—Found by Mr. Brown, on the ſouthern coaſt of New Holland.—A little ſhrub, flowering in December, very much branched, clothed with aceroſe ſheathing *leaves*. *Flowers* ſolitary, at the ends of the ſhort branches. Tube of the *calyx* covered by the ſheaths of the leaves; the limb prominent, like a bright blue ſtar, of ſix equal rays, the three outermoſt downy underneath. This pretty genus is not very nearly allied to any other, though ſomething like *Aphyllanthes*, but widely different in ſtructure, and rather approaching DASYPOGON, hereafter to be deſcribed.

CALEDONIA, a county of Vermont, l. 2, *r.* 23; add—In 1810, it contained 18,750 inhabitants.

CALEIDOSCOPE, or KALEIDOSCOPE, from καλος, *beautiful*, ειδος, *a form*, and σκοπεω, *to ſee*, an inſtrument recently invented by Dr. Brewſter, and for which he has obtained a patent, for the purpoſe of creating and exhibiting an infinite variety of beautiful forms.

The inſtrument in its ſimpleſt form conſiſts of two reflecting planes, inclined to each other, made either of two plates of glaſs, blackened or ſilvered, or two metallic ſurfaces, or the two inner ſurfaces of a ſolid priſm of glaſs, or rock-cryſtal, from which the light ſuffers total reflection. The plates may be of any length; but that which is moſt convenient will be found to be from five to ten or twelve inches, or they may be made only two, three, or four inches long, provided diſtinct viſion is obtained at one end, by placing at the other end an eye-glaſs, whoſe focal length is equal to the length of the reflecting-plane; their breadth ſhould be about eight or nine-tenths of an inch when the length is ſix inches; but it ſhould increaſe with the length, in order to have the aperture of the ſame angular magnitude. Two edges of theſe reflectors, being made perfectly ſtraight, are placed together by a particular contrivance, in ſuch a manner, that their inclination, or the angle which they form, is exactly an even aliquot part of a circle, or a fourth, ſixth, eighth, tenth, twelfth, fourteenth, &c. part of 360°. When the plates are thus fixed in a tube, and the eye placed at one end, as near as can be, in the line of the interſection of the two planes, it will perceive a circular field of view, compoſed of as many luminary ſectors as the number of times the angle formed by the reflectors is contained in 360°. Theſe ſectors, excepting the one ſeen by direct viſion, and conſtituting the angular aperture of the plates, are a ſeries of images of this aperture, formed by ſucceſſive reflections between the inclined reflectors. The images formed by one reflector from each of the plates lie on each ſide of the direct aperture, and are inverted images of that aperture; the next two images formed by two reflections are images not inverted; and ſo on throughout the whole ſeries, every two direct images being ſeparated by an inverted one.

From theſe obſervations, it will be ſeen that the caleidoſcope is not an inſtrument which produces beautiful forms by the *multiplication of ſingle forms;* for it is demonſtrable, that a ſymmetrical and beautiful pattern cannot be produced by the repetition of any ſingle form: and if it were poſſible to conſtruct a multiplying-glaſs with mathematical perfection, and free from all the priſmatic colours, it would be impoſſible to produce with it an arrangement of ſimple forms, marked with ſymmetry and beauty. The principle of the caleidoſcope, therefore, is to produce ſymmetry and beauty by the creation and ſubſequent multiplication of compound forms, each of which is compoſed of a direct and an inverted image of a ſimple form.

The tube which holds the reflecting plates moves in another tube; and upon the outer end of the laſt tube is placed a cell, or cap, for receiving a ſeries of object-plates, containing fragments of differently-coloured glaſs and other ſubſtances placed at random. When one of theſe object-plates is placed in the cell, the inner tube is puſhed in as far as it will go; and the inſtrument being held in one hand, the cell containing the object-plates may be removed round with the other, and the eye of the obſerver being placed at the other will obſerve the irregular maſſes of colour arranged in an infinite variety of forms, mathematically ſymmetrical, and highly pleaſing to the eye.

If the object be put in motion, the combination of images will likewiſe be put in motion, and new forms, perfectly different, but equally ſymmetrical, will ſucceſſively preſent themſelves; ſometimes varying in the centre, ſometimes emerging from it, and ſometimes playing around it in double and oppoſite oſcillations. When the object is tinged with different colours, the moſt beautiful tints are developed in ſucceſſion, and the whole figure delights the eye by the perception of its form, and the brilliancy of its colouring.

The effects, of which we have given a general deſcription, obviouſly ariſe from inverſion and ſubſequent multiplication of every object placed before the angular aperture, or the luminous ſector ſeen by direct viſion, and from the perfect junction of all the reflected images. When the object is moved, the inverted images all ſeem to move in an oppoſite direction, while the images not inverted move in the ſame direction with the object: and from theſe oppoſite motions, as well as from the entrance of new objects, by the revolution or the direct motion of the object-plate, ariſes that endleſs variety of forms which affords ſo much gratification to the eye.

In the preceding form of this inſtrument, the object muſt neceſſarily be placed cloſe to the end of the reflectors; for if it is removed from this poſition, the ſymmetry is deſtroyed, and the deviation from a ſymmetrical form increaſes as the diſtance of the object from the reflector increaſes. The uſe of the inſtrument in this form is, therefore, limited to objects which can be held cloſe to the reflector.

This limitation, however, has been ſuperſeded; and the uſe and application of the inſtrument indefinitely extended by an optical contrivance. A lens of a ſhort focal length is placed on the object end of the outer tube, and the inner tube is drawn out till the image of objects, whatever be their diſtance, falls exactly on the outer end of the reflectors. When this is the caſe, theſe objects will be arranged into the moſt beautiful and ſymmetrical forms, in the ſame manner as if they had been reduced in ſize, and actually placed at the end of the reflectors. In this way, every object in nature may be introduced into the picture formed by the inſtrument, and the obſerver will derive a new and endleſs ſource of enjoyment by the creation of pictures of natural objects, whether animate or inanimate.

As the caleidoſcope is of great uſe in the ornamental arts, particularly to carpet and lace manufacturers, calico-printing, paper-ſtaining, jewellery, &c. &c., its adaptation to their purpoſe is effected by occaſionally furniſhing the inſtrument with a ſtand, in order that the pattern may be fixed whilſt the artiſt is engaged in copying it. It is alſo capable of being uſed with Dr. Wollaſton's camera lucida, by which means thoſe who would otherwiſe be unable to copy the patterns may do it with perfect facility and accuracy. The effects of the inſtrument may alſo be exhibited to many perſons at once, on the principles of the ſolar microſcope, or magic lantern. The inſtrument for ſcientific purpoſes is occaſionally ſo conſtructed as to admit of the inclination of the reflectors being varied at pleaſure. Under the authority of Dr. Brewſter, caleidoſcopes of all the different forms are manufactured by the opticians with great accuracy and perfection; but the popularity of the inſtrument has been ſuch as to induce a great number of individuals, who have been ignorant of its principles, to infringe upon the patent, and impoſe upon the public a wretched imitation of the original, poſſeſſing none of the properties which are eſſentially neceſſary to the production of beautiful and ſymmetrical forms; and in order to juſtify ſuch proceedings, it became neceſſary to ſearch out for ſome combination of mirrors already deſcribed, which might have ſome reſemblance to Dr. Brewſter's inſtrument: and the firſt ſuppoſed anticipation of it was found in prop. 13 and 14 of Wood's Optics; but profeſſor Wood, in a letter to Dr. Brewſter on the ſubject, has moſt handſomely diſclaimed having in contemplation the effects produced by the caleidoſcope in giving the propoſitions alluded to. The next ſuppoſed anticipation was an inſtrument propoſed and made by Mr. Bradley in 1717, which conſiſted of two pieces of ſilvered looking-glaſs, five inches wide, and four inches high, jointed together with hinges, and opening like a book. Theſe plates being ſet upon a geometrical drawing, and the eye being placed in front of the mirrors, the lines of the drawing were ſeen multiplied by repeated reflections. This inſtrument had been deſcribed long before by Kircher, and did not receive a ſingle improvement from the hands of Bradley. It had been often made by the opticians; but no perſon ever thought of applying it to any purpoſe of utility, or of uſing it as an inſtrument of rational amuſement by the creation of beautiful forms: indeed, from its conſtruction, it is quite incapable of producing any of the ſingular effects of the caleidoſcope. As, however, the ſimilarity between the two inſtruments is maintained by many perſons, either from ignorance or intereſt; in order, therefore, to render that juſtice to Dr. Brewſter which to us appears his due, we give the following ſtatement of the differences between the two inſtruments, upon the ſuppoſition of their both being applied to geometric lines upon paper.

1. In Bradley's inſtrument, the length is leſs than the breadth of the plates.	1. In the caleidoſcope, the length of the plates muſt be four, five, or ſix times their breadth.
2. Bradley's inſtrument cannot be uſed with a tube.	2. The caleidoſcope cannot be uſed without a tube.
3. In Bradley's inſtrument, from the erroneous poſition of the eye, there is a great inequality of light in the ſectors, and the laſt ſectors are ſcarcely viſible.	3. In the caleidoſcope, the eye is ſo placed, that the uniformity of light is a maximum, and the laſt ſectors are diſtinctly viſible.
4. In Bradley's inſtrument, the figure conſiſts of elliptical, and conſequently unequal ſectors.	4. In the caleidoſcope, all the ſectors are equal, and compoſe a perfect circle, and the picture is perfectly ſymmetrical.
5. In Bradley's inſtrument, the unequal ſectors do not unite, but are all ſeparated from one another by a ſpace equal to the thickneſs of the mirror-glaſs.	5. In the caleidoſcope, the equal ſectors all unite into a complete and perfectly ſymmetrical form.
6. In Bradley's inſtrument, the images reflected from the firſt ſurface interfere with thoſe reflected from the ſecond, and produce a confuſion and overlapping of images entirely inconſiſtent with ſymmetry.	6. In the caleidoſcope, the ſecondary reflections are entirely removed, and therefore no confuſion takes place.
7. In Bradley's inſtrument, the defects in the junction of the plates are all rendered viſible by the erroneous poſition of the eye.	7. In the caleidoſcope, the eye is ſo placed, that theſe defects of junction are inviſible.

To which it may be added, that profeſſors Playfair of Edinburgh, and Pictet of Geneva, and the celebrated Mr. Watt, have each of them borne teſtimony to the diſſimilarity of the two inſtruments, and to the unqueſtionable claim which Dr. Brewſter has to the invention of the caleidoſcope.

CALENDAR. To the French calendar, annex—the French have aboliſhed their new calendar, and reſtored the Gregorian, which was ordered to be uſed in all their dates after the 1ſt of January, 1806.

CALEYA, in *Botany*, a very diſtinct and elegant genus, thus named by Mr. Brown, in juſt commemoration of Mr. George Caley, an able and accurate botaniſt, who has for ſeveral years been employed by ſir Joſeph Banks, in the inveſtigation of the vegetable productions of New South Wales, but whoſe diſcoveries are not all admitted into Mr. Brown's work, being, we hope, deſtined to appear in ſome more popular, and more amply deſcriptive, publication.—Brown in Ait. Hort. Kew. v. 5. 204. (Caleana; Br. Prodr. Nov. Holl. v. 1. 329.)—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Flower reverſed. Calyx-leaves and petals linear, nearly equal, ſpreading. Lip ſtalked, peltate, hollow, opening outwards. Style dilated. Anther a permanent lid. Pollen powdery.

There are two ſpecies, *C. major* and *minor*, both found near Port Jackſon; the former ſent to Kew, by Mr. Caley, in 1810. Theſe are ſmooth *herbs*, with ſimple naked bulbs. *Leaf* radical, ſolitary, linear, ſheathed at the baſe. *Flowers* few, browniſh-green; the *lip* and *column* red. The *lip* is moveable, reflexed; but during rain it becomes inflexed over the *column*, which Mr. Brown is doubtful whether to attribute to the diminution of light, or to the irritation of the rain.

CALICIUM, from καλυκιον, *a little cup*, well expreſſing the form of the fructification.—Perſ. in Uſt. Ann. faſc. 7. 20. Achar. Syn. 55. "Lichenogr. 39. t. 3. f. 1—8."—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Cruſt uninterrupted, uniform. Receptacles cup-ſhaped, cartilaginous, ſtalked, more or leſs elevated, containing a compact powdery maſs of ſeeds, forming an even diſk.

Acharius defines twenty-five ſpecies of this curious and beautiful, though minute and inconſpicuous genus of the *Lichen* tribe. They form grey, white, or yellow patches, of various extent, on old wrought wood, or boards, expoſed to the weather; ſometimes on the old bark of trees. The *receptacles* are, moſt frequently, each elevated on a ſlender briſtle-like *ſtalk*, uſually black, like a horſe-hair, and ſo different from the chalky or granulated *cruſt* from whence they grow, as to appear altogether paraſitical. Their powder when touched ſtains the fingers. Sixteen ſpecies are deſcribed and figured in Eng. Bot. eſpecially in vol. xxxv.

CALLICOMA, Curt. Mag. t. 1811. See CODIA.

CALLISTACHYS, or rather CALLISTACHYA. See OXYLOBIUM.

CALNE. The borough and pariſh of Calne, in 1811, contained 750 houſes, and 3547 perſons; *viz.* 1621 males, and 1926 females: 325 families employed in agriculture, and 402 in trade and manufactures.

CALOCHILUS, in *Botany*, from καλος, *beautiful*, and χειλος, *a lip*.—Brown Prodr. Nov. Holl. v. 1. 320.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ringent; two lower leaves under the lip. Petals ſeſſile, ſmaller, erect. Lip longer than the calyx, ſeſſile, pointed; bearded at the margins and on the diſk. Anther parallel to the ſtigma, permanent.

Herbage ſmooth. *Bulbs* undivided, naked. *Leaves* few, all on the ſtem; the lower one channelled, much longer than the reſt. *Spike* racemoſe, lax, with prominent, reddiſh, rather large *flowers*. Nearly akin to NEOTTIA; ſee that article.

1. C. *campeſtris*. Br. n. 1.—Lip not much longer than the calyx, with a half-lanceolate point, one-fifth its own length. Column with two glands at the baſe. Bracteas longer than the germen. Flowers from four to eight.—Gathered by Mr. Brown at Port Jackſon, as well as in the tropical part of New Holland.

2. C. *paludoſus*. Br. n. 2.—Lip twice the length of the calyx, with a ligulate zigzag point, half its own length. Column without glands. Bracteas ſhorter than the germen. Flowers from two to four.—Found by Mr. Brown, at Port Jackſon.

CALOCHORTUS, from καλος, *beautiful*, and χορτος, *a graſs*. Purſh 240.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Coronariæ*, Linn. *Junci*, Juſſ. *Melanthaceæ*, Brown.

Eſſ. Ch. Corolla in ſix deep ſpreading ſegments; three innermoſt largeſt; woolly above, with a ſmooth ſpot at the baſe. Filaments very ſhort, inſerted into the baſe of each ſegment. Anthers erect, arrow-ſhaped. Stigmas reflexed. Capſule of three cells.

1. C. *elegans*. Graſſy Woolly-flower. Purſh n. 1.—Found by governor Lewis, at the head-waters of the Kooſkooſky, North America, flowering in May. *Bulb* ſolid, globular, eaten by the natives. *Leaf* ſolitary, radical, graſſy, ribbed, nearly ſmooth, taller than the *flower-ſtalk*, which is ſimple, round, ſmooth, bearing two or three very elegant, drooping, white *flowers*, the ſize of *Hypoxis erecta*, on ſlender *partial ſtalks*, each accompanied by a linear-lanceolate *bractea*. The three inner ſegments of the *corolla* are covered with long down, and marked with a roundiſh, ſmooth, purple ſpot at their baſe.

CALOGYNE, from καλος, *handſome*, and γυνη, *a female*.—Brown Prodr. Nov. Holl. v. 1. 579.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Campanaceæ*, Linn. *Campanulaceæ*, Juſſ. *Goodenoviæ*, Brown.

Eſſ. Ch. Calyx ſuperior, in five deep equal ſegments. Corolla two-lipped. Anthers ſeparate. Style three-cleft. Stigmas each with a cup-ſhaped integument. Nectary a gland between the two lower filaments. Capſule imperfectly two-celled. Seeds imbricated, compreſſed.

1. C. *piloſa*. Br. n. 1. the only ſpecies, found by Mr. Brown in the tropical part of New Holland. An annual hairy plant, ſmelling when dried like our *Anthoxanthum*. The *leaves* are cut or toothed; floral ones auricled at the baſe. *Stalks* axillary, ſingle-flowered, without *bracteas*; reflexed as the *fruit* ripens.

This plant is ſeparated from GOODENIA, (ſee that article,) ſolely on account of the three-cleft *ſtyle*, and three *ſtigmas*, and Mr. Brown heſitates about the propriety of the meaſure.

CALOMERIA. See HUMEA.

CALOPOGON, from καλος, *handſome*, and πωγων, *a beard*.—Brown in Ait. Hort. Kew. v. 4. 204.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Flower reverſed. Calyx and petals ſpreading, diſtinct. Lip ſtalked; diſk bearded. Style unconnected. Anther terminal, permanent; pollen angular.

1. C. *pulchellus*. Tuberous Calopogon. Ait. n. 1. (Limodorum tuberoſum; Linn. Sp. Pl. 1345. Curt. Mag. t. 116. Cymbidium pulchellum; Swartz Nov. Act. Upſ. v. 6. 75. Willd. Sp. Pl. v. 4. 105. Purſh 592. Big. Boſt. 208.)—Native of meadows and moſſy bogs, in North America, from Canada to Florida, flowering in July. An elegant plant, eighteen inches high, unbranched, with a ſmall, tuberous, white *root*, one ſheathing ſword-ſhaped *leaf*, and a ſimple lax *ſpike*, of three or four large, beautiful, purple *flowers*, whoſe *lip* bears a yellow tuft of round-headed fibres. We cannot but think, with Mr. Saliſbury, Parad. 89, that this is a genuine *Arethuſa*, agreeing preciſely in habit with *A. bulboſa*. Few orchideous genera are more natural.

CALOSTEMMA, from καλος, *beautiful*, and ϛεμμα, *a crown*.—Brown Prodr. Nov. Holl. v. 1. 297.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narciſſi*, Juſſ.

Eſſ. Ch. Petals ſix. Nectary with twelve ſegments, bearing the ſtamens. Berry globoſe, with one or two ſeeds.

Diſtinguiſhed from PANCRATIUM, as Mr. Brown obſerves, chiefly by the ſtructure of the ſingle-celled germen and pericarp. The *flowers* are ſmall, not an inch long, either white or purple. The *ſeeds* germinate in the berry.

1. C. *album*. Br. n. 1.—Leaves elliptic-oblong, moſtly ſolitary. Barren ſegments of the nectary linear, emarginate.—Native of the tropical part of New Holland.

2. C. *purpureum*. Br. n. 2.—Flower-ſtalk earlier than the leaves. Barren ſegments of the nectary triangular.—Found on the ſouthern coaſt of New Holland.

CALOTHAMNUS, ſo named from καλος, *beautiful*, and θαμνος, *a ſhrub*, and it well deſerves the appellation.—Labill. Nov. Holl. v. 2. 25. Brown in Ait. Hort. Kew. v. 4. 417.—Claſs and order, *Polyadelphia Icoſandria*. Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth half-ſuperior, of one leaf, turbinate; limb in four or five ſhort, broad, deciduous ſegments. *Cor.* Petals four or five, ovate, twice the length of the calyx, and alternate with its ſegments. *Stam.* Filaments very numerous, in four or five ſets, oppoſite to the petals, the claw of each ſet flattened, oblong, many times longer than the corolla, ſome of them either combined together, or partially imperfect, pinnate, or otherwiſe many-cleft, in the upper part, with capillary ſegments; anthers terminal, inſerted by their baſe, linear-oblong, undivided. *Piſt.* Germen in the bottom of the calyx, ſmall, roundiſh; ſtyle thread-ſhaped, erect, ſhorter than the ſtamens; ſtigma acute. *Peric.* Capſule coated with the baſe of the calyx, and firmly united to the branch, roundiſh, of three cells. *Seeds* numerous, ſmall, oblong.

Eſſ. Ch. Calyx in four or five ſegments. Petals four or five. Stamens numerous, very long, in ſeveral various ſets, oppoſite to the petals; anthers linear, undivided, vertical. Capſule coated by the calyx, three-celled, permanent. *Seeds* numerous.

Obſ. The *ſtamens* in ſome ſpecies conſiſt of uniform ſets, anſwerable to the number of the *petals*; in others, two or more of thoſe ſets are partially combined laterally, the remainder being diminiſhed to ſimple threads, without *anthers*, and this laſt is the character of the genus as M. Labillardiere underſtood and deſcribed it. But Mr. Brown has, in conformity to nature and analogy, not limited it ſo ſtrictly. We adopt his views of the genus, only begging leave to conſtruct the eſſential character without exceptions, ſuch phraſeology being beſt avoided. The genus before us comes next to Beaufortia, (ſee that article,) and is full as ſplendid, differing from it eſſentially in the ſtructure of the *anthers*, and in having numerous ſeeds. From Melaleuca, (ſee that article in vol. xxiii.) the difference is leſs ſtriking, but we believe very eſſential, conſiſting in the vertical, not incumbent, *anthers*. To this Mr. Brown adds that the *infloreſcence* is unilateral.

1. C. *ſanguinea*. Blood-red Unequal Calothamnus. Labill. Nov. Holl. v. 2. 25. t. 164.—Flowers four-cleft. Sets of ſtamens combined; two of them imperfect, diſtinct. Adult *leaves* linear-awlſhaped, compreſſed, ſmooth.—Native of Lewin's land, flowering in December. A *ſhrub*, ſix feet high, with round, ſcarred branches. *Leaves* ſcattered, ſlender, acute, entire, rather above an inch long; hairy when young. *Flowers* in ſmall lateral ſeſſile tufts, about the length of the leaves, conſpicuous for their blood-red *ſtamens*, two ſets of which unite to form a broad, wedge-ſhaped, concave body, divided at the top into numerous, vertical, parallel *filaments*, each bearing an upright linear *anther*; the two remaining ſets diminiſhed to ſimple, awl-ſhaped threads, without any *anthers*. *Capſule* ſmall, globoſe.

2. C. *quadrifida*. Four-cleft Equal Calothamnus. Br. in Ait. n. 1. Sims in Curt. Mag. t. 1506.—Flowers four-cleft. Sets of ſtamens equal and diſtinct, with many anthers. Adult leaves ſmooth, as well as the fruit.—Gathered by Mr. Brown, on the ſouth-weſt coaſt of New Holland. Sent to Kew in 1803, by Mr. Good, along with the two following. This bears ſplendid ſcarlet *flowers*, whoſe beauty however depends on the large *ſtamens*, an inch and a half long, the *petals* being ſmall, pale, and inconſpicuous. The *leaves* are linear-obovate, or ſomewhat ſpatulate, but extremely narrow, hardly more than an inch in length.

3. C. *villoſa*. Hairy Five-cleft Calothamnus. Br. in Ait. n. 2.—"Flowers five-cleft. Sets of ſtamens equal and diſtinct, with numerous anthers. Adult leaves villous, as well as the fruit."—Found by Mr. Brown on the ſouth-weſt coaſt of New Holland. A green-houſe *ſhrub*, flowering at Kew, from July to September.

4. C. *gracilis*. Slender-leaved Calothamnus. Br. in Ait. n. 3.—"Flowers five-cleft. Sets of ſtamens equal and diſtinct, with only three anthers to each. Leaves elongated, ſmooth, as well as the prominent capſule. Stem branched." Native of the ſame country as the laſt.

No other ſpecies have been hitherto deſcribed.

CALOTROPIS, from καλος, *handſome*, and τροπις, *a keel*, alluding to the beauty of the flower, and the keel-ſhaped leaves which compoſe its crown.—Brown Tr. of Wern. Soc. v. 1. 39. Ait. Hort. Kew. v. 2. 78.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Br.

Eſſ. Ch. Corolla. Crown of the ſtamens ſimple, of five keel-ſhaped leaves, attached lengthwiſe to the tube of the ſtamens; recurved at the baſe. Maſſes of pollen ten, ſmooth, pendulous. Stigma pointleſs. Follicles tumid, ſmooth. Erect ſmooth milky *ſhrubs*, with broad oppoſite *leaves*, and handſome large *flowers*, in lateral corymboſe *panicles*, inſerted between the footſtalks. Only two ſpecies are deſcribed.

1. C. *procera*. Bell-flowered Auricula-tree. Ait. n. 1. (Aſclepias procera; Ait. ed. 1. v. 1. 305. Willd. Sp. Pl. v. 1. 1263. Schneev. Ic. t. 18. (See Asclepias, n. 29.) A. gigantea; Andr. Repoſ. t. 271. "Zja-raek; Le Brun Voy. 315. t. 184.")—Segments of the corolla ſpreading.—Native of Perſia. A ſtove ſhrub impatient of damp and cold, flowering from July to September. The whole plant is glaucous, ſix or ſeven feet high, with broad, ſeſſile, entire *leaves*. *Flowers* irregularly corymboſe, numerous, larger than in moſt of this tribe, an inch or more in width, of a rich browniſh-purple, powdered like an Auricula; pale beneath.

2. C. *gigantea*. Curled-flowered Auricula-tree. Ait. n. 2. (Aſclepias gigantea; Linn. Sp. Pl. 312, excluding the ſynonyms of Plukenet and Alpinus. Willd. Sp. Pl. v. 1. 1264. (See Asclepias, n. 6.) Ericu; Rheede Hort. Mal. v. 2. 53. t. 31.)—Segments of the corolla reflexed, with twiſted points.—Native of ſandy ground on the coaſt of Malabar. Very like the foregoing, but the *corolla* is differently ſhaped, as expreſſed in the character, and is ſaid to be variegated with white and purpliſh-red, ſmelling like a lily. We beg leave to obſerve, that if priority of date were to determine generic names, without regard to the ſound regulations of Linnæus, Mr. Brown's elegant *Calotropis* muſt give way to Rheede's *Ericu*, as the appellation of this genus, in ſpite of law, ſenſe, taſte, and convenience.

Vol. VI.

CALVERT, in *Geography*. Add—This county contained, in 1811, 8005 inhabitants, including 3937 ſlaves.

CALYPSO, in *Botany*, an elegant claſſical name of Mr. Saliſbury's, from καλυπτω, *to cover or conceal*, not merely alluding to the covering of the ſtigma, but preſerving a poetical analogy between this botanical beauty, ſo difficult of acceſs, and the ſecluded goddeſs, whoſe iſle was fabled to be protected miraculouſly from the obſervation of navigators.—Saliſb. Parad. 89. Brown in Ait. Hort. Kew. v. 5. 208. Purſh 593.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx-leaves and petals all turned upwards. Lip inflated, with a double ſpur in front. Column winged. Anther a terminal deciduous lid; maſſes of pollen four.

1. C. *borealis*. Northern Calypſo; Saliſb. Parad. t. 89. Purſh n. 1. (C. americana; Br. in Ait. n. 1. Cypripedium bulboſum; Linn. Sp. Pl. 1347. Fl. Lapp. ed. 2. 257. t. 12. f. 5. Sm. Spicil. 10. t. 11. Orchis lapponenſis monofolia; Rudb. Elyſ. v. 2. 209. f. 10. Serapias ſcapo unifloro; Gmel. Sib. v. 1. 7. t. 2. f. 1.)—Native of Ruſſia, and Oſtrobothnia, (*Linn.*) Nova Scotia, and ſeveral parts of the weſt coaſt of North America. *Menzies.* Found on the banks of the Columbia river, by governor Lewis. *Purſh.* *Root* of a few aggregate bulbous knobs. *Leaf* ſolitary, radical, ovate, many-ribbed, ſpotted. *Stalk* ſcaly, three to ſix inches high, bearing one large, beautiful, crimſon *flower*, with a purpliſh *lip*, bearded with yellow. We have in vain ſought for any permanent ſpecific difference between the American and European plant.

CALYSTEGIA, a genus ſeparated by Mr. Brown, Prodr. Nov. Holl. v. 1. 483, from *Convolvulus*, and chiefly diſtinguiſhed by the great ſize of the two leafy *bracteas*, inclofing the calyx, whence the name, from *καλυξ*, and *ϛεγω*, *to cover*. *Convolvulus ſepium* and *C. Soldanella* of Linnæus, with ſeveral others, conſtitute this genus, which appears to us better omitted.

CALY-YUG, denotes, according to the chronology of the Hindoos, the preſent or fourth age of the world.

CAMALODUNUM, l. 3, *r*. Trinouantes.

CAMBERWELL, a pariſh of Brixton hundred, in the county of Surrey, which includes the hamlets of Dulwich and Peckham, and in 1811 contained 1849 houſes, and 11,309 perſons; *viz.* 4854 males, and 6455 females; but ſince that time much increaſed in buildings and inhabitants.

CAMBIUM, l. 31, for CORTICAL LAYERS *r*. CORTEX; l. 39, for PITH and MEDULLARY CANAL *r*. MEDULLA. Col. 2, l. 5, *r*. MONOCOTYLEDONES.

CAMBRIA, in *Geography*, a county of Pennſylvania, containing 2117 inhabitants.—Alſo, a townſhip of the ſame county, having 868 inhabitants.

CAMBRIDGE, col. 4, l. 7, add—By the return in 1811, the borough and univerſity of Cambridge contained 1991 houſes, and 11,108 perſons; *viz.* 5288 males, and 5820 females: 80 families employed in agriculture, and 1600 in trade and manufactures.

CAMBRIDGE, in Waſhington county, &c. l. 2, *r*. cenſus of 1810, 6730 inhabitants, and 650 ſenatorial electors; l. 10, for 2115 *r*. 2323; l. 38, *r*. 990.

CAMBRIDGE, a town of Guernſey county, in Ohio, having 474 inhabitants.

CAMBRIDGE, *Weſt*, a townſhip of Middleſex county, Maſſachuſetts, having 971 inhabitants.

CAMBRIDGESHIRE, col. 1, l. *ult*. *r*. In 1811, this county contained 17,489 houſes, and 101,109 perſons; *viz.* 50,756 males, including 2946 local militia, and 50,353 females: 12,831 families employed in agriculture, and 5303 in trade, manufactures, and handicraft.

CAMDEN, a county of North America, l. 3, for 4033 *r*. 5347.

CAMDEN, a county in Georgia, &c. l. 3, *r*. containing 3941 inhabitants, of whom 2681 are ſlaves.

CAMDEN, in the diſtrict of Maine, contains 1607 inhabitants.

CAMDEN, a poſt-townſhip of Oneida county, in the ſtate of New York, watered by the W. branch of Fiſh creek, containing about 1100 inhabitants, principally farmers from Connecticut.

CAMELINA, in *Botany*, an old name of French origin, uſed by Dodonæus, but whether it alludes to this plant's being the companion of flax, *Linum*, as Crantz ſeems to intimate, is hardly worth enquiring.—Crantz Auſtr. faſc. 1. 17. Brown in Ait. Hort. Kew. v. 4. 93.—Claſs and order, *Tetradynamia Siliculoſæ*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch nearly ovate, many-ſeeded: valves tumid. Cotyledons incumbent. Filaments without teeth. *Brown*.

Mr. Brown founds this genus on the *Myagrum ſativum* of Linnæus, and the *M.* (not *Alyſſum*) *auſtriacum* of Jacq. Auſtr. t. 111. The firſt is the only *Camelina* of Crantz above cited, who diſtinguiſhes it from ALYSSUM, (ſee that article,) by the connection between the *ſtyle* and the valves of the *pouch*, the *ſtyle* of *Alyſſum* being connected with the *partition* only. Mr. Brown's diſtinction depends chiefly on the poſition of the *cotyledons*; for every *Alyſſum* has not toothed filaments. Of *Myagrum auſtriacum* we do not feel competent to judge, but we are diſpoſed to keep the *ſativum* an *Alyſſum*, as in Fl. Brit. and Engl. Bot. t. 1254, unleſs it could be ſet apart along with *Alyſſum utriculatum* of Linn. Curt. Mag. t. 130, one ſpecies of Mr. Brown's and Lamarck's *Veſicaria*, very different from the original VESICARIA of Tournefort; ſee that article.

CAMPBELL, l. 3 and 4, *r*. 11,001 and 5368.

CAMPBELL, a town of Kentucky, containing 3060 inhabitants, of whom 438 are ſlaves.

CAMPBELL-*Town*. Add—The burgh and pariſh, in 1811, contained 1010 houſes, and 7807 perſons; *viz.* 3367 males, and 4440 females.

CAMPDEN, col. 2, l. 23 from the bottom, add—In 1811, it was ſtated to contain 273 houſes, and 1214 perſons; *viz.* 594 males, and 620 females.

CAMPTON, l. 5, *r*. 873.

CAMPYNEMA, in *Botany*, ſo named by Labillardiere, "from *καμπυλος*, *curved*, and *νημα*, *a filament*," ſee the character.—Labill. Nov. Holl. v. 1. 93. Brown Prodr. Nov. Holl. v. 1. 290.—Claſs and order, *Hexandria Trigynia*. Nat. Ord. *Aſphodeleæ*, but doubtful, *Br*.

Eſſ. Ch. Petals ſix, ſuperior, permanent. Filaments and ſtyles recurved. Capſule of three cells, burſting at their inner angle. Seeds numerous, depreſſed, ſpongy.

1. C. *linearis*. Br. n. 1. Labill. t. 121.—Native of Cape Van Diemen. A ſmooth *herb*, with a *root* of ſeveral tapering fibres. *Leaves* graſſy, alternate, half-claſping the ſtem. *Flowers* terminal, erect, either ſolitary, or from two to four in a lax cluſter. *Anthers* verſatile, heart-ſhaped. *Stigmas* ſimple. *Seeds* in a ſimple row, attached to the inner angle of each cell. Nothing is ſaid of the colour of the *flower*.

CANAAN, l. 2, for Lincoln *r*. Somerſet; l. 4, *r*. 1275; l. 7, *r*. 1810 and 1094; l. 12, add—In 1810, it contained 2203 inhabitants; l. 13, add—with 232 inhabitants.—Alſo, a townſhip of Wayne county, in Pennſylvania, having 829 inhabitants.

CANAAN, *New*, a town of Fairfield county, in Connecticut, having 1599 inhabitants.

CANAL, col. 14, l. 44, add—The principal interior canals that are already (1818) completed in the United States are, the Middleſex canal, uniting the waters of the Merrimack river with the harbour of Boſton, and the canal Carondelet, extending from Bayou St. John, a poſt of delivery in the Miſſiſſippi diſtrict, to the fortifications or ditch of New Orleans, and opening internal communication with lake Pontchartrain. The union of this canal by lakes with the Miſſiſſippi would, independently of other advantages, enable the government to tranſport with facility and effect the ſame naval force for the defence both of Miſſiſſippi and lake Pontchartrain, the two great avenues by which New Orleans may be approached from the ſea. In 1816 or 1817, the ſtate legiſlature of New York paſſed acts, appropriating funds for opening a navigable communication between the lakes Erie and Champlain and the Atlantic ocean, by means of canals, connected with the Hudſon river. When this ſcheme, actually begun, is accompliſhed, and a communication opened by canals and lakes between lake Erie and the navigable waters of Hudſon's river, and alſo between lake Champlain and theſe waters, the ſtate of New York will ſoon become, in itſelf, a powerful empire.

Sheet Q q, inſtead of CANAL at the head of the page, inſert in col. 1 and 2, CAN.

CANAL, p. 44, col. 2, l. 6 from the bottom, for thereon *r*. therein. P. 49, col. 1, l. 20, add—Mr. Chapman has lately (*viz.* in 1816) ſuggeſted to the editor, that this method, without complicated collateral aid, not had in contemplation, will be found to be impracticable; becauſe the moment the deſcending criſſon entered the lower canal, the equilibrium would be loſt, and all counterbalance when the criſſon had entered to ſuch depth as to allow its contained veſſel to go out.

For Hartlepool Canal *r.* Hartley Canal; for Durham *r.* Northumberland; and for Hartlepool *r.* Hartley.

Canal, *Baſingſtoke*, col. 2, l. 3, after commences in, inſert—Cooper's meadow, adjoining to the town of Baſingſtoke, and enters the river Wey about two miles above Weybridge; *dele*, l. 3, 4, 5, from Wey to Baſingſtoke; l. 18, after Lodden, add—The proprietors are prohibited from touching the Lodden, or any of the ſprings or ſtreams that feed it.

CANANDAQUA, or Canandaigua, l. 11, *r.* In 1810, this townſhip had 415 families, 206 ſenatorial electors, and 2392 inhabitants.

CANDARINE, a money of account in China, where 1 tale is = 10 marcs = 100 candarines = 1000 caſh.

CANDLES, *Laws relating to*, col. 2, l. 2, add—By 49 Geo. III. c. 98. duties of cuſtoms are likewiſe impoſed; l. 8, *r.* c. 9.

CANDY, a weight in the Eaſt Indies. At Madras the candy is 500 lbs. avoirdupois, = 20 maunds. See Maund.

CANFIELD, in *Geography*, a townſhip of Trumbull county, in Ohio, having 494 inhabitants.

CANHADA, a liquid meaſure in Portugal, 6 canhadas being = 1 pote, *r.* See Almuda.

CANICULAR Year, c. 2, l. 16, for in *r.* on.

CANNA, or Canne, a meaſure for cloth in Italy, and the ſouth of France, Spain, &c. each canna at Barcelona being = 61.4 Engliſh inches; at Florence, = 93.1 Engliſh inches for woollen and 91.7 for ſilk; at Genoa, = 116.7 Engliſh inches; at Majorca, 67.5; at Malta, 81.9; at Marſeilles, 79; at Montpellier, 79.8; at Morocco, 20.1; at Naples, 83; at Palermo, 76.2; at Saragoſſa, 81.5; at Toulouſe, 71.7.

CANNAUGHQUANESING, in *Geography*, a townſhip of Butler county, in Pennſylvania, having 1284 inhabitants.

CANO, l. 3, *r.* 1601; l. 7, after Seville, and under Juan Martinez Montanes; l. 26, inſert—In 1643 he removed to Toledo; and upon, &c.

CANTERBURY. This city, by the return of 1811, contained 2093 houſes, and 10,200 inhabitants; *viz.* 4605 males, and 5595 females: 508 families being employed in agriculture, and 1194 in trade and manufactures.

Canterbury, a townſhip of America, &c. l. 5, for 1038 *r.* 1526, including 7 ſlaves; l. 8, add—It contains 1812 inhabitants.

CANTHARIDIN, in *Chemiſtry*, a name given by Dr. Thomſon to a peculiar principle extracted from cantharides in the following manner.

Boil cantharides in water till every thing ſoluble in that liquid be taken up. Concentrate the ſolution by evaporation, and when reduced to a thick ſyrup, boil it repeatedly in alcohol, till that fluid ceaſes to act upon it. Evaporate the alcoholic ſolution to dryneſs, and digeſt the dry reſidue in ſulphuric ether. When the ether has aſſumed a yellow colour decant it, and expoſe it in an open veſſel to ſpontaneous evaporation. Small cryſtalline plates mixed with yellow matter will ſoon ſeparate. The yellow matter may be ſeparated by alcohol, which leaves the cryſtals of cantharidin quite pure.

Cantharidin thus obtained exiſts in the form of ſhining micaceous plates. It is inſoluble in water, and in cold alcohol. Boiling alcohol diſſolves it, but the cantharidin again ſeparates on the cooling of the alcohol. Ether diſſolves it, but not in large quantities. It readily diſſolves in oils, and when applied to the ſkin, acts as a veſicatory with great energy. The ſolution of it in oils is equally efficacious. This principle ſeems to have been firſt ſeparated by Thouvenel. See Cantharides.

CANTHARIS, l. *ult.* *dele* which ſee reſpectively.

One of the moſt elegant inſects of this genus is the ſcarlet cantharis; entirely of a vivid red, except the body, legs, and antennæ, which are coal-black. It is ſomewhat more than half an inch in length. The C. bipuſtulata is a beautiful inſect, ſomewhat ſmaller than the preceding, of a very dark but elegant gilded green, with the tips of the wing-ſhells red, and on each ſide of the thorax a triple veſicle of a bright red colour, capable of extenſion or retraction at the inſect's pleaſure, and by the microſcope exhibiting an alternate inflation and contraction, like that of the lungs in the larger animals. This ſpecies is found in the middle of ſummer on various plants, and particularly on nettles. Shaw.

CANTICLES, col. 3, l. 16, *r.*—The cauſes of the apparent, &c.

CANTON, in America, add—and containing 1353 inhabitants.—Alſo, a town of Hartford county, in Connecticut, having 1374 inhabitants.—Alſo, a townſhip of Luzerne county, in Pennſylvania, having 417 inhabitants.—Alſo, a townſhip of Waſhington county, in the ſame ſtate, containing 1345 inhabitants.—Alſo, a town of Stark county, in Ohio, having 846 inhabitants.

Canton, in China, l. 17, after houſes, inſert—built of brick. Col. 2, l. 1, add—Theſe *ſampanes*, as they are called, accommodate, at the very loweſt computation, 40,000 people: l. 13, after 40,000, add—The accounts of the population of Canton are very various and contradictory. The exaggerated ſtatement above given is that of Le Comte. Du Halde eſtimates it at a million; and Sonnerat, erring in the other extreme, reduces the number to 75,000. But according to data, collected by captain King, in "Cook's Third Voyage," (vol. iii.) he apprehends, that the city and ſuburbs may probably contain about 150,000.

CAOUTCHOUC, in *Chemiſtry*. In addition to what has been ſaid of this ſingular ſubſtance, we may obſerve that it has been lately ſtated to exiſt in a great variety of plants, though it has been hitherto uſually confounded with other ſubſtances. It may be ſeparated from reſins by means of alcohol. It may be extracted from the different ſpecies of miſletoe by water, with which it readily combines, whilſt in that fluid ſtate in which it exiſts in theſe plants. When mixed with gum or extractive, it may be ſeparated by digeſting a part of the plant containing it, firſt in water, and then in alcohol, till all the ſubſtances ſoluble in theſe liquids be extracted. The reſiduum is then to be dried and digeſted in four times its weight of rectified petroleum. Expreſs the liquid part by ſqueezing the ſubſtance in a linen cloth. The liquid is then to be put by for ſome days to ſettle, and after the clear part has been poured off, the remainder is to be mixed with a third part of water, and diſtilled. The caoutchouc remains behind.

According to Bucholz, a conſiderable proportion of caoutchouc exiſts in opium. Maſtic alſo is ſtated to contain a ſubſtance very ſimilar to caoutchouc.

CAPELAT, or Capellat, a name ſometimes given by farriers to a ſwelling of a wenny kind, which grows on the hock of a horſe, and on the point of its elbow. It often ariſes from bruiſes, and in this caſe ſhould be bathed with hot vinegar and alum; but when they grow gradually on both heels and elbow, blood is extravaſated. When this happens, ſuppuration ſhould be promoted by rubbing the part with ſtimulating unguents; and when matter is formed, the ſkin ſhould be opened with a lancet, in more dependent parts towards one ſide, for avoiding a ſcar. The ſubſequent dreſſings may be turpentine, honey, and tincture of myrrh.

CAPEMAY, in *Geography*, a county of New Jerſey, containing 3632 inhabitants, of whom 81 are ſlaves.

CARAGE *of Lime*, denotes the quantity of ſixty-four buſhels.

CARALLIA, in *Botany*, *Carallie* of the Telingas, or natives of Hindooſtan; being one of thoſe barbarous names which ſome modern botaniſts have ventured to tolerate, but which no claſſical one can approve.—Roxb. Coromand. v. 3. 8.—Claſs and order, *Icoſandria Monogynia*. Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Eſſ. Ch. Calyx in ſix or ſeven ſegments, ſuperior. Petals ſix or ſeven. Stigma three-lobed. Berry of one cell, with a ſolitary ſeed.

1. C. *lucida*. Shining Carallia. Roxb. as above, t. 211.—Native of the lower region of the Circar mountains. A ſmall, handſome, evergreen tree, flowering in March and April. *Leaves* on ſhort ſtalks, oppoſite, elliptical, acute, finely ſerrated, ſmooth, four or five inches long, and two or two and a half broad. *Flowers* ſmall, yellow, in little, aggregate, axillary, ſtalked heads. *Berry* the ſize of a pea, reddiſh. *Seed* large, with a ſtrongly curved embryo. Nothing is recorded of the qualities or uſes of this plant. It is evidently next akin to EUGENIA; ſee that article.

CARAWAY, *r.* CARUM, &c.; at the end of the next article *r.* CARUM.

CARBON, in *Chemiſtry*. The progreſs of chemical knowledge enables us to ſtate, with greater accuracy and preciſion, the nature of ſome of the compounds of carbon, than at the period when this article in the Cyclopædia was written.

Carbonic Oxyd.—It has been ſhewn by Gay Luſſac, that 100 meaſures of this gas require for complete combuſtion 50 meaſures of oxygen, and that the product is 100 meaſures of carbonic acid; hence it muſt be compoſed of one atom of carbon and one atom of oxygen, or 100 parts by weight will conſiſt of

Oxygen - - -	57.14
Carbon - - -	42.86
	100.00

And its true ſpecific gravity muſt be .9722, and 100 cubic inches of it muſt weigh, at a mean temperature and preſſure, 29.652 grains. Carbonic oxyd has the property of combining with chlorine, and forming a peculiar compound, which its diſcoverer, Dr. Davy, has named PHOSGENE *gas*; which ſee.

Carbonic Acid.—When pure charcoal is burnt in oxygen gas, it has been ſhewn that the original bulk of the oxygen ſuffers no change. Hence it is obvious, that, by ſubtracting the ſpecific gravity of oxygen from that of carbonic acid gas, we ſhall obtain the quantity of carbon exiſting in it. The ſpecific gravity of oxygen gas is 1.11, and that of carbonic acid 1.52. Hence 100 parts, by weight, of carbonic acid will conſiſt of

Oxygen - - -	72.73
Carbon - - -	27.27
	100.00

which correſpond with two atoms of oxygen and one of carbon. See ATOMIC *Theory*.

Carburetted Hydrogen.—The ſpecific gravity of carburetted hydrogen, according to Dr. Thomſon, is .5555, and 100 cubic inches of it weigh 16.99 grains. It requires for its complete combuſtion twice its volume of oxygen gas, and produces exactly its own volume of carbonic acid; the only remaining product is water. Hence 100 parts, by weight, of this gas are compoſed of

Carbon - - - -	75
Hydrogen - - -	25
	100

which correſpond with one atom of carbon and two of hydrogen.

Olefiant Gas.—The ſpecific gravity of this gas, according to Dr. Thomſon's experiments, is .974, and 100 cubic inches of it weigh 29.72 grs. It requires for its complete combuſtion three times its volume of oxygen gas, and produces, when burnt, twice its volume of carbonic acid gas, and a certain proportion of water. Hence 100 parts, by weight, of this gas are compoſed of

Carbon - - -	85.71
Hydrogen - - -	14.29
	100.00

which correſpond with one atom of carbon and one of hydrogen.

The curious oil-like compound formed by the union of this gas with chlorine, has been lately examined by MM. Robiquet and Colin. They found that it is compoſed of one volume of chlorine united with one volume of olefiant gas, and of courſe that its conſtituents, by weight, are

Olefiant gas - -	16.28
Chlorine - - -	83.72
	100.00

This oily liquid, which Dr. Thomſon conſiders as a ſort of *ether*, and hence names it *chloric ether*, burns with a green flame, and at the ſame time gives out copious fumes of muriatic acid and much ſoot. Its ſpecific gravity at 45° is 1.2201, water being 1.000. It boils at 152°. At the temperature of 49°, its vapour is capable of ſupporting a column of mercury 24.66 inches in height. The ſpecific gravity of this vapour was found by experiment to be 3.4434, which very nearly coincides with the above account of its compoſition. When paſſed through a red-hot porcelain tube it is decompoſed and converted into muriatic acid, and an inflammable gas containing hydrogen and carbon, while a copious depoſit of charcoal is found in the tube. It is alſo decompoſed when paſſed through red-hot oxyd of copper.

With reſpect to the *carbonates*, the numbers repreſenting them will of courſe require a little adjuſtment; this can be eaſily done from the compoſition of carbonic acid ſtated above, and from the data given under ATOMIC *Theory*.

CARBONIC *Acid Gas*, col. 2, l. 5, add—According to the accurate experiments of Meſſrs. Allen and Pepys, recorded in the Phil. Tranſ. the weight of a cubic inch of this gas is .464 of a grain. Col. 3, l. 46, *r.* milkineſs.

CARDAMOM, l. 2, inſert after *Cardamom*, *anguſtifolium*, *grana Paradiſa*, &c.

CARDIFF, col. 2, l. 9, inſert after *canal*—The town-hall of Cardiff is a reſpectable modern building, and near it is the county gaol, built upon Mr. Howard's plan; l. 14—By the parliamentary return in 1811, the number of inhabitants is ſtated at 2457. The only manufactory eſtabliſhed here is that of iron hoops: the trade, however, is very conſiderable, in conſequence of the numerous collieries up the vale, and the iron and tin works of Merthyr, Melin Gruffydd, &c. the produce of which is conveyed here by the canal for exportation, and which creates a large import trade from Briſtol, &c., in ſhop goods to ſupply the conſumption of the interior country. There are regular paſſage-boats twice a week from this place to Briſtol.

Cardiff is a borough-town, and in conjunction with the contributary boroughs of Cowbridge, Llantriſſant, Keaſig, Aberavon, Neath, Swanſea, and Loughor, ſends one member to parliament.

CAREX, col. 4, l. 11, *r. hanata.*

CAREYA, in *Botany*, named by Dr. Roxburgh, "after its diſcoverer Mr. William Carey, a good botaniſt, and a promoter of natural hiſtory in general."—Roxb. Coromand. v. 3. 13. Ait. Hort. Kew. v. 4. 236.—Claſs and order, *Monadelphia Polyandria.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Eſſ. Ch. Calyx ſuperior, four-cleft. Petals four. Style one. Germen of four cells. Berry with numerous ſeeds, imbedded in pulp.

1. C. *herbacea.* Herbaceous Careya. Roxb. as above, t. 217. Ait. n. 1.—Herbaceous. Flowers ſtalked. Outer filaments longeſt and without anthers.—Native of Rungpore, in Bengal, flowering in February. *Root* woody, perennial. *Stems* a ſpan high, annual, round, ſmooth. *Leaves* oppoſite, obovate, crenate, ſmooth, from four to eight inches long, on ſhort ſtalks. *Flowers* terminal, corymboſe, few, large and very beautiful, the *calyx* and *petals* greeniſh, tinged with red; the outer row of their innumerable *ſtamens* crimſon, capillary, two inches long, recurved, without *anthers*, about twice the length of the obovate *petals*. *Berry* brown, the ſize and texture of a medlar.

2. C. *arborea.* Tree Careya. Roxb. as above, 14. (Pelou; Rheede Hort. Malab. v. 3. 35. t. 36.)—Arboreous. Flowers ſeſſile. Inner filaments ſhorteſt, and without anthers.—Native of the valleys, in various mountainous parts of India. A large *tree*, with obovate, ſlightly ſerrated, ſmooth, deciduous *leaves*, from ſix to twelve inches long. *Flowers* crowded, pale yellow, appearing with the young leaves in March. *Fruit* the ſize of a ſmall orange, fetid and nauſeous till quite ripe, when the pulp becomes ſweetiſh, but Rheede reports it to be poiſonous, which, conſidering its affinity to *Pſidium*, is not credible. Dr. Roxburgh gives no account of this matter, but deſcribes the *wood* as the colour of mahogany, though leſs hard and cloſe. The fibrous *bark* makes tough and durable ropes.

CARGA, a meaſure for wine and oil at Barcelona, equal to $2\frac{1}{2}$ quarteras.

CARGADOR, in Portugal and Holland, denotes a ſhip-broker.

CARGILIA, in *Botany*, is dedicated to the memory of Dr. James Cargill of Aberdeen, a contemporary of Caſpar Bauhin, in whoſe *Prodromus*, p. 154, 155, (Mr. Brown by miſtake refers to his *Theatrum*,) ſeveral deſcriptions of *Fuci*, communicated by Dr. Cargill in 1603, may be ſeen.—Brown Prodr. Nov. Holl. v. 1. 526.—Claſs and order, *Polygamia Dioecia?* rather *Octandria Monogynia.* Nat. Ord. *Ebenaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx inferior, half-fourcleft. Limb of the corolla four-cleft. Stamens inſerted into the baſe of the corolla; filaments doubled. Germen of four cells, with two ſeeds in each. Berry globoſe, cloſely inveſted with the cup-ſhaped calyx.—Some flowers have fewer, and imperfect, ſtamens; others only the rudiment of a piſtil.

This genus is intermediate between DIOSPYROS and MABA. See thoſe articles.

1. C. *laxa.*—Leaves oblong, rather wavy, ſmooth. Calyx of the male flowers four-toothed, half as long as the tube of the corolla. Style in three or four deep ſegments. Young branches lax.—Found by Mr. Brown in the tropical part of New Holland.

2. C. *auſtralis.*—Leaves oblong, ſmooth, obtuſe, paler beneath; acute at the baſe.—Calyx of the male flowers four-cleft, as long as the tube of the corolla. Style undivided. Found by Mr. Brown, in New South Wales.

CARL D'OR, a gold coin of Brunſwick, of which there are double, ſingle, and half carl d'ors; that ſince 1802 containing 92 gr. of pure gold, and equal 16*s.* $3\frac{1}{2}$*d.* ſterling. The double in proportion. See COIN.

CARLIN. Add—See TARO.

CARLISLE, col. 5, l. 27, add—By the return of 1811, the city of Carliſle contained 1658 houſes, and 12,531 perſons; *viz.* 5628 males, and 6903 females: 134 families employed in agriculture, and 2301 in trade, manufactures, and handicraft.

CARLISLE, the chief town of Cumberland county, &c.;—l. 6. By the cenſus of 1810, Carliſle borough contains 2491 inhabitants, including 78 ſlaves.—Alſo, a town of Middleſex county, in Maſſachuſetts, having 672 inhabitants.

CARMELITES. Add—ſee Mancheſter Memoirs, vol. v.

CARN, or CAIRN. See CARNEDDE.

CARNESVILLE. Add—ſee FRANKLIN.

CAROLIN D'OR, or CAROLIN, a gold coin of Bavaria, Heſſe Darmſtadt, and Wurtemberg, valued at 11 florins. See COIN.

CAROLINA, *N. and S.* See UNITED STATES.

CAROLINE, l. 4, *r.* 17,544; l. 5, *r.* 10,764; l. 8, *r.* 9453; l. 10, *r.* 1520.

CARORA, l. 2, inſert—15 leagues E. of Maracaybo lake, in N. lat. 10°. The town is tolerably well built; the ſtreets are large and on a line; the air is ſalubrious, though the ſoil is parched; the inhabitants, amounting to about 6200, live on the produce of their flocks and herds, and employ themſelves in tanning and dreſſing the hides and ſkins, which are uſed in the city for boots, ſhoes, ſaddles, bridles, and curriery. The ſurplus of the local conſumption is ſpread over the province, or is conveyed to Maracaybo, Carthagena, and the iſland of Cuba. They alſo make, with a kind of fibre (*aloe diſticha,*) very good hammocks, which furniſh an article of commerce. Depons.

CARPATHIAN MOUNTAINS, l. 22, *r.* Zemnitz.

CARPHA, in *Botany*, ſo named by ſir Joſeph Banks and Dr. Solander, from καρφη, *dry ſtraw or chaff*, in alluſion to the habit of this genus.—Brown Prodr. Nov. Holl. v. 1. 230.—Claſs and order, *Triandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Juſſ. Br.

Eſſ. Ch. Spikelet ſingle-flowered; ſcales imperfectly two-ranked, the lower ones empty. Briſtles three to ſix, beneath the germen, as long as the fertile ſcale. Style awl-ſhaped, without a joint, crowning the priſmatic nut. Stigmas two or three.

Sect. 1. *Spikelets two-ranked. Stigmas three. Nut triangular. Briſtles feathery.*

1. C. *alpina.*—Spikelets in a corymboſe cluſter. Briſtles ſix, feathered nearly to the top. Stem leafy, ſmooth. Leaves rough.—Native of Van Diemen's iſland.

2. C. *deuſta.*—Tuft terminal. Involucrum of two elongated

gated leaves; dilated and membranous at the baſe. Briſtles three, feathery at the baſe. Stem leafleſs. Leaves radical, almoſt briſtle-ſhaped.—Native of Port Jackſon.

Theſe, with a non-deſcript ſpecies from Terra del Fuego, conſtitute, in Mr. Brown's opinion, the genuine genus of *Carpha*, the following being perhaps entitled to form one by themſelves.

Sect. 2. *Spikelets awl-ſhaped. Style elongated, in two diviſions. Nut nearly cylindrical.*

3. C. *avenacea.*—Panicle ſomewhat ſpiked. Scales with awn-like points. Briſtles four, ſlightly toothed; fringed at the baſe. Stem roundiſh, leafy.—Native of the ſouth coaſt of New Holland. *Stamens* three.

4. C. *diandra.*—Panicle denſe. Spikelets two-flowered. Scales with awn-like points. Stamens two. Briſtles five or ſix, capillary, toothleſs; fringed at the baſe. Stem roundiſh, leafy.—Found at Port Jackſon.

5. C. *clandeſtina.*—Spike elongated. Sheaths alternate. Spikelets in pairs, concealed. Stem round, leafy.—Found on the ſouth coaſt of New Holland.

CARRICK. See Trankey.

CARTER, l. 1, inſert E. Tenneſſee. Add—It contains 1*l.* 4*s.* 6*d.* See Tax.

CARTERET, in Carolina, &c., l. 3, *r.* 4823; l. 4, *r.* 4190 inhabitants, 202 being ſlaves.

CARTS, *Laws relating to*, col. 3, l. 49, for 1*l.* 4*s.* *r.* 1142.

CARTHAMUS, *Chemical Properties of.* Many experiments have been made on the colouring matter extracted from this plant. The laſt and moſt intereſting are thoſe of Dufour and Marchais, of which we ſhall preſent our readers with a ſhort account.

The flowers of the carthamus contain two colouring matters; a yellow, which is ſoluble in water, and has hitherto been applied to no uſe; and a red, which is employed by the dyers, &c., and which conſtitutes the pigment called *rouge*. The yellow colouring matter readily diſſolves in water, but it is difficult to ſeparate the whole of it. Dufour effected this by expoſing the carthamus wrapt up in a piece of linen to the action of a ſtream of water. To ſeparate the red colouring matter, he macerated for an hour the carthamus, after it had been thus waſhed, in a weak ſolution of carbonate of ſoda. Into this ſolution was put a quantity of cotton, and lemon-juice was then dropped into it till the liquid aſſumed a fine cherry-red colour. After ſtanding twenty-four hours, the liquid loſt its red colour, the whole colouring matter having combined with the cotton, and dyed it red. The cotton was taken out and well waſhed, to ſeparate a little of the yellow colour adhering to it. It was then put into a very dilute ſolution of carbonate of ſoda. This alkali ſeparated the colouring matter from the cotton, diſſolved it, and aſſumed a yellow colour; the cotton being removed and lemon-juice dropped into the ſolution, a fine roſe-coloured powder gradually ſeparated, and at laſt precipitated. This was the red colouring matter. This red colouring principle is inſoluble in water and oils, but is ſoluble in alcohol and ether. The alkalies alſo diſſolve it, but deſtroy its colour. When diſtilled, it yields a little water, ſcarcely any gas, a little oil, and a portion of charcoal, equal to one-third of the original weight. When this charcoal is burnt it leaves no aſhes. One thouſand parts of carthamus yielded only five of this red colouring matter, but no leſs than 268 of the yellow colouring matter above-mentioned. Carthamus alſo contains a great variety of other ſubſtances according to Dufour, many of which, ſuch as alumina, ſand, &c., are evidently foreign. It is probably in ſome ſuch manner as the above that the *pink ſaucers* are prepared from carthamus, though we believe the exact proceſs is kept ſecret.

CARTILAGE, *Chemical Properties of.* See Bone.

CARTONEMA, in *Botany*, from καρτος, *ſhorn*, and νημα, *a filament.*—Brown Prodr. Nov. Holl. v. 1. 271.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Commelineæ*, Br.

Eſſ. Ch. Calyx three-leaved, permanent. Petals three, ſmaller. Filaments equal, permanent, beardleſs, partly roughiſh. Anthers oblong, vertical. Style permanent Stigma bearded. Capſule ſhorter than the calyx, of three cells and three valves, with central partitions. Seeds one or two, with a dorſal embryo.

1. C. *ſpicatum.*—Found by Mr. Brown in the tropical part of New Holland. *Root* perennial, tuberous below the fibres. *Herb* clothed with lax hairs, much reſembling Philydrum in appearance. *Stem* leafy, ſimple, or ſlightly branched. *Leaves* linear, claſping, elongated. *Spike* terminal, of many yellow *flowers*, each with two unequal, leafy, permanent *bracteas*. The habit, as well as the permanent *ſtamens* and *ſtyle*, lead Mr. Brown to ſuſpect ſome affinity to *Philydrum*. Hence perhaps the true place of that puzzling genus may be diſcovered.

CARVER, in *Geography*. Add—It contains 358 inhabitants.

CASBIN, inſert—or Casween, l. 11, after broad, add—it may ſtill, however, be regarded as one of the largeſt and moſt populous towns in the kingdom, and carries on a great trade with Ghilan.

CASEY, a county of Kentucky, containing 3252 inhabitants, of whom 237 are ſlaves.

CASH, a ſmall coin in China, and India beyond the Ganges. See Tale.

CASHIERING, in *Military Language*. An officer ſentenced by a general court-martial, or peremptorily ordered by the king, to be diſmiſſed from the ſervice, is ſaid to be *caſhiered*.

CASSAVA, or Tapioca, *Chemical Properties of.* This is prepared from the roots of the Jatropha *manihot*, an American plant. (See Jatropha.) Theſe are peeled and ſubjected to preſſure in a bag made of ruſhes. The expreſſed juice is a virulent poiſon, and is employed by the Indians for poiſoning their arrows; but it depoſits gradually a white powder, which has all the properties of ſtarch, and which, when waſhed and dried, is perfectly harmleſs, and highly nutritive. What remains in the bag alſo conſiſts chiefly of the ſame ſtarch. It is dried in ſmoke, and afterwards preſſed through a kind of ſieve. Of this ſubſtance, the *caſſava bread*, ſo much employed in the Weſt Indies, is made.

CASSINIA, in *Botany*, dedicated by Mr. Brown to his learned fellow-labourer in the ſtudy of compound flowers, M. Henry Caſſini, two of whoſe Memoirs on their ſtamens and ſtyle have appeared in the French Journal de Phyſique, for 1813 and 1814.—Br. in Ait. Hort. Kew. v. 5. 185.—Claſs and order, *Syngeneſia Polygamia-ſegregatæ*. Nat. Ord. *Compoſitæ*, Linn. Br.

Eſſ. Ch. Partial calyx four-leaved, two-flowered. Florets all perfect. Seed-down chaffy, tufted. Partial receptacle naked.

1. C. *aurea*. Yellow Caſſinia.—Native of the ſouth coaſt of New Holland. *Br.* Seeds were ſent to Kew, by Mr. Good, in 1803. The plant is marked as a green-houſe perennial herb, flowering in July and Auguſt, but we have no account of its habit or appearance.

CAST, for Brahmins *r.* Brachmans.

CASTELLANO, a weight for gold in Spain, 50 caſtellanos being = 400 tomines or 4800 grains. Silver is weighed by the ſame mark of 50 caſtellanos, divided into 8 ounces, 64 ochavos, 128 adarnnes, 384 tomines, or 4608 grains.

CASTINE. Add—It contains 1036 inhabitants.

CASTLE, New. See Newcastle.

CASTLE-CARY, l. 8, add—By the returns of 1811, the pariſh contained 281 houſes, and 1406 inhabitants; 650 being males, and 756 females.

CASTLE-RISING. By the returns of 1811, the borough and pariſh contained 48 houſes, and 297 perſons; *viz.* 148 males, and 149 females.

CASTLETON, l. 9, *r.* 1420.

CASTLE-TOWN, a townſhip of America, &c. l. 2, which contained, by the cenſus in 1810, 1301 inhabitants, and 121 ſenatorial electors. Here are three houſes for public worſhip, and ſome ſchool-houſes.

CASTOR. By the returns of 1811, the pariſh contained 185 houſes, and 1051 perſons; 487 being males, and 564 females.

Vol. VII.

CASWELL, l. 3, *r.* 11,757 and 4299.

CATAHULA, a pariſh of the territory of Orleans, having 1164 inhabitants.

CATALPA, in *Botany*, a well-ſounding barbarous name, which Linnæus in Hort. Cliff. 317, could trace no further than the gardeners of that day, nor are we acquainted with its origin or meaning.—Juſſ. Gen. 138. Dryand. in Ait. Hort. Kew. v. 1. 24. Purſh 10.—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Perſonatæ*, Linn. *Bignoniæ*, Juſſ.

Eſſ. Ch. Corolla five-cleft, irregular. Calyx in two deep ſegments. Three barren ſtamens. Capſule of two cells. Seeds with a membranous jagged wing at each end.

1. C. *ſyringifolia*. Common Catalpa. Sims in Curt. Mag. t. 1094; and

2. C. *longiſſima*. Wave-leaved Catalpa. (Bignonia longiſſima; Willd. Sp. Pl. v. 2. 290.) are the two deſcribed ſpecies. (See Bignonia n. 1 and n. 22.) We have heard that Dr. Solander, who was firſt aware of this genus, and who would certainly never have admitted ſo unauthoriſed a name as *Catalpa*, was very deſirous of having it called *Solandra*.

CATAWESSY. Add—It contains 1934 inhabitants.

CATHARINE II., col. 3, l. 40, for Perſian *r.* Pruſſian.

CAT'S-EYE. See Mineralogy, *Addenda*.

CATTY, a weight at Canton, in China, and in ſome parts of India. The catty or gin of 16 lyangs or tales weighs 19 oz. 6 dwts. 4 grs. Engliſh troy, ſo that 10 tales would weigh 5792 Engliſh grains. See Tale.

CAVALLO, Tiberius, F.R.S., in *Biography*, the ſon of an eminent phyſician of Naples, where he was born in 1759. Deſtined for commerce, he came to England for the purpoſe of acquainting himſelf with the principles of commerce in 1771; but literature and philoſophy diverted his deſtination and enjoyed his preference. To thoſe who were engaged in purſuits ſimilar to his own, and to the editor of this Cyclopædia, he was a very uſeful coadjutor. His publications on a variety of philoſophical ſubjects, and his communications to the Royal Society, were numerous, and are well known; particularly his "Elements of Natural and Experimental Philoſophy," 1803, 4 vols. 8vo. He died, much reſpected and eſteemed, and with the editor's ſincere regret, in London in 1810.

CAUCUS, a term uſed in North America for a kind of electioneering committee; *caucuſing*, as it is ſaid, denoting electioneering. Of the origin of this uncouth term we have the following account in Gordon's Hiſt. of the Amer. Rev. London 1788. "About the year 1738, the father of Samuel Adams, and twenty others who lived in the north or ſhipping part of Boſton, uſed to meet to make a *caucus*, and lay their plan for introducing certain perſons into places of truſt. Each diſtributed the ballots in his own circle, and they generally carried the election. As this practice originated in the ſhipping part of Boſton, caucus might have probably been a corruption of Caulker's meeting." See Pickering's American Vocabulary.

CAVEDONA, l. *ult.* *r.* 80.

CAVEER, or Cabeer, a money of account at Mocha, in Arabia, where accounts are kept in piaſtres of 80 caveers current.

CAVELLO, a copper coin of Naples.

CAVENDISH, *The Honourable* Henry, in *Biography*, was the ſon of lord Charles Cavendiſh, and born in London in 1731. In literature, mathematics, chemiſtry, and philoſophy, he was eminently diſtinguiſhed; but his temper and habits were through life ſingularly recluſe and economical; ſo that he appeared to thoſe who were not honoured with being his intimate aſſociates to great diſadvantage. In early life his fortune was ſmall; but by the retired manner in which he lived, and by ſubſequent accumulation of property, he died very rich. His library was very valuable; and eaſy of acceſs to all his literary friends; but it is to be lamented that, in other reſpects, he was not emulous of following the example and acquiring the reputation of his *eminent* friend, ſir Joſeph Banks, the preſident of the Royal Society, whoſe Sunday evening meetings he conſtantly attended, being generally there as well as at the meetings of the Royal Society, where he was almoſt always preſent, more ready to hear than to ſpeak. A ſimilar reſerve and taciturnity marked his character in all his ordinary ſocial connections and ſecular concerns. As a philoſopher, his ruling temper was not without its beneficial effects. His contributions to the Royal Society, and which may be found in its Tranſactions, relate to chemiſtry, electricity, meteorology, and aſtronomy. This eminent philoſopher died on February 4th, 1810, in the 79th year of his age; and at that time was reckoned the greateſt proprietor in the Bank of England, his wealth being eſtimated at nearly 1,300,000 pounds, which he left entirely among his relations.

Cavendish, in *Geography*, a town of Windſor county, in Vermont, having 1295 inhabitants.

CAUK, l. *ult.* add—and Barytes.

CAULINIA, in *Botany*, ſo named by De Candolle, in honour of Don Philip Cavolini, an able Neapolitan naturaliſt, who has illuſtrated the principal ſpecies.—"De Cand. Fr. v. 3. 156." Brown Prodr. Nov. Holl. v. 1. 339. (Poſſidonia; Konig in Ann. of Bot. v. 2. 95. Kernera; Willd. Sp. Pl. v. 4. 947.)—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Aroideæ*, Br.

Eſſ. Ch. Calyx and Corolla wanting. Filaments dilated, permanent, membranous, bearing the two-lobed anthers externally at the baſe. Germen ſuperior, ſingle-ſeeded. Stigma nearly ſeſſile. Pericarp fleſhy.

This genus is founded on *Zoſtera oceanica* of Linnæus, ſee Cavol. Monogr. tranſlated in Ann. of Bot. v. 2. 77. t. 6. To this Mr. Brown adds a New Holland ſpecies, *C. ſerrulata*, with three doubtful ones, among which is *Ruppia antarctica*, Labill. Nov. Holl. v. 2. 116. t. 264. We are not informed why this genus ſuperſedes the Cavolinia we have already deſcribed; ſee that article.

CAULOPHYLLUM, Michaux Bor.-Amer. v. 1. 204. Purſh 218. See Leontice.

CAUSTIC, Lunar, l. 18, *r.* revived.

CAUSTIS, in *Botany*, καυϛις, *ſcorched hay or corn*, alluding to the dry ſheaths of the ſtem, which appear as if burnt.—Brown Prodr. Nov. Holl. v. 1. 239.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperaceæ*, Juſſ. Br.

Eſſ. Ch. Spikelets nearly ſingle-flowered. Scales faſciculated, the empty ones numerous. No briſtles beneath the germen. Style dilated at the baſe. Stigmas three or four. Nut tumid, crowned with the bulbous baſe of the ſtyle.

Obſ. One ſpecies has five *ſtamens*, a circumſtance marked by Mr. Brown as very extraordinary.

Theſe are rigid ruſhy plants, growing on dry heaths in New Holland. Their *ſtems* are leafleſs; round and undivided in the lower part; panicled and ſemi-cylindrical above; the ultimate branches awl-ſhaped and leaf-like. The *ſtems* are clothed with entire withered ſheaths, extended on one ſide into an awl-ſhaped point, of the ſame colour. *Spikelets* panicled, ſmall, ſometimes dioecious. *Nut* ovate, white, opaque. *Brown.*

1. C. *flexuoſa.*—Panicles looſe, zigzag; their ultimate branches ſmooth. Scales of the ſpikelets ſmooth.—Found at Port Jackſon.

2. C. *dioica.*—Panicles zigzag, rather denſe; ultimate branches rough-edged. Scales of the ſpikelets downy.—Native of the ſouth coaſt of New Holland.

3. C. *pentandra.*—Principal and partial branches ſtiff. Stamens five.—Found near Port Jackſon.

CAWZI, or Cazi, denotes in India a Mahometan judge or juſtice, who alſo officiates as a public notary by affixing his ſeal. This is the ſame with the officer named Cadi in Turkey.

CAYUGA, in *Geography*, a county of New York, containing 29,843 inhabitants, of whom 75 are ſlaves.

CECIL, l. 3, add—in 1810, 13,066 inhabitants, of whom 2469 are ſlaves. Add at the cloſe—containing 1167 inhabitants.

CEDAR Creek, a hundred of Suſſex county, in Delaware, having 3874 inhabitants, of whom 310 are ſlaves.

CELEMINE, a corn meaſure in Spain. See Caffise.

CELESTINE *Sulphate of Strontian*. See Strontian.

CELSIUS, Andrew, in *Biography*, an eminent Swediſh aſtronomer, was born at Upſal in 1701, and diſtinguiſhed by his knowledge of mathematics, and more eſpecially of aſtronomy, to which his attention was principally devoted. In 1730 he was appointed by the king profeſſor of aſtronomy, and he contributed very much to the revival of the ſtudy of this ſcience in his native country, where it had been much neglected. With this view, he travelled into foreign countries, viſiting Germany in 1732, and Italy in 1733. From Bologna he went to Rome; and having an opportunity of meaſuring the power of light, he concluded from his experiments on this ſubject, that the light of the moon, at new moon, is eight times weaker than at full moon: and that the light of the ſun is 320,000 times ſtronger than that of the moon; and when in the meridian, thirty times more powerful than in the horizon. From Rome he removed to Paris in 1734, and was there engaged to accompany Maupertuis and other eminent aſtronomers, who were appointed to meaſure a degree under the polar circle; a problem of great importance in determining the figure of the earth. To the ſucceſs of this miſſion he very much contributed by his journey to London in 1736, in order to procure inſtruments of Graham's conſtruction, and here he had the ſatisfaction of being introduced to ſeveral ſcientific perſons. On his return from this miſſion, he was recompenſed for his ſervices by a penſion of 1000 livres, granted to him by the French government, as well as the quadrants which had been uſed at Tornea. In 1737 he returned to his own country, where he erected, in his own garden, a turret for the purpoſe of making obſervations; but in 1739, in conſequence of a diſſertation publiſhed at Upſal on the importance and utility of ſuch obſervations, a large public obſervatory was immediately begun and completed in the following year. Thus furniſhed with the means of making his obſervations, he was indefatigable in the uſe of them, and in the correction of tables which had been before conſtructed. But on his obſervations of various kinds, and their practical reſult, our limits will not allow us to enlarge. His fame was daily increaſing, ſo that he was a member of the Imperial Academy of the Searchers into Nature, of the Academy of Berlin, of the Royal Society of London, and of the Inſtitute of Bologna. He was alſo ſecretary to the Society of Upſal, and to the Academy of Sciences at Stockholm. His ſeparate works, as well as his communications to learned ſocieties, were numerous; but his life and labours were terminated by a conſumption, in the 43d year of his age, in April 1744. Gen. Biog. Appendix.

CEMENT. Mr. Parkes, in his "Eſſays," (vol. i. p. 320.) recommends the following fire-cake, as that which he employs, becauſe he has not been able to diſcover a better; *viz.* good clay two parts, ſharp waſhed ſand eight parts, and horſe-dung one part. Theſe materials, being intimately mixed and beaten up with a little water, and the whole afterwards thoroughly tempered like mortar, by treading it for a conſiderable time with the feet. Mr. Watt's fire-cake, which is a good one, is formed by pounding porcelain clay from Cornwall, and mixing it to the conſiſtence of thick paint, with a ſolution of borax, in the proportion of two ounces of borax to a pint of hot water.

CENARRHENES, in *Botany*, from κενος, *empty*, and αῤῥην, *a male*, ſo named by M. Labillardiere, who took the nectariferous glands for alternate abortive ſtamens.—Labill. Nov. Holl. v. 1. 36. Brown Prodr. Nov. Holl. v. 1. 371. Tr. of Linn. Soc. v. 10. 158.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Br.

Eſſ. Ch. Petals four, regular, tapering, deciduous. Stamens inſerted into the baſe of each petal. Nectariferous glands four, at the baſe of the germen, ſtalked. Germen ſeſſile. Stigma ſimple. Drupa with a ſingle nut.

1. C. *nitida*. Labill. t. 50.—Native of the ſouthern part of Van Diemen's iſland. A ſmooth tree. *Leaves* alternate, ſtalked, obovate-oblong, ſhining, diſtantly ſerrated, three or four inches in length. *Spikes* much ſhorter, axillary, ſolitary, ſimple. *Flowers* alternate, quite ſeſſile, with a ſmall, broad, acute *bractea* to each.

Mr. Brown has, in our opinion, moſt happily determined the natural order of this genus, which is nearly allied to Personia (ſee that article); and his excellent remarks in the Linnæan Tranſactions, too long for inſertion here.

CENIS, col. 2, l. 19, after plain, inſert—about ſix miles long, covered with verdure; l. 46, add—From the higheſt of theſe mountains, Hannibal ſhewed his ſoldiers the fine country they were going to conquer. The higheſt point of Mount Cenis is 9261 feet at the grand croſs, on the ſide of Italy 6022 feet.

CENOMYCE, in *Botany*, from κενος, *empty*, and μυκη, *a ſort of fungus*, alluding to the hollowneſs of the little fungus-like receptacles.—Achar. Syn. 248. "Lichenogr.

105. t. 11. f. 3—6."—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Frond leafy, cartilaginous, lobed. Receptacles orbicular, coloured, inflated, without a border, on hollow tubular ſtalks.

This genus contains the *Lichenes pyxidati* of Linnæus, and embraces the Bæomyces of Perſoon, and of Acharius in his earlier works; but the latter name now deſignates another genus, which the reader will find in the preſent volume. Acharius has forty-two ſpecies of *Cenomyce*. Examples of the genus may be ſeen in Engl. Bot. t. 907. 1393, 1894, 2051, &c.

CENTER *of Rotation*, col. 6, l. 35, *r. p* × *p*C; l. 63, *r. p*C.

Center, in *Geography*, a townſhip of Columbiana, in Ohio, having 1103 inhabitants.

CENTRANTHERA, in *Botany*, from κεντρον, *a ſpur*, and ανθηρα, *an anther*.—Brown Prodr. Nov. Holl. v. 1. 438.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophularinæ*, Br.

Eſſ. Ch. Calyx ſplit at one ſide; its five ſegments cohering at the other. Corolla funnel-ſhaped; limb ſpreading, five-lobed, unequal. Stamens within the tube. Lobes of the anthers ſpurred at the baſe. Stigma lanceolate. Capſule with two cells, two valves, and a contrary partition bearing the receptacle of the ſeeds, at length ſeparating from the valves.

1. C. *hiſpida*. Br. n. 1.—Found by ſir Joſeph Banks, in the tropical part of New Holland. An upright briſtly *herb*, with oppoſite, undivided, narrow *leaves*, and a terminal ſpike. *Flowers* purpliſh, alternate, nearly upright, each with three *bracteas*. *Capſule* ovate, rather pointed, its valves ſometimes divided. *Seeds* minute, with a lax reticulated ſkin. *Albumen* but ſmall. *Embryo* round. *Calyx* at length ſeparable into two diviſions. Akin on the one hand to *Buchnera* and *Euphraria*, on the other perhaps to *Digitalis*, being alſo allied to *Seſamum*, but diſtinguiſhed by the ſtructure of the *capſule*, and the preſence of *albumen*. The *ſtigma* requires further examination. Mr. Brown thinks there is another ſpecies found in the Eaſt Indies.

CENTRE, in *Geography*, a county of Pennſylvania, containing 10,681 inhabitants.—Alſo, a townſhip of Butler county, in Pennſylvania, containing 742 inhabitants.

Centre-*Harbor*, a town of Strafford county, in New Hampſhire, containing 349 inhabitants.

CENTROLEPIS, in *Botany*, Labill. Nov. Holl. v. 1. 7. See Devauxia.

CEPHALOTUS, κεφαλωτος, *capitate*, expreſſive of the glandular head of each of the ſtamens.—Labill. Nov. Holl. v. 1. 6. Brown Bot. of Terra Auſtr. 68.—Claſs and order, *Dodecandria Hexagynia*. Nat. Ord. *Roſaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx in ſix ſegments, coloured. Petals none. Stamens inſerted into the rim of the calyx. Anthers glandular at the back. Germens ſingle-ſeeded. Styles vertical.

1. C. *follicularis*. New Holland Pitcher-plant. Labill. as above, 7. t. 145. Br. t. 4.—In marſhy ground, near King George's ſound and Princeſs Royal harbour, on the ſouth-weſt coaſt of New Holland, flowering in December and January. *Herb* perennial, with ſcarcely any *ſtem*. *Leaves* at the top of each diviſion of the crown of the *root*, numerous, crowded, ſtalked, elliptic-lanceolate, acute, entire, ſmooth, or ſlightly hairy, an inch and a half long, intermixed with numerous, ſtalked, deflexed, inflated, pitcher-like *veſſels*, larger than the leaves; double-winged, and fringed, at the front and ſides; tumid and crenate at the margin; more or leſs cloſed by a convex ribbed lid. Each is half full of a ſweetiſh watery fluid, in which ants are generally found drowned, as in Nepenthes (ſee that article); but theſe remarkable plants have no other character in common. *Flower-ſtalks* central, ſolitary, nearly round, hairy, leafleſs, twelve or eighteen inches high, each terminating in a denſe, compound, obtuſe *cluſter*, of ſmall white *flowers*. The *fruit* is unknown.

CEPHALUS, a genus of the cartilaginous order of fiſhes, the ſpecies of which have been united with thoſe of the genera of *Diodon* and *Tetrodon*; which ſee. Dr. Shaw has given the following character of this genus: jaws bony; body terminating abruptly, ſo as to reſemble the head of a fiſh. The ſpecies enumerated by Shaw are, *C. brevis*, or tetrodon mola of Linnæus; *C. oblongus*, or Tetrodon trunculus, or oblong diodon of Pennant; *C. varius*, with body variegated by whitiſh undulations and ſpots; *C. Pallaſianus*, the diodon mola of Gmel. Linn.

CERASIN, in *Chemiſtry*, a name given by Dr. John to a peculiar vegetable ſubſtance, which has always been hitherto conſidered as a variety of gum. Its properties are the following.

It is a ſolid ſubſtance, having the general appearance and taſte of gum; though it is uſually harder than gum, and not ſo eaſily reduced to powder. When put into cold water it imbibes that liquid and ſwells up very conſiderably, and becomes ſemi-tranſparent and gelatinous, but is not in the leaſt ſoluble, a property by which it is diſtinguiſhed from gum. It diſſolves in boiling water, but again precipitates as the liquid cools, and remains in the ſtate of jelly. This gelatinous maſs may be uſed like gum to paſte together pieces of paper, &c. It is inſoluble in alcohol and ether; but cold water, acidulated with either of the mineral acids, diſſolves a ſmall portion of it, and if heated, the whole. When an alkaline ſolution is dropt into the nitric ſolution of ceraſin, a portion only of the ceraſin is precipitated. If the liquid be evaporated, the remainder is obtained converted into a peculiar bitter-taſted ſubſtance.

Tragacanth gum may be conſidered as an example of pure ceraſin. (See Tragacanth.) Ceraſin alſo conſtitutes a portion of the gummy matter that exudes from the prunus *ceraſus*, (hence the name,) prunus avium, prunus domeſtica, xanthera haſtilis, &c.

CERATIOLA, in *Botany*, from κερατιον, *a little horn*, alluding to the appearance of the ſtigma.—Michaux Bor.-Am. v. 2. 221. Willd. Sp. Pl. v. 4. 712. Purſh 21.—Claſs and order, *Dioecia Diandria*. Nat. Ord. *Ericis* affine? Juſſ.

Eſſ. Ch. Male, Calyx none. Corolla none.

Female, Calyx none. Corolla none. Stigma in many unequal ſegments. Berry with two ſeeds.

1. C. *ericoides*. Heath-like Ceratiola. Willd. n. 1. Purſh n. 1.—Native of Georgia and Florida, in dry gravelly ſoil; plentiful on the iſlands in the mouth of St. Mary's river. *Purſh*. A ſmall *ſhrub*, determinately branched, reſembling a heath; young *branches* finely woolly. *Leaves* four in a whorl, ſtalked, linear, revolute, rigid, ſmooth, about half an inch long. *Flowers* from ſmall lateral *buds*, with concave, fringed ſcales. *Anthers* large, of two cells, burſting lengthwiſe. Segments of the *ſtigma* often combined into two little horn-like bodies. *Berry* globular, red, half the ſize of a pea. Perhaps this might be conſidered as an Empetrum deſtitute of *calyx* and *corolla*; ſee that article. It forms however a better artificial genus than many daily publiſhed. We have ſpecimens from Mr. Fraſer.

CERIUM, in *Chemiſtry*, the name of a metal. This metal, or rather its oxyd, is extracted from a Swediſh mineral formerly confounded with tungſten, and was firſt obtained ſeparately by Klaproth, who conſidered it as a new earth, to which he gave the name of *ochroita*. (See OCHROITE.) About the ſame time this mineral was examined with more attention by Hiſinger and Berzelius, who gave it the name of *cerit*, and detected in it a peculiar ſubſtance, which they conſidered as a metallic oxyd, to which they gave the name of *Cerium*, from the planet *Ceres*, then lately diſcovered by Piazzi. They did not ſucceed in reducing this oxyd; nor was Gahn, who made the experiment ſome time afterwards, more ſucceſsful. Vauquelin, however, who had formerly examined the mineral, turned his attention to the ſubject a ſecond time, and he ſucceeded in reducing it ſo far as to ſhew that its baſis is a metal.

In 1814 a new ſet of experiments was made upon it by Laugier. He appears to have reduced it to the metallic ſtate, but combined with carbon. Oxalic acid, according to Laugier, ſeparates the whole of the oxyd of cerium from iron. The aſſertion of this chemiſt, however, that its oxyd is not volatile, has been denied by Dr. Thomſon.

To procure the oxyd of cerium in a ſtate of purity, the Swediſh chemiſts employed the following method. The mineral was reduced to a fine powder, and digeſted in nitric acid till every thing ſoluble was taken up. The ſolution was then evaporated to dryneſs, and the reſidue diſſolved in water. Into this ſolution ammonia was poured, till every thing precipitable by its means was thrown down. The precipitate being well waſhed, was rediſſolved in nitric acid, the acid neutralized, and then tartrate of potaſh added to the ſolution. The precipitate thus formed was then heated to redneſs, well waſhed with vinegar, and dried, and was conſidered as pure oxyd of cerium.

The oxyd of cerium, when firſt prepared, is white; but when it has been heated it becomes reddiſh-brown. Formed into a paſte with oil, and heated in a charcoal crucible, it loſes weight: when urged by a ſtrong fire on charcoal, it does not melt but continues in powder. It exhibits, however, brilliant particles, which were proved to be of a metallic nature.

According to Vauquelin and Hiſinger, cerium combines with two proportions of oxygen. The protoxyd is white: the peroxyd reddiſh-brown. The peroxyd contains 1½ times as much oxygen as the protoxyd. The protoxyd, according to Hiſinger, is compoſed of

Cerium - 100
Oxygen - 17.41
The peroxyd of Cerium - 100
Oxygen - 26.115

From Hiſinger's experiments, it appears that the equivalent number for the protoxyd of cerium is 67.5, and of the metal 57.5. But if with Dr. Thomſon we ſuppoſe the peroxyd to be a compound of two atoms of cerium and three of oxygen, the weight of the atom of peroxyd will be 145.

No compound of this metal with hydrogen, azote, chlorine, nor fluorine is known. The carburet formed by Laugier was a black matter, which took fire ſpontaneouſly when expoſed to the air. The phoſphuret, which appears to have been formed in one inſtance by Hiſinger and Berzelius, was a hard, brown, tenacious ſubſtance, which ſhone in the dark, and took fire when heated.

Hydroſulphuret of ammonia throws down cerium at firſt of a brown colour, but it becomes deep green if the re-agent be added in larger quantity. When dry, the hydroſulphuret formed is a bright green, and burns when heated, leaving a yellow oxyd of cerium. The colour of the precipitate varies, however, according to the ſtate of oxydation of the cerium held in ſolution.

No alloy of cerium is known, except one with iron, obtained by Vauquelin; this was white, brittle, and diſſolved with great difficulty in nitro-muriatic acid.

Salts of Cerium. Nitrate of Cerium.—Nitric acid unites with both the oxyds of cerium; with the white oxyd it combines moſt readily. The ſolution is colourleſs, cryſtallizes with difficulty, retains an exceſs of acid, and has a ſweet auſtere taſte. The red oxyd diſſolves with difficulty in cold nitric acid, but the ſolution may be readily effected by heat. The ſolution is yellow, and if an exceſs of acid be preſent, it yields ſmall white deliqueſcent cryſtals. Both the nitrates are ſoluble in alcohol, and are decompoſed by heat.

Muriate of Cerium.—This ſalt exiſts in the form of ſmall four-ſided priſmatic cryſtals of a yellowiſh-white colour. They are ſoluble in alcohol, and deliqueſce on expoſure to the air. When expoſed to heat they are decompoſed.

Sulphate of Cerium.—Sulphuric acid diſſolves the red oxyd of cerium with difficulty. The ſolution when obtained is of an orange-colour, and yields by evaporation ſmall octahedral and needle-formed cryſtals of perſulphate of cerium. Their colour is partly lemon-colour and partly orange. This ſalt is not ſoluble in water without exceſs of acid. When expoſed to the air, the cryſtals ſoon aſſume the form of a yellow powder. Sulphuric acid combines readily with the white oxyd of cerium, eſpecially when in the ſtate of carbonate. The ſolution is colourleſs, and readily cryſtallizes. There is a triple ſulphate of potaſh and cerium.

Phoſphate of Cerium.—This is a white powder inſoluble in water, but ſoluble in the nitric and muriatic acids.

Arſeniate of Cerium.—This ſalt is inſoluble. There is a ſoluble ſuperarſeniate which does not cryſtallize.

Acetate of Cerium.—This ſalt exiſts in the form of ſmall granulated cryſtals, readily ſoluble in water, but ſparingly ſoluble in alcohol, and not altered by expoſure to the air.

Oxalate of Cerium.—Oxalic acid and oxalate of ammonia precipitate cerium from its ſolution. The precipitate with the peroxyd is red, with the protoxyd white. It is not ſoluble in exceſs of acid, but readily in ammonia.

Tartrate of Cerium.—The tartrate of potaſh throws down cerium from its ſolutions in the form of a white inſoluble tartrate. This tartrate, however, is ſoluble in nitric, muriatic, and ſulphuric acids, and alſo in pure alkalies.

Citrate of Cerium.—The citrate of cerium is inſoluble, without an exceſs of acid, when it is readily ſoluble. The ſolution does not cryſtallize. The other ſalts of this metal are unknown, or devoid of intereſt. With reſpect to theſe ſalts in general, it may be obſerved, that they are either of a white or yellow colour, according to the ſtate of oxydation of the metal, and their ſolutions have a ſweetiſh taſte. The hydroſulphuret of potaſh, pruſſiate of potaſh, and oxalate of ammonia, produce in them white precipitates; while the gallic acid and infuſion of galls occaſion no precipitate, when added to ſolutions of their ſalts.

CERIUM. See MINERALOGY, *Addenda*.

CERNE, or CERNE-ABBAS, l. 36, add—In 1811 the pariſh contained 145 houſes, and 795 perſons; *viz.* 358 males, and 427 females.

CERUMEN, or *Ear-Wax, Chemical Properties of.* This ſubſtance is nearly inſoluble in water. Alcohol, when aſſiſted by heat, diſſolves five-eighths of the cerumen; the remainder is ſtated by Vauquelin to poſſeſs the properties of albumen mixed with a little oily matter: when the alcoholic ſolution is evaporated, it leaves a deep orange-reſiduum of a very bitter taſte, having the ſmell and conſiſtence of turpentine. It melts when heated, evaporates in a white ſmoke, without leaving any reſiduum, and in ſhort reſembles the *reſin of bile*.

bile. Ether alſo diſſolves this oily body; but the ſolution is much leſs bitter, and lighter coloured. From theſe and other experiments, Vauquelin conſiders cerumen as compoſed of

Albumen,
An inſpiſſated oil,
A colouring matter,
Soda and phoſphate of lime.

CESAR's Creek, a townſhip of Greene county, in Ohio, having 640 inhabitants.

CETIC Acid, in *Chemiſtry*. A name given by Chevreul to a ſubſtance obtained by ſaponifying ſpermaceti. It may be procured by adding an acid to a ſoap compoſed of ſpermaceti and potaſh. Cetic acid is a white ſolid ſubſtance, without taſte or ſmell. It melts at a temperature of about 113°, but does not cryſtallize on cooling, a circumſtance in which it differs from ſpermaceti. It is inſoluble in water, but boiling alcohol diſſolves more than its weight of it, and as the ſolution cools, the cetic acid ſeparates in brilliant lamellar cryſtals. The ſolution in alcohol reddens litmus. It combines readily with the different ſalifiable baſes, and forms ſalts or rather ſoaps, none of which appear to poſſeſs any ſtriking properties.

CETRARIA, in *Botany*, Achar. Syn. 226, a natural, but not very eaſily defined genus of *Lichenes*, compriſing eleven ſpecies, among which are *L. juniperinus*, *glaucus*, *nivalis*, and *iſlandicus* of Linnæus. See Lichenes, n. 19 in the arrangement of Acharius.

CEYLANITE, or Pleenaste. See Mineralogy, *Addenda*.

CHACE, col. 2, l. 32, for vizier *r.* veneur.

CHÆTANTHUS, in *Botany*, from χαιτη, *a briſtle*, and ανθος, *a flower*.—Brown Prodr. Nov. Holl. v. 1. 251.—Claſs and order, *Dioecia Triandria*. Nat. Ord. *Reſtiaceæ*, Br.

This genus is diſtinguiſhed from Leptocarpus (fee that article) by the undivided *ſtyle*, and the minute ſetaceous form of the inner ſcales of the very ſhort calyx. The only ſpecies is

1. C. *leptocarpoides*, found by Mr. Brown, on the ſouth coaſt of New Holland.

CHÆTODON, col. 2, l. *ult.* for Japan *r.* Java. Add—See Teuthis.

Chætodon *Arcuanus*. Add—Perhaps from the Aroo iſlands among the Moluccas.

CHÆTOSPORA, in *Botany*, from χαιτη, *a briſtle*, and σπορα, *a ſeed*.—Brown Prodr. Nov. Holl. v. 1. 232.—This genus is founded by Mr. Brown, on thoſe ſpecies of the Schoenus of Linnæus, and other authors (ſee that article), whoſe ſeed is ſubtended by briſtles, which are not ſo long as the *ſcales* of the flower. Fifteen ſpecies are natives of various parts of New Holland, one of which, *C. lanata*, Br. n. 4, is *Schoenus lanatus*, Labill. Nov. Holl. v. 1. 19. t. 20. The reſt appear to have been firſt deſcribed by Mr. Brown. *Schoenus compreſſus* and *rufus* of Fl. Brit. belong to *Chætoſpora*. See Rhynchospora for a genus ſimilarly characteriſed.

CHAIN, col. 2, l. 4 from bottom, *r. Plate* XII.

CHALK, French, *r.* See Slate.

CHAMÆDOREA, in *Botany*, from χαμαι, *dwarf*, and δωρεα, *a gift*, becauſe the lower part of the ſtem yields the flowers and fruit.—Willd. Sp. Pl. v. 4. 800. Ait. Hort. Kew. v. 5. 394.—Claſs and order, *Dioecia Hexandria*. Nat. Ord. *Palmæ*.

Eſſ. Ch. Male, Calyx deeply three-cleft. Corolla deeply three-cleft. Rudiment of a ſtyle longer than the ſtamens.

Female, Calyx deeply three-cleft. Petals three. Nectary three ſcales, between the petals and germen. Styles three. Drupa ſucculent, with one ſeed.

1. Ch. *gracilis*. Slender Chamædorea. Willd. n. 1. Ait. n. 1. (Boraſſus pinnatifrons; Jacq. Hort. Schoenbr. v. 2. 65. t. 247, 248.)—Native of the Caraccas and of Guiana. An elegant palm, whoſe *trunk* is ten feet high, an inch in diameter, very ſmooth, crowned with alternate pinnate *leaves*, two feet long, and ſending out from near the bottom ſeveral long, ſlender, aggregate *ſpikes*, of numerous ſmall yellow *flowers*; the male ones longeſt, and pendulous. *Fruit* ſcarlet, the ſize of a pea.

CHAMÆRAPHIS, from χαμαι, *dwarf*, and ῥαφις, *a needle*, becauſe each of the little ſhort partial flower-ſtalks bears a very long awn from near its apex.—Brown Prodr. Nov. Holl. v. 1. 193.—Claſs and order, *Triandria Trigynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two valves, two-flowered; the outer valve very ſmall. Corolla of two valves. Outer floret male, its outer valve like the inner valve of the calyx: inner female, ſmaller, membranous. Scales two beneath the germen. Stigmas feathery. Seed incloſed in the hardened corolla.

1. Ch. *hordeacea*. Br. n. 1.—Gathered by Mr. Brown, in the tropical region of New Holland.—A perennial graſs, with two-ranked, linear, ſtraight *leaves*; their *ſtipula* rounded. *Spike* ſolitary, reſembling *Hordeum*, with imbricated *flowers*, in two ranks, parallel to the zigzag *common-ſtalk*, on ſhort *partial ſtalks*, each of which bears, from its inſide, near the top, a very long *awn*. It is cloſely allied to Panicum (ſee that article), differing chiefly in having three *ſtyles*, which indeed is extremely peculiar.

CHAMBER, in *Architecture*, l. 5 from the end, *r.* ought not to be, &c.

CHANCEFORD. Add—It contains 996 inhabitants.

Chanceford, *Lower*, a townſhip of the ſame county and ſtate, having 818 inhabitants.

CHARLEMONT, a townſhip of America, l. 3, *r.* 987.

CHARLES County, l. 4 and 5, *r.* 20,245, including 12,435 ſlaves.

Charles *City*, l. 4, *r.* 5186, and 3023.

Charles, *St.* Add—Alſo, a pariſh of the German coaſt county, in the territory of Orleans, containing 3291 inhabitants, of whom 2321 are ſlaves.—Alſo, a diſtrict in Louiſiana, containing 3505 inhabitants, including 271 ſlaves.

CHARLESTON (2d article), l. 5, *r.* 38,468, and 33,714.

Charleston (3d article), inſert in l. 1—city; l. *ult.* *r.* 1810, 24,711, and 11,671.

CHARLESTOWN, l. 3.—The population is 5283; the ſenatorial electors 669, by the cenſus of 1810. Here are two Preſbyterian or Dutch reformed churches, one for Baptiſts, one for Methodiſts, and 30 ſchool-houſes; l. 7,—The number of inhabitants in 1810 was 28, including one ſlave; l. 8,—The number of inhabitants is 1580; l. 14,—The population in 1810 was 1501; l. 27, for 2000 *r.* 4959; l. 41, for 2022 *r.* 1174, including one ſlave.—Alſo, a townſhip of Indiana, in Clark county, having 11 inhabitants.

CHARLETON, col. 2, l. 8, by the cenſus of 1810, the number of inhabitants was 1946, and of ſenatorial electors 227; l. 12, for 1965 *r.* 2180.

CHARLOTTE, l. 5, for 635 *r.* 1679.

Charlotte, a county of Virginia, l. 3, for 10,078 *r.* 13,161, and for 4916 *r.* 7597.

CHARLTON. Add—Alſo, a town of Worceſter county, in Maſſachuſetts, having 2180 inhabitants.

CHARTIER. Add—It contains 1747 inhabitants.

CHARTRES, l. 11, *r.* 48° 26′ 54″. E. long. 1° 29′ 35″.

CHASE, in *Sea-Language*, col. 2, l. 5, *r.* keeps the chaſe.

CHASSIS DE GALERIE, *r.* CHASSES, &c.

CHATHAM, col. 3, l. 19 from bottom, *r.* 2191 and 12,652.

CHATHAM, in America, l. 5, *r.* 1334; l. 8, *r.* 208; l. 12, after 1767, add—It contains 3258 inhabitants; l. 14, after Newark, add—Alſo, a town of Morris county, in New Jerſey, having 2019 inhabitants.—Col. 2, l. 2, *r.* 12,877; l. 3, *r.* 3635; l. 12, after contains, add 7553; l. 13, *r.* 48.

CHAUX *de Fond*, l. 4, *r.* Locle; l. 6, *r.* Locle.

CHEESE, *Chemical Properties of.* See MILK.

CHEESE-*Preſs*, col. 2, l. 22, inſert—*Agriculture, Plate*, &c.

CHEILANTHES, in *Botany*, a genus of ferns, firſt diſtinguiſhed from ADIANTUM, (ſee that article in the preſent volume,) by profeſſor Swartz, and named from χειλος, *margin*, and ανθος, *a flower*, becauſe the fructification is really inſerted into the margin of the frond, not into the ſcales which conceal it. Such indeed was the idea hitherto conceived of *Adiantum;* but this not being the caſe with the original and beſt-known ſpecies, *Capillus Veneris*, the generic appellation was properly allowed to remain with that and its allies, under a corrected character.—Swartz Syn. Fil. 126. t. 3. Willd. Sp. Pl. v. 5. 455. Brown Prodr. Nov. Holl. v. 1. 155. Ait. Hort. Kew. v. 5. 526. Sm. Prodr. Fl. Græc. Sibth. v. 2. 278. Purſh 670.—Claſs and order, *Cryptogamia Filices*. Nat. Ord. *Filices annulatæ*.

Eſſ. Ch. Capſules annulated, in diſtinct marginal dots. Involucrum of membranous, diſtinct, inflexed ſcales, ſeparating internally.

Dr. Swartz defines ſixteen ſpecies; profeſſor Willdenow nineteen, the latter diſpoſing the whole in three ſections, though marked as two only, according to an inaccuracy we have often noticed in him. The following are ſufficient examples.

Sect. 1. *Frond ſimply pinnate.* One ſpecies.

Ch. *micropteris*. Small Cheilanthes. Willd. n. 1. Sw. n. 1. 324. t. 3. f. 5.—Frond pinnate, linear; leaflets hairy, nearly orbicular, with wave-like notches.—Native of Quito. *Fronds* narrow, a finger's length, with ſeveral, alternate, ſlightly ſtalked *leaflets*, about a line in diameter.

Sect. 2. *Frond doubly pinnate.* Ten ſpecies.

Ch. *pteroides*. Pteris-like Cheilanthes. Willd. n. 2. Sw. n. 12. Ait. n. 1. (Adiantum pteroides; Linn. Mant. 130. Pteris orbiculata; "Houtt. Nat. Hiſt. t. 96. f. 3.")—Frond doubly pinnate; lower branches ſomewhat compound; leaflets ovate-elliptical, obtuſe, rather heart-ſhaped, finely crenate. Dots crowded. Coverings imbricated. Common ſtalk poliſhed.—Native of the Cape of Good Hope. A handſome fern, a foot or more in height, with ſtout, black, ſhining *ſtalks*, and firm dark-green *leaflets*, half an inch long; paler beneath. This and the following might have been referred to the next ſection.

Ch. *ſuaveolens*. Aromatic Cheilanthes. Willd. n. 5. Sw. n. 6. "Schkuhr Crypt. 116. t. 19." Sm. Fl. Græc. Sibth. t. 966, unpubliſhed. (Polypodium fragrans; Linn. Mant. 307. Desfont. Atlant. v. 2. 408. t. 257. Petiv. Gazoph. t. 73. f. 4.)—Frond doubly pinnate, ſmooth; lower branches more or leſs compound; leaflets ovate, obtuſe, ſomewhat revolute. Common-ſtalk thread-ſhaped, roughiſh with ſlender ſcales.—Found on rocks and old walls in Barbary, Madeira, Cyprus, &c. An elegant little fern, three or four inches high, very fragrant when firſt dried. The copious hair-like tawny ſcales of the *ſtalk* are ſometimes almoſt entirely wanting.

Ch. *fragrans*. Sweet-ſcented Cheilanthes. Willd. n. 7. Sw. n. 4. 325. t. 3. f. 6. Ait. n. 2?—Frond doubly pinnate, ſmooth; leaflets elliptic-lanceolate, obtuſe, pinnatifid, with incurved, partly cloven ſegments. Common-ſtalk ſomewhat hairy.—Native of the Eaſt Indies, from whence Kœnig ſent ſpecimens, which remain unnamed in the Linnæan herbarium. The Madeira plant, gathered by the ſame botaniſt, is, as Dr. Swartz ſuſpected, a different ſpecies, being the *Polypodium fragrans* of Linnæus, our *Ch. ſuaveolens*, which is probably alſo Mr. Aiton's *Ch. fragrans*. The Eaſt Indian fern before us is excellently delineated by profeſſor Swartz, and has a more oblong *frond*, with curiouſly pinnatifid *leaflets*, nor can thoſe who have ſeen both ſpecies ever confound them. We are unacquainted with *Ch. odora*, Willd. n. 6.

Sect. 3. *Frond triply or quadruply pinnate.* Eight ſpecies.

Ch. *dichotoma*. Forked Cheilanthes. Willd. n. 15. Sw. n. 15. 335. t. 3. f. 7.—Frond three or four times pinnate, ſmooth; leaflets three-lobed, obtuſe, ſomewhat crenate.—Native of mountains in Quito. A ſpan high, ſlender and delicate, with alternate, wavy, almoſt capillary *branches*, and minute round-lobed *leaflets*.

Ch. *tenuifolia*. Fine-leaved Cheilanthes. Willd. n. 16. Sw. n. 13. 332. "Schkuhr Crypt. t. 125." Br. n. 1. (Trichomanes tenuifolia; Burm. Ind. 237. Dryopteris campeſtris; Rumph. Amboin. v. 6. 74. t. 34. f. 2.)—Frond triply pinnate, ſmooth; leaflets obovate-oblong, ſlightly crenate; upper ones confluent.—Native of the Eaſt Indies. This has the habit of *fragrans* and its allies, but is much larger.

Ch. *dealbata*. White-leaved Cheilanthes. Purſh n. 2.—"Frond triply pinnate; leaflets oval, diſtinct, crenate or emarginate at the end; white beneath."—On rocks, on the banks of the Miſſouri, in July. A very delicate ſmall fern, much reſembling *Ch. tenuifolia*. *Purſh.*

CHEKIE, or CHEQUEE, a Turkiſh weight: that with which gold, ſilver, diamonds, and precious ſtones are weighed, is divided into 100 drachms, and the drachm into 16 killots or carats, or 64 grains. A chequee weighs 10 oz. 5 dwts. 3 grs. troy weight; and a drachm $49\frac{1}{2}$ grs. ditto; ſo that 48 chequees = 41 lbs. troy nearly. The oke is = 4 chequees, or 400 drachms; and the chequee = 11 oz. avoirdupois. The chequee of goats' wool is 800 Turkiſh drachms, or 5 lbs. 10 oz. avoirdupois; the chequee of opium 250 Turkiſh drachms = 27 oz. 10 drs. avoirdupois.

CHELMSFORD, col. 2, l. 12 from the bottom, *r.* 4649 and 822.

CHELMSFORD, in America, l. 4, *r.* 1396.

CHELSEA, in America, l. 3, *r.* 594; l. 8, *r.* 1327.

CHELTENHAM, col. 2, l. 19 from the bottom, *r.* 8325; l. 12, *r.* 1568.

CHELTENHAM, a townſhip of Montgomery county, in Pennſylvania, having 783 inhabitants.

CHEMIN CREUX, *r.* RAVINE.

CHENANGO, a county of New York, containing, by the cenſus of 1810, 21,704 inhabitants, of whom 13 are ſlaves.

CHEPSTOW, col. 4, l. 48, for wall *r.* walk. Add—The pariſh of Chepſtow contained, in 1811, 421 houſes, and 2581 perſons; 1158 being males, and 1423 females.

CHERAY, or CHURAY, a weight in Perſia; the batman of Churay being double the batman of Taurus, and weighing 12 lbs. 4 oz. 13 drs. avoirdupois.

CHERBOURG, l. *ult.* *r.* N. lat. 49° 38′ 31″. W. long. 1° 37′ 18″.

CHERRYFIELD, in *Geography*, a town of Waſhington county, in the diſtrict of Maine, with 181 inhabitants.

CHERRY-TREE, a townſhip of Venango county, in Pennſylvania, having 391 inhabitants.

CHESHAM. The pariſh of Cheſham, in 1811, contained 417 houſes, and 2071 perſons; 924 being males, and 1147 females.

CHESHIRE, col. 2, l. 4 from the bottom, *r.* 41,187 and 227,031.

Cheshire. By the returns of 1811, Aſhton-upon-Merſey in this county, and in a pariſh of the ſame name (omitted in its alphabetical arrangement), appears to have then contained 156 houſes, and 918 perſons; 467 being males, and 451 females.

Cheshire, in America, *dele* l. 5 and 6, and add—and 40,988 inhabitants.

Cheshire, a townſhip, &c. l. 3, add—containing 1315 inhabitants. At the cloſe, add—It contains 2288 inhabitants.

CHESNUT Hill. Add—containing 1128 inhabitants.

CHEST, in *Anatomy*, l. 2, inſert—Lungs.

Chest *of Viols*, *dele* Six-stringed Base.

CHESTER, col. 6, l. 17. In 1811, the city of Cheſter contained 3296 houſes, and 16,140 perſons; 7007 being males, and 9133 females: 397 families employed in agriculture, and 2296 in trade and manufactures.

Chester, in Nova Scotia, l. 8, *r.* 1534; l. 13, *r.* 2030; l. 17, *r.* 2370; l. 30, after aſſiſtants, add—It contains 1056 perſons; l. 32, *r.* 40; l. 33, *r.* 39,596; l. 34, *r.* 7; l. 57, *r.* 11,479; l. 58, *r.* 2743. At the cloſe, add—Alſo, a town of Clinton county, in Ohio, having 1254 perſons.—Alſo, a town of Burlington, in New Jerſey, having 1839 inhabitants.—Alſo, a town of Morris county, in New Jerſey, having 1175 inhabitants.—Alſo, a borough of Cheſter county, in Pennſylvania, having 471 inhabitants.

Chester, *Weſt*, a county of New York, containing 30,272 inhabitants, of whom 982 are ſlaves.

CHESTERFIELD, col. 2, l. *ult.* In 1811 the pariſh of Cheſterfield contained 951 houſes, and 4476 perſons; 2025 being males, and 2451 females.

Chesterfield, l. 3, *r.* 1408; l. 7, *r.* 1839; l. 15,—It contains 5564 inhabitants, of whom 1639 are ſlaves; l. 17, *r.* 9979, and 6015. Add—Alſo, a town of Burlington county, in New Jerſey, having 1839 inhabitants.

CHESTER-LE-STREET. In 1811, the townſhip of Cheſter-le-Street contained 245 houſes, and 1726 perſons; 800 being males, and 926 females.

CHESTERVILLE, a town of the diſtrict of Maine, in the county of Kennebeck, with 430 inhabitants.

CHETWERT, and Chetwerick, two corn meaſures in Ruſſia; the former or cool being 2 oſmins = 4 pajacks = 8 chetwericks = 64 garnitzy. The latter meaſures 1555.92 cubic inches, and contains 5¾ Wincheſter gallons nearly. In buſineſs the uſual calculation is, that 100 chetwerts produce 72 quarters, and 1 chetwert 5¾ buſhels, Wincheſter meaſure.

CHIASTOLITE. See Mineralogy, *Addenda*.

CHICHESTER, in *Geography*. In 1811, the city of Chicheſter contained 1083 houſes, and 6425 perſons; 2878 being males, and 3547 females.

Chichester, *Upper and Lower*. Add—The former contains 437, and the latter 511 inhabitants.

Chichester, l. 4, *r.* 951.

CHILISQUAQUE. Add—Northumberland county, having 1505 inhabitants.

CHILLIKOTHE. Add—By the cenſus of 1810, it contained 1360 inhabitants.

CHILMARK, l. 3, *r.* 723.

CHILODIA, in *Botany*, perhaps from χειλος, in alluſion to its longer and more conſpicuous lip.—Brown Prodr. Nov. Holl. v. 1. 507.—Claſs and order, *Didynamia Gymnoſpermia.* Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Br.

Eſſ. Ch. Calyx two-lipped, with a pair of appendages; tube ſtriated; upper lip undivided, with an interior tranſverſe rib; lower divided half way. Corolla ringent; upper lip ſhorteſt, undivided; lower with a large cloven central lobe. Anthers pointleſs, deeply cloven at the baſe.

1. Ch. *ſcutellariana*. Br. n. 1.—Gathered by Mr. Brown at Port Jackſon, New South Wales. A little ſhrub, agreeing with *Proſtanthera* in habit, but differing in *calyx* and *anthers*. The *leaves* are linear, revolute. *Flowers* axillary, ſolitary, ſtalked. We venture to rid the ſpecific name of its termination, *oides*, which might be done with advantage in many other ſimilar inſtances.

CHILOGLOTTIS, from χειλος, *a lip*, and γλωττα, *the tongue*, alluding to the tongue-ſhaped appendage to the lip.—Brown Prodr. Nov. Holl. v. 1. 322.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Calyx ringent; two lower leaves under the lip, channelled, with cylindrical points. Lip ſtalked; glandular in the diſk; with a tongue-ſhaped appendage at the baſe. Column cloven at the top. Anther a terminal permanent lid; the cells cloſe together. Maſſes of pollen two in each cell, powdery, compreſſed.

1. Ch. *diphylla.*—Native of Port Jackſon, New South Wales. *Bulbs* ſolitary, naked, terminating the deſcending *caudex*. *Herb* ſmooth. *Leaves* two, oval, many-ribbed, ſheathed at the baſe. *Flower* ſolitary, reddiſh, with a ſolitary *bractea* half way up the ſtalk. Akin to Cyrtostylis and Pterostylis. *Brown.* See thoſe articles.

CHIMBORAZO, l. 9, add—according to Humboldt, its ſummit is 21,430 feet above the level of the ſea; and conſequently a great part is above the circle of perpetual congelation, which, in this latitude almoſt under the line, is ſituated higher than the ſummit of Mont Blanc.

CHINA, col. 3, l. 19 from the bottom, *r.* Mandſhurs. Col. 24, l. 4, *r.* ſticks or poles.

CHIODECTON, in *Botany*, from χιων, *ſnow*, and δεχομαι, *to receive*, alluding to the whiteneſs of the warts or aggregate receptacles.—Achar. in Tr. of Linn. Soc. v. 12. 43. t. 3.—A genus of cruſtaceous Lichens, found on the barks of trees in South America, thus defined.

Eſſ. Ch. Warts convex, of the ſubſtance of the cruſt. Receptacles numerous, imbedded in the warts, globular, aggregate, black, powdery throughout.

Two ſpecies are deſcribed, *Ch. ſphærale*, f. 2, and *ſeriale*, f. 3.

CHIPPENHAM, l. 30,—In 1811, the borough and pariſh contained 668 houſes, and 3410 perſons; *viz.* 1580 being males, and 1830 females: 145 families employed in agriculture, and 652 in trade and manufactures.

CHITTENDEN, l. 6, *r.* 1810; l. 24, *r.* 1820. At the cloſe, add—It contains 446 inhabitants.

CHLOANTHES, in *Botany*, χλοανθες, *turning green;* from the colour aſſumed by the pale yellow corolla in drying, as is the caſe with the primroſe.—Brown Prodr. Nov. Holl. v. 1. 513.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ*, Linn. *Vitices*, Juſſ. Gen. *Verbenaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx bell-ſhaped, equally five-cleft. Corolla tubular, ringent; throat dilated; upper lip cloven; lower in three deep ſegments, the middle one longeſt. Stamens prominent. Stigma cloven, acute. Drupa dry. Nuts two, each of three cells; two lateral cells ſingle-ſeeded; middle one abortive, obliterated.

Downy *ſhrubs*, with oppoſite, ſimple, decurrent, linear, bliſtery *leaves*. *Stalks* axillary, ſolitary, ſingle-flowered, each with two *bracteas*. *Calyx* rather leafy, revolute at the edges. *Corolla* ſulphur-coloured; turned green by drying. *Nuts* tumid in front. *Seeds* with ſcarcely any albumen. *Brown.*

1. Ch. *ſtoechadis*. Br. n. 1.—Back of the leaves, and outſide of the calyx, ſnow-white, downy. Bracteas in the middle of the flower-ſtalks.—Native of Port Jackſon, New South Wales.

2. Ch. *glanduloſa*. Br. n. 2.—Back of the leaves glandular, and clothed, like the outſide of the calyx, with ſcattered hairs. Bracteas at the baſe of the flower-ſtalks. —From the ſame country.

CHLORATES, in *Chemiſtry*. See CHLORINE.

CHLORIC *Acid*. See CHLORINE.

CHLORINE. This name was given by ſir H. Davy to the principle formerly termed OXYMURIATIC *Acid*, under which head its leading properties are detailed. We have only therefore to notice here ſome important compounds of this principle lately diſcovered, eſpecially thoſe with oxygen.

The *protoxyd* of chlorine, or *euchlorine*, has been already deſcribed under the article above alluded to. For its correct compoſition, ſee Table II. ATOMIC *Theory*.

The *deutoxyd* of chlorine was diſcovered about the ſame time by ſir H. Davy and the count Von Stadion of Vienna, but Davy's account of it was firſt publiſhed. It may be prepared by mixing together a ſmall quantity of chlorate of potaſh (not more than fifty grains) in powder, with ſulphuric acid, till the whole forms a dry paſte of an orange colour. Put this paſte into a ſmall glaſs retort, and plunge the belly of the retort into hot water, and keep it in that poſition for ſome time, taking care that the temperature of the water never becomes ſo high as 212°. A bright yellowiſh-green gas ſeparates from the paſte, which muſt be received in ſmall glaſs jars over mercury. This gas is the deutoxyd of chlorine. Its colour, as above ſtated, is a bright yellowiſh-green. Its ſmell is peculiar and aromatic, without any mixture of the ſmell of chlorine. Water abſorbs at leaſt ſeven times its bulk of this gas. The ſolution is deep yellow, and has an aſtringent and corroſive taſte, leaving a diſagreeable and laſting impreſſion on the tongue. It deſtroys without previouſly reddening vegetable colours, provided they are moiſt. It does not act upon mercury, nor any other combuſtible ſubſtance tried, except phoſphorus, which, when introduced into the gas, occaſions an exploſion, and burns with great ſplendour. When heated to 212° it explodes with more violence than euchlorine, and emits a great light. Two volumes of deutoxyd of chlorine, when thus exploded, are converted into three volumes, according to Davy, which conſiſt of two volumes or four atoms of oxygen and one of chlorine, or *per cent.* of

Chlorine - - -	52.94
Oxygen - - -	47.06
	100.00

And its ſp. gr. will be 2.361, that of chlorine being ſuppoſed to be 2.5. According, however, to the count Von Stadion's analyſis, this deutoxyd is compoſed of one atom chlorine, and only three of oxygen.

Chloric Acid.—The exiſtence of this compound of chlorine with oxygen was ſuſpected by Berthollet, but it was firſt obtained by M. Gay Luſſac. It is the acid which exiſts in what was formerly termed *oxymuriate*, but now *chlorate* of potaſh. It was procured by diſſolving the chlorate of barytes in water, and cautiouſly adding dilute ſulphuric acid to the ſolution, till the whole of the barytes was ſeparated. The *chloric* acid remained in ſolution. This acid has a ſtrong ſour taſte, but no ſenſible ſmell. Its aqueous ſolution is colourleſs, and reddens vegetable blues without deſtroying them. By a gentle heat it may be concentrated without being decompoſed, or volatilized with the water. When thus concentrated, it has an oily conſiſtency. When the heat is raiſed, it is partly volatilized, and partly decompoſed into chlorine and oxygen. Muriatic acid decompoſes it ſimilarly without heat: the nitric acid does not affect it. It combines with the different baſes forming *chlorates*, formerly termed *oxymuriates*, the moſt important of which will be preſently deſcribed. Chloric acid has been proved to be compoſed of

Chlorine - - -	47.24
Oxygen - - -	52.76
	100.00

Or of one atom chlorine and five of oxygen. See ATOMIC *Theory*, Table II.

Chlorate of Potaſh.—This is the beſt known and moſt important of the chlorates. See it briefly deſcribed under HYPEROXYMURIATIC *Acid.*

Chlorate of Soda.—This ſalt was firſt accurately deſcribed by Chenevix. It may be prepared by the ſame proceſs as the chlorate of potaſh; but the eaſieſt mode of obtaining it is, to diſſolve carbonate of ſoda in chloric acid. It does not readily cryſtallize, but its cryſtals when formed are ſquare plates. Its taſte is ſharp and cooling. On burning coals it melts into globules, and emits a yellow light. When diſtilled it gives out oxygen, mixed with a little chlorine, and the ſalt left behind has alkaline properties.

Chlorate of Ammonia.—This ſalt may be formed by diſſolving carbonate of ammonia in chloric acid, or by mixing a ſolution of carbonate of ammonia with a ſolution of an earthy chlorate. It cryſtallizes in fine needles, and is very ſoluble in water and alcohol. Its taſte is ſharp. Thrown on burning coals, it fulminates with a red flame. When ſtrongly heated, it is decompoſed, chlorine is evolved mixed with azote and oxygen, and ſome muriate of ammonia remains behind.

Chlorate of Barytes.—The earthy chlorates are formed with more difficulty than the alkaline. The chlorate of barytes may be formed by pouring warm water on a quantity of the pure earth prepared by Vauquelin's method, and paſſing a current of chlorine through the mixture. To ſeparate the chlorate from the muriate, which are both equally ſoluble, and otherwiſe reſemble each other, Mr. Chenevix had recourſe to the ingenious expedient of boiling phoſphate of ſilver with the compound ſolution; thus muriate of ſilver and phoſphate of barytes are formed and eaſily ſeparated, while nothing but the chlorate of barytes remains in the ſolution, and may be eaſily obtained. This ſalt cryſtallizes in ſquare priſms, terminated by an oblique face. It diſſolves in about four times its weight of cold water. The ſolution is neither precipitated by nitrate of ſilver nor muriatic acid. It is inſoluble in alcohol. When heated it gives out oxygen gas, and an alkaline reſiduum is left.

Chlorate of Strontian.—This ſalt was formed by a proceſs ſimilar to the above, and reſembles it in many of its properties, but is deliqueſcent, and rather more ſoluble.

Chlorate of Lime, and *Chlorate of Magneſia*, may be formed as above. They are both deliqueſcent, and very ſoluble both in water and alcohol.

The metallic *Chlorates* may be formed by diſſolving the oxyds of the different metals in chloric acid. They do not poſseſs any very remarkable properties, except thoſe common to all the chlorates; *viz.* of giving out oxygen when heated, and of detonating when thrown on burning coals. The chlorate of ſilver, mixed with a little ſulphur, and ſtruck ſlightly, fulminates with prodigious violence.

CHLORIODIC Acid. See Iodine and Simple *Subſtances*.

CHLORITE. See Mineralogy, *Addenda*.

CHLORO-CYANIC Acid. See Cyanogen.

CHLOROPHANE. See Mineralogy, *Addenda*.

CHLOROPHYTUM, in *Botany*, from χλωρον, *green*, and φυλον, *a plant*, becauſe of the green hue of the flowers, as well as herbage, in the original ſpecies.—Ker in Curt. Mag. 1071. Brown Prodr. Nov. Holl. v. 1. 276.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. "*Bromeliæ*, Juſſ." *Ker*. *Aſphodeleæ*, Brown.

Eſſ. Ch. Corolla inferior, in ſix deep, equal, ſpreading, permanent ſegments. Filaments thread-ſhaped, ſmooth. Style thread-ſhaped. Stigma ſimple. Capſule with three deep compreſſed lobes, three cells, and three valves with central partitions. Seeds ſeveral, compreſſed, with a naked ſcar.

Herbage ſmooth. *Root* faſciculated; the fibres occaſionally fleſhy. *Leaves* radical, ribbed, linear, ſometimes lanceolate. *Flowers* racemoſe green or white, their partial ſtalks jointed in the middle. *Capſule* membranous, veiny.

1. Ch. *inornatum*. Greeniſh-flowered Chlorophytum. Curt. Mag. t. 1071. Ait. Epit. 365.—Stem none. Leaves lanceolate, nearly as tall as the ſtalk. Partial ſtalks ſolitary.—Native of Sierra Leone, from whence, and not from the Weſt Indies, its ſeeds were brought to the late Mr. Fairbairn, at Chelſea, if we miſtake not, by Francis Borone, in 1793. It is a ſtove plant, flowering and ſeeding in ſummer. Several radical, many-ribbed, pointed *leaves*, five or ſix inches long, paler beneath, are accompanied by an erect, ſimple or branched, leafleſs *ſtalk*, a ſpan high. *Flowers* pale green, ſcentleſs, each with a pointed *bractea*. *Corolla* ſpreading, three-quarters of an inch wide.

2. Ch. *laxum*. Looſe-cluſtered White Chlorophytum. Br. n. 2.—"Stem none. Leaves linear, nearly as tall as the ſtalk. Cluſters lax, elongated, ſimple or divided; partial ſtalks ſolitary or in pairs."—Found by Mr. Brown, in the tropical part of New Holland.

3. Ch. *elatum*. Tall Chlorophytum. (Anthericum elatum; Ait. Hort. Kew. v. 2. 268. Willd. Sp. Pl. v. 2. 138. Aſphodelus foliis planis, &c.; Mill. Ic. 38. t. 56. Phalangium elatum; Redout. Liliac. t. 191.)—Stem much branched, almoſt leafleſs, much taller than the linear-lanceolate radical leaves.—Native of the Cape of Good Hope. A perennial green-houſe plant, flowering in Auguſt and September. The *flowers* are copious, white, ſmaller than in the firſt ſpecies, ſolitary and almoſt ſeſſile.

Mr. Brown mentions a fourth ſpecies, found at the Cape, but without any name or character.

CHONDRACHNE, Brown Prodr. Nov. Holl. v. 1. 220, a genus conſiſting of only one ſpecies, diſtinguiſhed by its infloreſcence alone from Chorizandra; ſee that article.

CHORD, col. 2, l. 13, for EO *r.* ED.

CHORETRUM, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 354.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Santalaceæ*, Br.

Eſſ. Ch. Calyx ſuperior, in five deep, vaulted, coloured ſegments, each with an interior deſcending keel, permanent, with a minute five-toothed calycle at the baſe. Stamens in the hollows of the ſegments. Anthers with four cells and four valves. Stigma radiated. Drupa?

The only known ſpecies are *Ch. lateriflorum* and *glomeratum*, found on the ſouth coaſt of New Holland, ruſhy branched ſhrubs, with minute ſcattered *leaves*, and ſmall white *flowers*, being nearly related to Leftomeria; ſee that article.

CHORISPERMUM, from χωρις, *ſeparately*, and σπερμα, *ſeed*, ſee the character.—Brown in Ait. Hort. Kew. v. 4. 129.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pod of two cells, without valves, ſeparating into ſingle-ſeeded cloſed fragments. Cotyledons flat, accumbent. Stigma ſimple.

1. Ch. *tenellum*. Purple Choriſpermum. Ait. n. 1. (Raphanus tenellus; Willd. Sp. Pl. v. 3. 561. Pallas Voy. v. 3. 741. t. L. f. 3.)—Leaves, as well as pods, ſmooth; upper ones lanceolate, toothed; lowermoſt pinnatifid.—Native of deſarts near the Caſpian ſea. A little annual *herb*, with ſmall purple flowers. Mr. Brown's ſpecific character indicates the exiſtence of another ſpecies, not known to us.

CHORIZANDRA, from χωριζω, *to ſeparate*, and ανηρ, *a male*, becauſe the ſtamens are individually ſeparated by ſcales.—Brown Prodr. Nov. Holl. v. 1. 220.—A genus conſiſting of two ſpecies, natives of Port Jackſon, nearly akin to Chondrachne of the ſame author, and to the Linnæan Chrysitrix; ſee thoſe articles. From the latter it differs in infloreſcence and habit. How far they could with propriety be united, we have not materials to form a deciſive opinion.

CHORIZEMA, a name of which there have been various explanations, (ſee Tr. of Linn. Soc. v. 9. 252,) is moſt probably derived from χωριζω, *to ſeparate*; but certainly not in alluſion, as De Theis ſuppoſes, to any diviſion of the fruit. We rather believe the author of this name had in contemplation the ſeparate filaments, of which ſo few inſtances were known in papilionaceous flowers, at the time he wrote, and ἡμα may allude to their *dart-like* figure.—Labill. Voy. Engl. ed. v. 1. 435. Nov. Holl. v. 2. 120. Sm. in Sims and Kon. Ann. of Bot. v. 1. 506. Tr. of Linn. Soc. v. 9. 251. Ait. Hort. Kew. v. 3. 8. (Podolobium; ibid. 9.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-cleft, two-lipped. Corolla papilionaceous. Style curved. Stigma obtuſe. Legume oblong, tumid, of one cell, with many ſeeds.

1. Ch. *ilicifolia*. Holly-leaved Chorizema. Labill. as above, t. 21. Sm. n. 1. Ait. n. 1.—Leaves alternate, oblong, pinnatifid, with ſpinous teeth; point entire, longer than the teeth. Bracteas cloſe to the flower.—Found by M. Labillardiere, at the foot of the mountains, on the ſouth coaſt of New Holland, flowering in December. Sent to Kew in 1803, by Mr. Good. *Stem* ſhrubby, hardly a foot high, branching from the root. *Leaves* alternate, ſeſſile, ſmooth, coriaceous, with ſharp ſpines. *Flowers* in terminal cluſters.

2. Ch. *nana*. Dwarf Chorizema. Sims in Curt. Mag. t. 1032. Ait. n. 2. (Pultenæa nana; Andr. Repoſ. t. 434.)—Leaves alternate, elliptic-oblong, bluntiſh, ſinuated, with ſpinous teeth. Bracteas rather diſtant from the flower.—From the ſame country. We profit by Mr. Brown's remarks for diſtinguiſhing this ſpecies, hitherto confounded by us with the foregoing. Its ſtature is more humble. *Flowers* in lateral cluſters, orange, with purple *wings*, and a ſhort, white, purple-tipped *keel*. We know not diſtinctly the colour of *ilicifolia*.

3. Ch. *rhombea*. Few-flowered Chorizema. Br. in Ait. n. 3.—"Leaves entire, flat, pointed; lower ones orbicular,

ſomewhat rhomboid; upper elliptic-lanceolate. Stalks with few flowers.—Native of the ſame country. *Mr. Brown.*

4. Ch. *triloba.* Three-lobed Chorizema. Sm. n. 2. (Podolobium trilobum; Ait. Hort. Kew. v. 3. 9. Curt. Mag. t. 1477. Pultenæa ilicifolia; Andr. Repoſ. t. 320.)—Leaves oppoſite, ſomewhat haſtate; entire or toothed, ſpinous. Cluſters axillary, ſhorter than the leaf. Germen ſilky.—Found near Port Jackſon, New South Wales. (See Podolobium.) Young *branches* and *leaves* downy. *Flowers* copious, yellow, with a red radiating ſpot, and red *keel*, the latter nearly as long as the *wings*.

5. Ch. *ſcandens.* Climbing Chorizema. Sm. n. 3.—Leaves nearly oppoſite, elliptical, undivided. Cluſters terminal, elongated. Calyx rather hairy.—Found by Dr. White, at Port Jackſon. *Stem* twining. *Flowers* in looſe pendulous cluſters, yellow variegated with red.

6. Ch. *ſericea.* Silky-leaved Chorizema. Sm. n. 4.—Leaves moſtly alternate, elliptical. Cluſters axillary, the length of the leaves. Calyx ſilky. Standard narrow.—Gathered by Mr. Menzies, at King George's ſound. *Stem* twining. *Leaves* more ſilky at the back than in *C. ſcandens; flowers* thrice as large as in that ſpecies.

7. Ch. *coriacea.* Leathery-leaved Chorizema. Sm. n. 5.—Leaves roundiſh-elliptical, abrupt, coriaceous, ſcattered. Umbels axillary, ſtalked. Calyx hairy.—From the ſame country. A ſtout, upright, rigid *ſhrub*. *Leaves* beautifully veiny; ſilky beneath. *Umbels* on ſilky ſtalks, much ſhorter than the leaves.

CHOUT, denotes in India a fourth part; and the Mahratta chout is a fourth of the revenues, exacted as tribute by the Mahrattas.

CHOWAN, l. 3, *r.* 5297 and 2789.

CHRISTCHURCH. In 1811 the borough and ſtreet contained 303 houſes, and 1553 perſons; 682 being males, and 871 females.

CHRISTIAN, a county of Kentucky, containing 10,889 inhabitants, of whom 1708 are ſlaves.

Christian *d'Or*, a Daniſh gold coin, current in Holſtein ſince 1775, worth about 13 marks lubs, or 26 marks Daniſh currency.

CHRISTIANA. Add—By the cenſus of 1810, it contained 6698 inhabitants, 47 being ſlaves.

CHRISTINA, Santa,—for Christiania *r.* Christiana.

CHRISTOPHER's, St., col. 2, l. 13 from bottom, *r.* W. long. 62° 43′.

CHROMATE *of Iron.* See Mineralogy, *Addenda.*

CHROME, or Chromium, in *Chemiſtry*, the name of a metal. (See Chrome.) Since that article was written, however, ſome facts have been aſcertained reſpecting this metal and its compounds, which deſerve to be briefly mentioned here.

Chrome ſeems capable of combining with three different proportions of oxygen, and of forming three oxyds, the *green*, the *brown*, and the *yellow* or *chromic acid.* The *green* oxyd may be formed by expoſing chromic acid to heat in cloſe veſſels, by which means a portion of the oxygen is expelled. It may be alſo formed in other modes, as by precipitation; in which caſe it has a dark green colour, and contains water. In this ſtate it readily diſſolves in acids, but if expoſed to a heat a little below redneſs, it becomes ignited, diminiſhes in bulk, and its colour changes to a lighter green. It is now no longer ſoluble in acids, though it has loſt no weight. The *brown* oxyd may be formed by diſſolving the above green oxyd in nitric acid, evaporating the ſolution to dryneſs, and expoſing the dry maſs to heat, till it ceaſes to give out nitrous fumes. A brown brilliant powder remains, which is ſoluble in alkalies but not in acids. It is not improbable, that this will be found hereafter to be a *ſubnitrate* inſtead of an oxyd. *Chromic acid*, the third oxyd of chromium, is eaſily reduced to the ſtate of green or protoxyd, by the action of ſulphuretted hydrogen, ſulphureous acid, and protoxyds of iron, copper, and tin.

The *chromates* have been already deſcribed. The *chromate* of lead is the only one much uſed, which has been lately employed as a paint with great ſucceſs.

CHRONOLOGY, Chronological Table,

B.C. 710, Sennacherib's army deſtroyed, &c. Col. 9, l. 20, *r.* eclipſe of the *ſun;* for 549 *r.* 558, Daniel, &c. Col. 11, l. 38, *r.* Perſians; l. 41, *r.* 466. Col. 12, l. 2, *r.* Hellanicus. Col. 18, l. *penult.*, inſert—at. Col. 22, l. 2, after kingdom, inſert—of Cyrené. Col. 29, l. 33, *r.* Macrinus; l. 35, ditto. Col. 30, l. *ult.* *r.* Hierocles. Col. 34, l. 24, for one *r.* that; l. 45, *r.* Anien. Col. 38, l. 3 from the bottom, add—at Rome. Col. 39, l. 49, *r.* 206. Col. 41, l. 60 and 61, *dele* Charlemagne, &c. Col. 46, l. 27 and 28 *dele.* Col. 47, l. 7 from the bottom, for Frederic *r.* Ladiſlaus II. Col. 52, l. 2, for Babylon *r.* Egypt; l. 9, ditto; l. 21, *dele* 1298; l. 27, *dele* the Ottoman empire began. Col. 55, l. 21, 22, *dele.* Col. 58, l. 32, *dele* Brazil diſcovered; l. 51, for 800 *r.* 780; l. 64, for North *r.* South. Col. 59, l. 53, *r.* Navaro. Col. 63, l. 21 *dele;* l. 61, after Palladio, add—Frobiſher ſails for Greenland, and again in the following year. See Frobisher; l. 63, after 1580, inſert—ſee Drake. Col. 64, l. 27, *dele* Greenland diſcovered. Col. 65, l. 32, for April 22 *r.* June 2. Col. 70, l. 41, after 22, add—in the battle of Gothard; l. 42, *dele* the battle of St. Godart, July 22. Col. 71, l. 53, *r.* Seneff. Col. 74, l. 15, for July *r.* February. Col. 75, l. 37, *r.* ob. 1719, æt. 74. Col. 76, l. 1 and 2, *r.* When the Spaniards, under the duke of Vendôme, defeated Staremberg. Col. 78, l. 1 and 2, *dele* the Spaniards, &c. May 20; l. 10, for June *r.* May; l. 33 *r.* 1744, æt. 56. Col. 79, l. *penult.*, *r.* 76. Col. 82, l. 38, for Aug. *r.* September. Col. 84, l. 20, add—(from next paragraph)—The Turkiſh fleet, &c. July 5, and *dele* theſe words in that paragraph. Col. 85, l. 4 from bottom, add—Inquiſition of Naples aboliſhed. Col. 87, l. 4, 5, and 6, *dele* French, &c. bay; l. 11 and 12, *dele* Ghent, &c. Dec. 12; l. 20, for Yorkſhire in 1780 *r.* Glouceſter; l. *ult.* but 2, inſert—Ghent and Bruſſels ſurrendered. Col. 88, l. 24, after French king, add—appeared at the bar of the convention for the laſt time, Dec. 26, 1792; and condemned by vote, Jan. 16, 1793; and ſuffered on the 21ſt. Col. 89, l. 10 from bottom, add—The French accounts ſtate the number of perſons at 60, inſtead of 3000, and date the cataſtrophe Aug. 3, inſtead of Sept. 3. Col. 91, l. 2, after Buonaparte, add—was employed in protecting the directory againſt an inſurrection of the Jacobins, which was his firſt appearance under a conſpicuous character. *Dele* ſeized Egypt, July 1; l. 48, after Feb. 22, add—1200 Frenchmen landed at Fiſhguard, and immediately ſurrendered themſelves priſoners. Col. 93, l. 2, after ſlain, *dele* near Periapatam, and add—in the defence, and within the walls of his capital, Seringapatam; l. 3, after forces, add—under general Harris; l. 54, *r.* June 14. Col. 94, l. 2, after battle of, for Rhamonia *r.* Alexandria; l. 3, after Engliſh (March 21), add—under ſir Ralph Abercromby, who was wounded in the conteſt, which terminated ſo honourably to himſelf and the army, and died a few days after, univerſally lamented; l. 8, for September *r.* April; l. 12, after two, *r.* Spaniſh ſhips being blown up; *viz.* the admiral's ſhip and the San Hermanegildo of 112 guns ſunk; and the San Antonio of 74 guns, commanded by the chef de diviſion Le Rey, under French colours, taken by the Superb, July 13; l. 31, *dele* from ſir Ralph, &c. to lamented. Col. 98, add—

1807.—Battle between the French and Ruſſians, in which the latter were defeated, Feb. 7.—Battle of Friedland, in which the Ruſſians were defeated with great ſlaughter, June 14.—St. Thomas, a Daniſh iſland, taken by the Engliſh, Dec. 21.

1808.—Battle of Vimiera, in which the whole of the French force, under general Junot, was defeated by ſir Arthur Welleſley, Aug. 21.

1809.—Cayenne taken by the Engliſh and Portugueſe, Jan. 15.—Battle of Corunna, in which the French were defeated by the Engliſh, Jan. 16.—Battle of Oporto, in which the French were defeated by ſir Arthur Welleſley, May 11.—Battle of Aſpern and Eſling between the French and Auſtrians, with dreadful ſlaughter on both ſides, May 21 and 22.—Pope Pius VII. excommunicated Buonaparte, June 10.—At Raab, Auſtrians defeated by the French, June 14.—At Wagram, Auſtrians defeated by the French, July 5.—Battle of Talavera de la Reyna, in which the French were defeated by the Engliſh and Spaniards, July 27.—Zante, and the reſt of the Seven Iſlands, ſurrendered to the Britiſh in October.—Buonaparte divorced from the empreſs Joſephine, Dec. 17.—General Jubilee through the kingdom, celebrating the entrance of George III. on the 50th year of his reign.

1810.—Iſlands of Faroe and Iceland taken under Britiſh protection, Feb. 12.—Amboyna ſeized by the Engliſh, Feb. 17.—Buonaparte married to Maria Louiſa of Auſtria, April 1.—Iſle of Bourbon ſurrendered to the Britiſh, July 10.—Battle of Buzaco, in which the French were repulſed with great ſlaughter by the allied army under lord Wellington, Sept. 27.—Mauritius ſurrendered to the Britiſh, Dec. 3.

1811.—Population of London, Weſtminſter, Borough, and neighbouring diſtricts, appeared to be 1,099,104, being an increaſe, in two years, of 133,139.—Iſland of Java ſurrendered to the Britiſh, Sept. 18.—Battle of Civdad Rodrigo, between the French and allied armies, under lord Wellington, which terminated in an orderly retreat of the latter, Sept. 23.—Cavares and Merida, the French, under general Girard, ſurpriſed and routed by general Hill, Oct. 28.

1812.—Badajos taken by ſtorm by the Britiſh and Portugueſe, April 6.—Spencer Percival, prime miniſter of Britain, aſſaſſinated in the lobby of the houſe of commons, by John Bellingham, May 11.—Battle of Salamanca, in which the French were defeated with great ſlaughter by lord Wellington, July 22.—Smolenſko, the Ruſſians defeated by the French, Aug. 16.—Queen's Town, Canada, the army of the United States defeated by the Britiſh, Oct. 12.—Polotſk, the French defeated by the Ruſſians, and the place taken by ſtorm, Oct. 20.—The French driven from Dorogobudſh by the Ruſſians, under Platoff, with great ſlaughter, Nov. 7.—At Witepſk, the French, under general Victor, defeated by the Ruſſians, under Witgenſtein, with the loſs of 3000 men, Nov. 14.—Ney's corps, 12,000 of which laid down their arms, defeated by the Ruſſian general Millamdovitſh, Nov. 17.—At Berezina, the conteſt terminated in the capture by Witgenſtein of a French diviſion of 8800 men, Nov. 28.—Near Wilna, a French column was deſtroyed by Platoff, when a general and 1000 priſoners were taken, Dec. 11.

1813.—Concordat ſigned between pope Pius VII. and Buonaparte, at Fontainbleau, Jan. 25.—At Bejar, in Spain, the French were defeated by general Hill and the allied Spaniards, Feb. 20.—At Lunenburg, the French were defeated by the united army of Ruſſians and Pruſſians, with the loſs of general Moramd, 100 officers, and 2200 privates, and two pieces of cannon, April 2.—At Fort George, on the Niagara, the Britiſh were defeated by the Americans, May 27.—At Vittoria, the French, under Joſeph Buonaparte, were defeated by lord Wellington and the allied Spaniards, June 21.—Pyrenées, Soult was defeated, with immenſe ſlaughter, by lord Wellington and the Spaniards, July 28.—St. Sebaſtian was taken by ſtorm, by general Graham, July 31.—Before Dreſden, the allied army of Auſtrians, Ruſſians, and Pruſſians, was defeated by the French, Auguſt 28.—At Toplitz, the French were defeated by the allied Auſtrians, Ruſſians, and Pruſſians, Aug. 30.—At Dennewitz, the French were defeated with great loſs by the Crown Prince of Sweden, Sept. 8.—At a Moravian village on the Thames in Canada, the Britiſh were defeated by the Americans, Oct. 5.—At Mockero, a deſperate conflict occurred between the French and the allied army of Auſtrians, Ruſſians, and Pruſſians, the place having been taken and re-taken five times, terminating in a defeat of the French, Oct. 11.—Before Leipſic, a ſecond general engagement took place, the reſult of which was, a loſs to the French of 10,000 men, in killed, wounded, and priſoners, with 63 pieces of artillery, and the deſertion of 17 German battalions, Oct. 18.

1814.—At Rothiere, the French, under Napoleon, were defeated by the allied Ruſſians and Pruſſians, with the loſs of 3000 priſoners, and 26 pieces of cannon, Feb. 21.—Bourdeaux entered by lord Wellington, March 12.—At Tarbes, Soult was defeated by lord Wellington, March 20.—Paris entered by the emperor of Ruſſia, at the head of his troops, March 31.—Buonaparte renounced, for himſelf and heirs, the throne of France, and accepted the Iſle of Elba for his retreat, April 5.—The ſtates of Parma, Placentia, and Gueſtella, conferred on Maria-Louiſa by treaty, April 5.—At Toulouſe, the French were defeated by lord Wellington, April 10.—Buonaparte embarked for Elba, April 28.—Treaty of Paris ſigned by the miniſters of the allied ſovereigns for the protection of France, May 30.—Pope Pius VII. returned to Rome, and reſumed his functions in May.—The emperor of Ruſſia, with the king of Pruſſia, prince Blucher, and other illuſtrious perſons, entered London amidſt great rejoicings, June 8.—Inquiſition of Spain reſtored by Ferdinand VII. July 21.—A grand jubilee on celebrating the peace, and the centenary of the acceſſion of the houſe of Brunſwick, Aug. 1.—Tuſcany, after having been ceded to Buonaparte in 1807, reſtored in 1814.—Waſhington, in North America, taken by the Britiſh, and the principal buildings deſtroyed by fire, Aug. 24.—Hackney chariots licenſed in London, not to exceed 200.

1815.—Buonaparte quitted Elba, and landed at Cannes, March 1.—King of Candy depoſed, and the ſovereignty veſted in Great Britain, March 2.—Buonaparte arrived at Fontainbleau, March 20.—Treaties for the maintenance of the treaty of Paris, between England, Ruſſia, and Pruſſia, ſigned at Vienna, March 25.—Buonaparte aboliſhed the ſlave trade, March 29.

—Potoſi evacuated by the royaliſts and entered by the Buenos Ayres army, under general Rondeau, April 5. —Florence evacuated by the Auſtrians, and entered by the Neapolitans, April 6.—Battle of Waterloo, in which the whole French army, with Buonaparte in command, was defeated by the Engliſh and Pruſſians, with immenſe ſlaughter, June 18. (See WATERLOO.) —Buonaparte retired to Paris after his defeat at Waterloo, June 20; and abdicated in favour of his ſon, June 23.—Paris evacuated by the French and occupied by the allied army, July 3.—Louis XVIII. reſtored to Paris, and reſumed the government, July 8. —Buonaparte failing to ſail from Rochfort to America, ſurrendered himſelf to captain Maitland of the Bellerophon, July 15.—Army of the Loire, under generals Suchet and Davouſt, ſubmitted to the government of Louis XVIII. July 16.—Bourdeaux ſubmitted to the government of Louis XVIII. July 14.—Buonaparte transferred at Torbay from the Bellerophon to the Northumberland, and ſailed for the iſland of St. Helena, decreed by the allied ſovereigns to be his reſidence for life, Aug. 8.—And arrived thither, Oct. 16.—The Muſeum of the Louvre was diſmantled by the allied ſovereigns of the treaſures of art which had been lodged there in conſequence of the depredations of Buonaparte. His pillage in Italy, which was conveyed to Paris, conſiſted of 66 pieces of ſculpture, and 47 capital paintings. Among the former, were the following chef-d'œuvres;—the Apollo, the Antinous, the Adonis, the Dying Gladiators, the Laocoon, the Two Sphynxes, and the Tomb of the Muſes. Among the latter, were the principal paintings of Raphael, Perugino, Guerchino, Annibal Carracci, Guido, Titian, and Correggio. In the national library were repoſited a MS. of Joſephus's Antiquities on papyrus, a MS. Virgil of Petrarch, with notes in his hand-writing, and 500 of the moſt curious MSS. which were in the library of the Vatican.

1816.—Treaty with the Nepauleſe in India, ratified March 15.—Princeſs Charlotte of Wales married to the prince of Saxe-Cobourg, May 12, the annual ſum of 60,000*l.* *per annum* having been previouſly ſettled upon him by parliament.—Declaration of independence of the repreſentatives of the United Provinces of South America in general congreſs, publiſhed at Montevideo, July 19.—Genoa transferred to the king of Sardinia.—Lotteries prohibited, on account of their immoral tendency, by the grand duke of Heſſe, October.

1817.—Inhabitants of Chili reſtored to freedom by the Buenos Ayres army under general San Martin in February.—A revolutionary inſurrection in Pernambuco in March.—Above 600 petitions for parliamentary reform, preſented by ſir Francis Burdett, ſtrewed the floor of the houſe of commons, March 4.—The meaſure for repealing the penal laws againſt Catholics, which had been negatived in the houſe of commons by 213 againſt 109, June 1, 1810;—and again by 146 againſt 83, and in the houſe of lords by 121 againſt 62, in 1811;—and again in the former houſe by 300 againſt 215, and in the latter by 174 againſt 102, in 1812;—and again in the former houſe by 251 againſt 247, May 13, 1813;—and again in the ſame houſe by 228 againſt 147, and in the houſe of lords by 86 againſt 60, in 1815;—and again in the houſe of commons by 172 againſt 141, and in that of the lords by 73 againſt 69, in 1816;—and again in the former houſe by 245 againſt 221, and in the latter by 142 againſt 90, April 1817.—A bill admitting Catholics to promotion in the army and navy paſſed June 1817.—Loan of twelve millions advanced to the French government by Engliſh merchants.

VOL. VIII.

CHRYSOPRASE. See MINERALOGY, *Addenda.*

CHUDLEIGH, l. 3, *r.* contains, by the return of 1811, 370, &c.; l. 14, *r.* being 1832.

CHUKOTSKIJA, for TSCHUTSKI *r.* TCHUKSTSKIJA.

CHUMLEIGH, l. 10, *r.* by the return of 1811 is 282, of inhabitants 1340.

CHURCH-STRETTON. In 1811, the townſhip contained 100 houſes, and 398 perſons; *viz.* 184 males, and 214 females.

CHURDER, ſignifies, in India, a ſtaff-bearer, or an attendant on a man of rank. He waits with a long ſtaff plated with ſilver, announces the approach of viſitors, and runs before his maſter, proclaiming aloud his titles.

CHUSISTAN, l. 14, add—Chuſiſtan, or Kuziſtan, the ancient Suſiana, is now divided between the territories of the Chab Sheikh, and thoſe that form the government of Shuſter. The former extend from the banks of the Tab to the conflux of the Karoon and Abzal, and from the ſhore of the Perſian gulf to a range of hills which ſkirt the valley of Ram Hormuz to the ſouth. This country, though watered by the Karoon and the rivers Zab and Jerahi, does not abound, as ſome travellers have aſſerted, in grain, rice, and dates; the greateſt part of it conſiſting in vaſt ſandy plains and moraſſes, wholly deſtitute of cultivation. The moſt fertile parts are thoſe in the environs of Dorak, the capital, and on the borders of the Hafar and Shat-ul-Arab, which produce dates and rice, and ſcanty portions of wheat and barley. The northern and weſtern parts of the country afford tolerable paſturage, and here the wandering tribes pitch their tents. The principal towns are, Dorak, Ahwaz, Endian, Maſhoor, Goban, and Jerahi. Dorak, or more properly Felahi, is ſituated in low marſhy ground, on the banks of two of the branches of the Jerahi. The walls of mud are two miles in circumference, ſixteen feet thick, and flanked with round towers. The majority of the inhabitants, amounting to about 8000, prefer living in the ſuburbs, under the ſhade of the date-trees. Dorak is the reſidence of the Sheikh, who has in it a miſerable palace. Its manufacture is the abba, or Arabian cloak, which is exported in great numbers all over Perſia and Arabia. Ahwaz, or Ahouas, formerly a flouriſhing city, and capital of a province of the ſame name, is reduced to a wretched town, containing 600 or 700 inhabitants, ſituated on the banks of the Karoon, 48 miles S. of Shuſter. Endian lies in N. lat. 30° 18′, 20 miles from Zeitoon, and 72 from Dorak, occupying both banks of the Tab, and nearly two miles in circuit. This town trades with Baſſora and Behaban, and has a population of between 4000 and 5000 ſouls. Maſhoor lies half way between Endian and Dorak, in the deſart, and two miles from the ſea, containing about 700 perſons, trading with Baſſora and the Arabian coaſt. The revenues of the Chab Sheikh amount to five lacs of piaſtres, or about 50,000*l.* ſterling, and he can bring into the field 5000 horſe and 20,000 foot. The territories attached to the government of Shuſter conſtitute the fineſt portion of Suſiana. M‘Kinneir's Perſian Empire.

CHYAZIC ACID, in *Chemiſtry.* See CYANOGEN.

CHYLE, and CHYME, *Chemical Properties of.* Theſe have been already deſcribed under DIGESTION, and we have here only to notice briefly the late experiments of Dr. Marcet and Dr. Prout on the ſubject. Theſe gentlemen were furniſhed by Mr. Aſtley Cooper with ſpecimens of chyle and chyme taken from different dogs, ſome of which had been fed on vegetable and others on animal food. Their experiments coincide almoſt exactly in every reſpect, ſo that it will be neceſſary only to mention Dr. Marcet's reſults. 1. The ſpecific gravity of the ſerous portion of chyle appears to be between 1021 and 1022, whether formed from vegetable or animal food. 2. The quantity of ſolid reſidue, comprehending both ſaline and animal matter, left by the evaporation of chyle at the heat of boiling water, may be generally ſtated to vary between 50 and 90 parts in 1000. 3. The quantity of ſaline matter appears to be about 9 parts in 1000, being the ſame proportion of ſalts which is found in all other animal fluids. 4. The chyle from vegetable food appears to yield, by analyſis, about three times as much charcoal as that from animal food. 5. The chyle from animal food is much diſpoſed to putrefy, and generally begins to undergo that change in three or four days; while that from vegetable food can be kept for weeks, or even ſometimes for months, without undergoing putrefaction. 6. The coagulum of chyle is more inclined to putrefy than the ſerous part. 7. The chyle formed from animal food alone is always milky; and in ſtanding, an unctuous white creamy ſubſtance collects on the ſurface: its coagulum is opaque, and has a pink hue. 8. The chyle from vegetable food is commonly tranſparent, or nearly ſo, like common ſerum. Its coagulum is nearly colourleſs, like an oyſter, and no creamy ſubſtance riſes to the ſurface. 9. The principal ingredient of the animal matter of chyle is albumen; but beſides albumen, chyle, eſpecially when derived from animal food, contains globules of an oily ſubſtance, which bears a ſtrong reſemblance to cream. 10. By the deſtructive diſtillation, chyle gives firſt a liquor impregnated with carbonate of ammonia, and afterwards a heavy fixed oil. The chyle from animal food yields a greater proportion of both theſe products, but the reſidue, whatever the mode of analyſis be, contains leſs charcoal than the chyle from vegetable food. Iron is readily detected in the reſidue of chyle, mixed with the ſalts and carbonaceous matter. 11. Chyme from vegetable food yields much more ſolid matter than any other animal fluid, though it appears to contain rather leſs ſaline matter. 12. Chyme contains albumen. 13. It yields about four times as much charcoal as chyle from vegetable food. 14. Neither chyle nor chyme contains any gelatine.

Dr. Prout aſcertained the curious fact in different animals, that albumen never exiſts in the ſtomach, even when the food is perfectly digeſted, but that an albuminous principle is formed the moment it enters the duodenum and comes in contact with the bile. He was alſo induced to conclude, that this albuminous principle becomes more abundant, and more perfectly albuminous, the nearer it approaches the ſanguiferous ſyſtem, ſo that it ſeems to undergo important changes between the inteſtines and thoracic duct. See Med.-Chir. Tranſ. vol. v. and Annals of Medicine and Surgery, vol. i.

CICCA, *dele* See TERME at the cloſe.

CICUTA. Annex—See CONIUM.

CIGOLI, *r. Ludovico* CARDI.

CIMEX, col. 2, l. 35, add—This offenſive creature was in a great degree unknown in the days of our anceſtors. Its origin is traced to the year 1670, when it was imported among the timber uſed for rebuilding the city of London after the great fire of 1666; but it was known at a much earlier period than this, though it was much leſs common than it is at preſent. A circumſtance is mentioned by Mouffat, which proves that theſe inſects were known at Mortlake, in Surry, in the year 1583. They live entirely by ſuction, employing for this purpoſe their ſharp and fine trunk or proboſcis, which lies in a ſtraight direction beneath the breaſt. Like the gnat and ſome other inſects, they probably infuſe ſome quantity of irritating fluid into the wound they make before they ſuck the blood of the animal, which they attack, as the ſwelling is often very conſiderable, and attended with ſevere itching. In winter they conceal themſelves behind the walls, wainſcot, and in other neglected places; and on return of warm weather they emerge from their concealment. Mr. Baker ſays, in his "Microſcope made eaſy," that the bug is one of the beſt ſubjects for exhibiting a microſcopic view of the circulation of the blood.

CIMOLIA, *dele* PIPE-CLAY.

CINCHONA, *Chemical Properties of.* Vauquelin ſome time ago publiſhed a ſet of comparative experiments on all the different ſpecies of cinchona which he could procure, in order to determine, if poſſible, how far they differ from each other, and what the conſtituents are on which their virtues depend. They may be divided into three diſtinct ſets.

1. Thoſe whoſe infuſions precipitate the infuſion of nutgalls, but not that of glue.

2. Thoſe whoſe infuſions precipitate glue, but not the infuſion of nutgalls.

3. Thoſe whoſe infuſions precipitate glue, nutgalls, and tartar emetic.

The following Table exhibits the effects of the different re-agents upon all the barks tried. It is difficult, however, as Dr. Thomſon has remarked, to determine, in all caſes, the real name of ſome of the ſpecimens, as Vauquelin has not given us the botanical name.

Barks.	Precipitate by Glue.	Precipitate by Tannin.	Precipitate by Tartar Emetic.
Yellow bark -	white	——	copious
Quinquina of Santa Fé	reddiſh	copious	——
Grey quinquina -	white	copious	white
Quinquina gris canelle	brown	——	——
Red quinquina -	red	——	yellowiſh-white
Grey quinquina -	white	yellow	yellowiſh-white
Quinquina gris plate	——	——	——
Cinchona pubeſcens	——	yellow	yellowiſh-white
Cinchona officinalis	——	yellow	——
Cinchona magnifolia	copious	——	——
Quinquina pitton vrai	——	copious	copious
Barks brought from Peru by Humboldt.			
Quinquina of Loxa	copious	copious	copious
Quinquina, white, of Santa Fé - -	——	——	——
Quinquina, yellow, of Santa Fé -	——	copious	copious
Quinquina, red, of Santa Fé - -	copious	——	——
Quinquina, yellow, of Cuença -	——	——	——
Quinquina, ordinary	copious	copious	copious
Infuſion of nutgalls	copious	——	yellow-white
Oak bark - -	copious	——	——
Cherry-tree bark -	——	——	——

It is very probable, that ſeveral ſpecimens in the above Table are duplicates, though we have no means of aſcertaining this with certainty. All the above barks produced a green colour with iron, and moſt of them produced a green precipitate with that metal.

The ſubſtance which precipitated tannin was brown, of a bitter taſte, and leſs ſoluble in water than alcohol. It precipitated tartar emetic, but not glue. It reſembled the reſins in ſome reſpects, though it gave out ammonia when diſtilled. Upon the whole, theſe experiments, though they eſtabliſh the fact that differences exiſt among the various ſpecies of cinchona, throw very little light upon the nature of their active ingredient or its mode of operation.

CINCINNATI, *dele* l. 9 and 10, and after paper, add —The number of public buildings, or dwellings, is from 1300 to 1400; of inhabitants, in 1810, 2540, and in 1817, 8000, all whites; the laws of Ohio prohibiting ſlavery, and even the ſettlement of free negroes, in the ſtate, except in certain caſes. About 400 houſes are built of ſtone or brick, many of which are three ſtories high, and in a ſuperior ſtyle. The public edifices are of brick. Numerous manufactures are already eſtabliſhed, and a very extenſive commerce is carried on by river navigation with Pittſburg, New Orleans, and all the weſtern ſtates; and by waggons with the interior country. The manners and dreſs of the inhabitants reſemble thoſe of the Engliſh. Cincinnati is ſaid to be the border of the weſtern world, and will probably be the largeſt city in America at no very diſtant period. Forty years ago it was the reſort of Indians; and the whole ſurrounding country was a wilderneſs, full of wild beaſts and ſavages.

CINNAMON STONE. See MINERALOGY, *Addenda*.

CIONE, ORGAGNA, *dele*.

CIPHER, col. 36, l. 35, for ſyllables *r.* letters.

CIRCAR. At the cloſe, add—*Circar* denotes generally the head of affairs, or the ſtate and government, as well as the great diviſion of a province. It is alſo a name uſed by Europeans in Bengal to ſignify the Hindoo writer and accountant, employed by themſelves or in the public affairs.

CIRCLE, col. 5, l. 27 from the bottom, for 7854 *r.* 1571.43. Col. 6, l. 3, *Plate* I. add—*of Aſtronomical Inſtruments*. Col. 68, l. 5 from the bottom, for cannot be *r.* cannot but be.

CIRENCESTER, col. 3, l. *penult.* By the return in 1811, the borough of Cirenceſter contained 902 houſes, and 4540 perſons; *viz.* 2030 males, and 2510 females: 207 families being employed in agriculture, and 526 in trade and manufactures.

CISTOTOME. See CYSTOTOMY.

CITRIC ACID, in *Chemiſtry*. This acid has been lately analyſed by Gay Luſſac and Thenard, and ſtill more recently by Berzelius. The reſults obtained by theſe able chemiſts differ conſiderably, which are partly to be aſcribed to the preſence of water in the acid analyſed by Gay Luſſac. (See ANALYSIS *of Organized Subſtances*.) The following Table exhibits theſe reſults.

	Hydrogen.		Carbon.		Oxygen.
Gay Luſſac	6.330	+	33.811	+	59.859
Berzelius	3.800	+	41.369	+	54.831

If we conſider the numbers of Berzelius as moſt accurate, citric acid may be ſuppoſed to conſiſt of two atoms hydrogen, four of carbon, and four of oxygen, and the weight of an integrant atom will be 72.5. Dr. Thomſon, however, is diſpoſed to conſider another atom of hydrogen, or three atoms, to be preſent in citric acid, which ſuppoſition he ſtates will render the weight of its integrant atom more accordant with the beſt analyſes of the citrates.

CLACKMANNAN. Add—In 1811, the pariſh of Clackmannan contained 693 houſes, and 3605 perſons; *viz.* 1657 males, and 1948 females.

CLACKMANNANSHIRE. By the returns of 1811, this ſhire contained 1995 houſes, and 12,010 perſons; *viz.* 5715 males, and 6295 females: 280 families being employed in agriculture, and 893 in trade and manufactures.

CLADIUM, in *Botany*, from κλαδος, *a twig*, alluding to its habit.—Browne Jam. 114. Brown Prodr. Nov. Holl. v. 1. 236.—A genus founded on *Schoenus Mariſcus* of Linnæus. (See SCHOENUS.) This plant grows in the Weſt Indies and New Holland, as well as in Europe. Mr. Brown, who defines thirteen New Holland ſpecies, gives the following

Eſſ. Ch. Glumes imbricated every way, one or two-flowered; the outer ones empty. Germen without briſtles or ſcales underneath. Style deciduous, without a joint at the baſe. Nut naked and ſmooth, with a ſmooth kernel.

CLADONIA, from its *twiggy* habit, a name given by Hoffmann to a tribe of Lichens, now ſunk in CENOMYCE; ſee that article.

CLAIBORNE, in *Geography*, a county of Eaſt Tenneſſee, having 4798 inhabitants, of whom 327 are ſlaves.—Alſo, a town of Miſſiſſippi territory, in Adams' county, containing 1538 inhabitants, of whom 14 are ſlaves.

CLAIR, a county of the Illinois territory, containing nine townſhips, and 5007 inhabitants, of whom 40 are ſlaves.

CLAIR, *St.* Add—It is a town of Butler county, having 1180 inhabitants.—Alſo, a town of Columbiana county, in the ſame ſtate, having 1003 inhabitants.—Alſo, a townſhip of Pennſylvania, in Alleghany county, containing 3080 inhabitants.

CLARCKIA, in *Botany*, ſo named by Mr. Purſh, in honour of general Daniel Clarck, the companion of the late governor Lewis, in his botanical travels.—Purſh 260.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Onagræ*, Juſſ.

Eſſ. Ch. Calyx four-cleft, tubular. Petals four, haſtate. Four filaments without anthers. Stigma in four dilated lobes. Capſule inferior, of four cells.

1. C. *pulchella*. Elegant Clarckia. Purſh n. 1.—On the Kooſkooſky and Clarck's rivers. *Governor Lewis*. Biennial, flowering in June. *Stem* erect, a foot or more in height, round, leafy, ſlightly branched upwards. *Leaves* ſcattered, ſeſſile, linear, entire, ſmooth, an inch or two long. *Flowers* axillary, ſolitary, ſomewhat ſtalked, large and handſome, of a fine purple or roſe colour. *Petals* in three equal, abrupt, ſpreading lobes. *Anthers* only four, involute. *Stigma* pale yellow, in four broad, rounded, petal-like lobes.

CLARE, in Suffolk. By the returns of 1811, the pariſh contained 253 houſes, and 1170 perſons; *viz.* 591 males, and 579 females.

CLAREMONT, l. 6, *r.* 2094.—Alſo, a town of Maſſachuſetts, in Hampſhire county, having 987 inhabitants.

CLARENDON, a townſhip of America, l. 4, after contains, inſert—1797.

CLARKE. Add—The county contains 10,981 inhabitants, of whom 2695 are ſlaves; and the town has 538 perſons, including 239 ſlaves.

CLARKSBURG. Add—Alſo, a town of Maſſachuſetts, in Berkſhire county, having 231 inhabitants.—Alſo, a county of Georgia, whoſe town is Athens, containing 2405 inhabitants, of whom 30 are ſlaves: its town contains 134, including 4 ſlaves.

CLASSIFICATION *of Animals*, &c. l. 33, inſert —For the claſſes of animals, formed from a knowledge of the internal ſtructure and according to the Linnæan ſyſtem, ſee NATURAL HISTORY. Col. 2, l. 42, *r.* a ſtrong cervical, &c.; l. 62, *dele* from Man to education, l. 65. Col. 3, l. 23 from bottom, after ant-eaters, inſert—; Col. 4, l. 33, for ſpecies *r.* animals. Col. 5, l. 29, for divided *r.* decided. Col. 6, l. 15, for and *r.* or of. Col. 7, l. 11, for when *r.* where.

Page 5, under DIGITATA, col. GENERA, l. 3, for Uomlatus *r.* Wombatus, and for *Womlat* r. *Wombat.* Col. SUB-GENERA, l. 26, for *Scalope* r. *Aquatic Shrew*; l. 35, for *Rinolphus* r. *Rinolophus*; l. 54, *r.* Myrmecophaga. *Dele* l. *ult.*

Page 6, col. GENERA, l. 13, *dele Grampus;* l. *penult. r. Touyou.*

Page 7, col. FAMILIES, l. 2, *r.* Alectorides. Col. GENERA, l. 9, *r.* Otis. Col. FAMILIES, under PASSERINÆ, l. 1, *r.* CRENIROSTRATÆ; l. 2, *r.* DENTIROSTRATÆ; l. 3, *r.* PLENIROSTRATÆ; l. 4, *r.* CONIROSTRATÆ; l. 5, *r.* SUBULIROSTRATÆ; l. 6, *r.* PLANIROSTRATÆ; l. 7, *r.* TENUIROSTRATÆ. Col. GENERA, l. 7, *r. Momot;* l. 13, after Oriolus, inſert—Buphaga...Beef-eater; l. 26, *r.* Trochilus, and alſo in next column.

Page 8, col. FAMILIES, l. 1, *r.* CURVIROSTRATÆ; l. 2, for or denticulated *r.* and cellular interiorly—and LEVIROSTRATÆ. Col. SUB-GENERA, for Kakatoe *r.* Cacatua; for Ara *r.* Macao. Under GRALLATORIÆ, col. FAMILIES, *r.* CURVIROSTRATÆ, LEVIROSTRATÆ, TENUIROSTRATÆ, PRESSIROSTRATÆ, and BREVIROSTRATÆ. Under ANSERINÆ, col. FAMILIES, *r.* SERRIROSTRATÆ, LONGIPENNÆ, and BREVIPENNÆ. Col. SUB-GENERA, after Alca, inſert—Torda, and remove Aphenodyta—*Manchot* to this column.

Page 9, col. GENERA, after Vultur, inſert—Gypætos, and after Falco, Secretarius—*Secretary.* Col. SUB-GENERA, *dele* l. 3 and l. 9. Under CHELONIA and *Families*, l. 2, *r.* Fluviatilia. Under SAURIA, col. GENERA, l. 3, *r.* Tupinambis; l. 4, Uroplatus; l. 5, Lophyrus; l. 7, *r. Guana;* l. 10, *r.* Chameleo; l. 13, Anoius; l. 16, Chalcides; after Seps, add—Bipes and Chirotes.

Page 10, under BATRACHIA and FAMILIES, for Anoura *r.* ECAUDATA; and for DELOURA *r.* CAUDATA. Under PISCES, col. ORDERS, l. 3, *r.* CHISMOPNEOSI, TREMATOPNEOSI, and OPHICHTHYOIDES.

Page 11, *r.* TREMATOPNEOSI; in the ſame column, *r.* CHISMOPNEOSI. Under TELEOBRANCHIATI, l. 4, after fins, add—which are joined. Under GENERA, *r.* Lepidogaſtrus. Ovoides, MOON-FISH.

Page 12, under FAMILIES, *r.* PANTOPTERI and PEROPTERI. Under GENERA, *r.* Notopteres. Under THORACICI, col. 1, *r.* nearly as high as long. Under GENERA, *dele* l. 2; *r.* Enoploſus, Acanthopodus, Chryſoſtoſus, Capros, Achirus.

Page 14, col. GENERA, *r. Centropome,* Gomphoſus, Oſphronemus, Pogonias, Hologymnoſus, Dipterodon, Coryphænoidon, Prionotus, Periſtedei, Stiophorus.

Page 15, under GENERA, *r.* Anloſtomus, Ompolk, Macropteronotus, Hypoſtomus, Cheilodactylus, Gaſteroplancus, Serra Salmo, *Sun-fiſh,* Synodus, Stylophorus.

Page 16, *r.* OPHICHTHYOIDES. Under GENERA, Murenoblenna, Ocypodes, Leucoſia, Galatæa, Penæus, Phronima; l. 11, for nervules *r.* nervures; l. 12, for ceiled *r.* coiled.

Page 16, TESTACEA. Col. GENERA, *r.* Ozolus. Under OCTOPODA, *r.* diſtinct and ſmall; jaws wanting, or formed in pincers, claws, or as a ſucker.

For SUCTARIA *r.* ACARIDES.
Aceras.
Trombidium.
Hydracna.
Leptus.
Atoma.

Under POLYPODA, FAMILIES, *dele* much, and inſert—MYRIOPODA for LONGIFORMIA; and in l. *ult. dele* body of an oval figure, and inſert—QUADRICORNIA for OVIFORMIA.

Page 17, *r.* HEXAPODA. Under GENERA, *r.* Bombylius, Stomoxys, Rhingia, Stratyomis; after Ceria, Midas, Cerochetus.

Page 18, col. 1, l. 1, *r.* croſſed; and again, l. 2, under FAMILIES, *r.* FRONTIROSTRA and PLANIPENNATA. Under GENERA, *r.* Promecopſis, Cercopis, Aleyrodes.

Page 19, under FAMILIES, *r.* APIARIA CHRYSIDEA. Under GENERA, Eulophus.

Page 21, under FAMILIES, *r.* Sternuxa, Mollipennata. Under GENERA, *r.* Bembidio, Clivina, Hyphydrus, Cebrio, Throſeus, Ptilinus, Necrophorus, Drilus.

Page 22, col. 1, *r.* hard; antennæ. Col. 2, *r.* often moniliform. Under FAMILIES, ANGUSTIPENNATA and SOLIDIPENNATA. Under GENERA, Lagria, Zonitis, Serropalpus, Celopus, Horia, Sarrotrium, Boletophagus, Aniſtooma, Eurychera, Akis, Sepidium, Zophoſis.

Page 23, under FAMILIES, l. 2, *r.* CYLINDRIFORMIA. Under GENERA, Oxyſtoma, Trogoſita, Cerambyx, Attelabus for Spondilis; *dele* Donacia, Necydalis for Melorchus, Clythra. In SUPPLEMENTARY TABLE, col. 2, after pediculated, inſert a;—Under ORDERS, *r.* COLEOPTERA.

Page 24, under SUB-ORDERS, *r.* PTEROPODA, GASTEROPODA. Under GENERA, after Clio, inſert—Cymbulia; *r.* Pneumodermon, after it, inſert—Helicina; *r.* Eolidia, after it, inſert—Glaurus; after Limax, inſert—Onchidium; after Sigaretus, inſert—Pleurobranchus, Dollabella, Parmacella; after Patella, inſert—Capulus; after Crepidula, inſert—Emarginula; *r.* Natica, *r.* Monodon; after Planorbis, inſert—Limnea; after Helix, inſert—Janthine, Phaſianella.

Page 25, under SUB-ORDERS, *r.* APODA; under GENERA, after Thalia, inſert—Botryllus; *r.* Anodontes; *r.* Pholas, and *dele* Cyrtodaria.

Page 26, under SUB-ORDERS, *r.* SETEGERI. Under GENERA, after Aphrodita, inſert—Amphinoma; after Dentalium, inſert—Arenicola; *dele* Faſciola, *Fluke; r. Animated Hair; r.* Scolex, and after it, inſert—Lernea, Nemertes. Under ACTINOIDEA, col. GENERA, *r.* Siponculus, *Siponcule;* after Actinia, inſert—Lucernaria; after Rhizoſtoma, add—Ceſtum, *Venus's girdle,* Diphyſas, Porpita, Velella, Phyſalia, Phyſſophora; *dele* the SUB-GENERA.

Page 27, *dele,* in l. 1, able to change from one place to another. Under GENERA, after Hydra, inſert—Coryna, Criſtatella, Pedicellaria; *r.* Pennatula, Vibrio-vibrio, Volvox-volvox.

CLAUDIO, refer to GELEE' *Claude*, and *dele* GALLIE.

CLAUSENBURG. See COLOSVAR.

CLAY, in *Geography*, a county of Kentucky, containing 2398 inhabitants, of whom 141 were ſlaves in 1810.

CLAY-STONE. See MINERALOGY, *Addenda.*

CLEAR CREEK, in *Geography*, a townſhip of Fairfield county, in Ohio, containing 1126 inhabitants.

CLEARFIELD, a county of Pennſylvania, containing a town of the ſame name, which in 1810 had 875 inhabitants.—Alſo, a townſhip of Butler county, in Pennſylvania, containing 288 inhabitants.

CLEARING, denotes a method adopted by the city bankers for exchanging the drafts on each other's houſes, and ſettling the differences. In purſuance of this method, at half-paſt three o'clock in the afternoon, a clerk from each banker attends at the clearing-houſe, where he brings all the drafts on the other bankers which have been paid into his houſe during the courſe of the day; and he depoſits them in their proper drawers (a drawer being here allotted to each banker): he then credits their accounts ſeparately with the articles which they have againſt him as found in his drawer. Balances are then ſtruck from all the accounts, and the claims transferred from one to another, until they are ſo wound up and cancelled, that each clerk has only to ſettle with two or three others, and their balances muſt be immediately paid either in caſh or Bank of England notes. Such drafts as are paid into a banker's too late for clearing, are ſent to the houſes on which they are drawn to be *marked*, which is underſtood as an engagement that they will be paid the next day. Kelly's Cambiſt.

CLEAVELAND, in *Geography*, a town of Cayhoge county, in Ohio, having, in 1810, 547 inhabitants.

CLERGY, col. 5, l. 44. By 41 Geo. III. c. 63. no perſon ordained a prieſt, or deacon, or being a miniſter of the church of Scotland, ſhall be capable of being elected to ſerve in parliament as a member of the houſe of commons. Such perſon's election ſhall be void; and if after his election he ſhall be ordained a prieſt, &c. he ſhall vacate his ſeat; and if he ſit or vote as a member of the houſe, he ſhall forfeit 500*l.* for every day in which he ſhall ſit or vote; provided ſuch proſecution be commenced within twelve calendar months after ſuch penalty ſhall be incurred. L. 54, after canon law, add—But now by 43 Geo. III. c. 84. certain proviſions of 21 Hen. VIII. are repealed, and other proviſions made in lieu thereof; and it is enacted, that after the paſſing of this act (7th July 1803) ſpiritual perſons againſt whom no action ſhall have been brought under the recited act are indemnified; and contracts which would have been good after paſſing this act are valid notwithſtanding that act; and proceeding may be ſtaid under certain conditions. And any ſpiritual perſon may take to farm to himſelf or to any perſon or perſons, to his uſe, by leaſe, grant, words, or otherwiſe, for term of life or of years, or at will, any meſſuage, manſion, or dwelling-houſe, with or without orchards, gardens, and other appurtenances, although not in any city, borough, or town, notwithſtanding the ſaid firſt recited act or any other.

And it ſhall alſo be lawful for any ſpiritual perſon, having or holding any donative, perpetual curacy, or parochial chapelry, not having ſufficient glebe or demeſne lands annexed to or in right of or by reaſon of his benefice or cure, or chapelry, or for any ſtipendiary curate or unbeneficed ſpiritual perſon, with the conſent in writing of the biſhop of the dioceſe, to take to farm to himſelf, or to any perſon to his uſe for a limited number of years, any farm or farms, lands, tenements, or hereditaments, that may under all the circumſtances appear to ſuch biſhop proper to be taken by ſuch ſpiritual perſon, for the convenience and accommodation of his hoſpitality only, without being ſubject to any pains, penalties, or forfeitures, under the ſaid firſt recited act or any other: provided that nothing herein contained ſhall extend to authoriſe any non-reſidence of ſuch ſpiritual perſon.

CLERMONT, a county of America, l. 5, *r.* 1810, 9965.

CLIFFORD, a townſhip of Luzerne county, in Pennſylvania, having 675 inhabitants.

CLINTON, l. 12, *r.* 1810, 8002; l. 13, of whom 29 are ſlaves.

CLINTON, col. 2, l. 21, after Hallowell, add—containing 1030 inhabitants.—Alſo, a county of Ohio, containing 2674 inhabitants.—Alſo, a townſhip of Knox county, in Ohio, including 714 inhabitants.—Alſo, a town of Georgia, in Jones' county, containing 6023 inhabitants, of whom 13 are ſlaves.

CLITHEROE. In 1811 this borough contained 299 houſes, and 1767 perſons; *viz.* 826 males, and 941 females.

CLITOMACHUS, l. 2, for Carthage *r.* Athens.

CLOCK. In col. 53, l. 18 from bottom, we have referred to PYROMETER for the deſcription of Troughton's new inſtrument, by which he tries the compenſation of his tubular pendulums; but on application both then and recently made to him for permiſſion to deſcribe it, we were informed that this inſtrument has not yet been completely finiſhed, and conſequently not deſcribed by him. We can, however, now give our readers ſome idea of its principle and conſtruction without a drawing. The pendulum is ſuſpended vertically in an encloſed box of wood, made faſt to a wall, and heated with lamps placed within; then a horizontal metallic bar, about thirty inches long, has one of its ends inſerted through the ſide of the box into a hole made in the centre of oſcillation of the ball, while the middle of it is ſupported by a ſhort bearing-piece driven into the wall, and projecting a few inches therefrom: on the remote end of this bar, a micrometer-ſcrew is fixed, that adjuſts a delicate ſpirit-level, borne by it; ſo that whenever the interior end of this horizontal bar is depreſſed by the elongation of the pendulum, the bubble runs to the exterior end of its tube, and indicates the quantity of elongation by its run, as meaſured by the micrometer during its re-adjuſtment; and on the contrary, when a contraction takes place in the pendulum, the bubble runs to the interior end; but when it remains ſtationary, on the application of heat to the pendulum, it is conſidered that the compenſation is perfectly adjuſted. Two thermometers are placed at a diſtance from each other in the box, and are viewed through ſlips of glaſs inſerted in the front of the box near the top and bottom, to ſhew that the heat is equally diffuſed; and thus the expanſion of any ſimple rod may be taken, while the apparatus is removed ſufficiently from the heat applied within the box, while the leaſt quantity of expanſion may be aſcertained, without danger of error, by means of the micrometrical level. It is hardly neceſſary to remark, that when a ſimple rod has its expanſion thus aſcertained in different degrees of temperature, its inferior end muſt reſt on the inner end of the horizontal bar, while its ſuperior end muſt be preſſed upwards againſt a pin in the wall inſtead of being ſuſpended; in which caſe, a counterpoiſe muſt be placed on the horizontal bar near the level, to hold the vertical rod up to its bearing. The peculiar advantage of trying the final adjuſtment of a pendulum of Troughton's conſtruction for compenſation after it has been brought to time, is, that the ſpring by which the pendulum is ſuſpended is *included* in the determination of the total reſult of all the contrary expanſions; which cannot be ſaid of any other method, except that which reſults from actual experience, in obſerving the variations of rate at oppoſite ſeaſons of the year, which is a tedious method, accompliſhed only at the expence of much obſervation and loſs of time after each new adjuſtment.

CLOCK-MAKING, col. 2, l. 13 from bottom, for radii *r.* diameters.

CLOWES, l. 2, for fifteenth *r.* ſixteenth.

CLUNCH. This is alſo a name given to Stourbridge clay, which lies at a great depth in the earth, under the bed of coal: it is a grey clay, of a ſandy nature, and better adapted for making large crucibles and fire-brick than perhaps any in Europe. Parkes's Eſſ. v. i.

CLUPEA ALOSA, col. 2, l. 39, for it is not of *r.* it is one of.

CLYSTERS, in *Farriery*, are of great uſe in allaying many acute complaints to which horſes are ſubject; and Mr. Clark recommends for this purpoſe ſimple clyſters of warm water or thin water-gruel. The inſtrument which he prefers for adminiſtering clyſters is a ſimple bag or ox-bladder, holding two or three quarts, tied to the end of a wooden pipe about fourteen or fifteen inches long, and an inch and a half in diameter where the bag is tied, and tapering to the extremity, where the thickneſs ſhould ſuddenly increaſe, and be rounded off to the point as ſmooth as poſſible. The hole through the pipe may be made ſufficiently large for admitting the end of a common funnel, by which the liquor may be poured into the bag. Mr. Clark recommends the following clyſters for the ſeveral purpoſes to which they are applied. An *emollient* clyſter may be compoſed of two or three quarts of the water-gruel, 6 oz. of coarſe ſugar diſſolved in the gruel, and the ſame quantity of olive-oil added to it. For a *laxation* clyſter, he directs two or three quarts of thin water-gruel, 8 oz. of Glauber's ſalt (or common ſalt), and 6 oz. of olive-oil. For a *purging* clyſter, he recommends 2 oz. of ſenna, two quarts of boiling water, the ſenna being infuſed and the liquor ſtrained off, with the addition of ſyrup of buckthorn and common oil, of each 4 oz. An *anodyne* clyſter may be prepared with one pint of the jelly of common ſtarch, or infuſion of linſeed, and 1 oz. or about two table-ſpoonſful of tincture of opium. For a *nutritive* clyſter, he directs three quarts of thick water-gruel well boiled; and in ſome caſes milk-gruel might be ſubſtituted with advantage. For a *diuretic* clyſter, in caſes of ſtrangury, or obſtructions of the ſeminary paſſages, he recommends 1 oz. of caſtile ſoap diſſolved in two quarts of warm water, and the addition of 2 oz. of Venice turpentine, previouſly beaten up with the yolks of two eggs.

COACHES, Hackney, col. 4, line 8 from bottom, add—By ſtatute 55 Geo. III. c. 159. ſ. 2. the commiſſioners are empowered to licenſe hackney chariots: and by an act paſſed July 11, 1817, the holders of licences may drive either a coach or a chariot under the ſame licence; provided that they do not at the ſame time drive more than one, which is to be expreſſed in the licence, under a penalty of 10*l*. or revocation of the licence.

COAL, col. 13, l. 3 from bottom, for 2 92 Grey, &c. *r*. 21 92 Grey, &c. Col. 20, l. 12, for eaſterly *r*. weſterly.

COALBROOK, or Colebrook Dale, in *Geography*, a townſhip of Berks county, in Pennſylvania, containing 792 inhabitants.

COBALT, col. 7, l. 6 from bottom, for or *r*. on.

Cobalt, in *Chemiſtry*, the name of a metal. Some circumſtances omitted in their proper place require to be mentioned here.

The ſpecific gravity of pure cobalt, according to Taſſaert, is 8.5384; according to Lampadius it is 8.7. It melts at about 130° of Wedgwood's ſcale, and is not capable of being volatilized by any degree of heat we can excite. Like iron, it is attracted by the magnet, and according to Wenzel is capable of being converted into a magnet, preciſely ſimilar in its properties to the common magnetic needle.

There are two oxyds of cobalt, the protoxyd or *blue*, and the peroxyd or *black* oxyd.

The protoxyd diſſolves in acids without efferveſcence, and ſeems to form the baſis of moſt of the ſalts of cobalt. According to Rothoff, it is compoſed of

Cobalt - - -	100
Oxygen - - -	27.36

Prouſt found the proportion of oxygen conſiderably leſs, that is to ſay, only 19.8 with 100 of the metal; and Klaproth ſtill leſs, or about 18.0. If, with Dr. Thomſon, we conſider Rothoff's analyſis moſt entitled to confidence, the weight of the atom of cobalt will be 36.25.

When the protoxyd of cobalt, newly precipitated from an acid, is dried by heating it in the open air, it aſſumes a flea-brown colour, which gradually deepens till it becomes black. This is the peroxyd of cobalt. It diſſolves with efferveſcence in muriatic acid, and a great quantity of chlorine is evolved. From the experiments of Rothoff, it appears that this oxyd is compoſed of

Cobalt - - -	100
Oxygen - - -	36.77

Hence it appears to be compoſed of two atoms cobalt, and three of oxygen; and on this ſuppoſition, the weight of its atom will be 102.5.

COCALICO. Add—containing 4024 inhabitants.

COCAMA, *r*. ſee Maynas.

COCCINELLA, l. 39, add—Theſe inſects are commonly known under the name of lady-birds. The C. 7-punctata, or that of a 7-ſpotted body, makes its appearance in the advanced ſtate of ſpring and middle of ſummer, and in every field and garden. One of the moſt beautiful of the Engliſh ſpecies is C. 18-punctata of Linnæus, which is little more than half the ſize of the common red bead, and is of a bright yellow colour, with numerous (generally 18) black ſpecks.

COCCIUM, l. 4, *r*. Ribcheſter.

COCCOLITE. See Mineralogy, *Addenda*.

COCHIN-CHINA, col. 8, l. 11 from bottom, for winged *r*. wing. Col. 10, l. 12, for men *r*. women.

COCKBURNE, l. 2, for Grafton *r*. Coos. Add—It contains 142 inhabitants.

COCKE, a county of Eaſt Tenneſſee, containing 5154 inhabitants, of whom 436 are ſlaves.

COCKERMOUTH, l. 40, *r*. 2964; l. 41, *r*. 602.

CODORUS. Add—It contains 1975 inhabitants.

COELACHNE, in *Botany*, from κοιλος, *empty*, and αχνα, *a huſk*, alluding to the inflated glumes.—Brown Prodr. N. Holl. v. 1. 187.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two nearly equal, very blunt, tumid valves, two-flowered. Florets of two valves, without awns; the uppermoſt ſtalked, female. Nectary of two ſcales. Stigmas feathery. Seed unconnected, cylindrical, acute at each end.

1. C. *pulchella*. Found by ſir J. Banks, in the tropical part of New Holland. A little ſmooth ſlender *graſs*, reſembling a diminutive *Briza*, very remarkable for the ſmaller, or imperfect, *floret* being female, not male.

COFFEE, col. 13, l. 1, *r*. 49, and 98; l. 15, *r*. 100. Col. 14, l. 29, *r*. 43.

COHASSET, l. 3, *r*. 994.

COINAGE, col. 2, l. 4 from bottom, *Plate* III. *fig*. 1. *Miſcellany*.

COIT's Gore, in *Geography*, a town of Franklin county, in Vermont, having 193 inhabitants.

COITSVILLE, a townſhip of Ohio, in the county of Trumbull, having 429 inhabitants.

COKE, *Sir* Edward, l. 3, *r*. Micham.

COLBERT, John Baptist, l. 16, *r*. XIV.

COLCHESTER. In 1811, the borough of Colcheſter contained 2111 houſes, and 12,544 perſons; 5400 being males, and 7144 females: 480 families employed in agriculture, and 1152 in trade and manufactures.

Colchester, in America, l. 7, add—containing, in 1810, 2697

2697 inhabitants, of whom 7 are ſlaves; l. 10, add—containing 657 inhabitants.

COLCHICUM, col. 2, add—See Phil. Tranſ. for 1817, pt. ii. p. 262; and for Meadow *r.* Saffron.

COLDINGHAM. In 1811 the pariſh contained 462 houſes, and 2424 perſons; 1174 being males, and 1250 females.

COLDSTREAM. In 1811, the pariſh contained 397 houſes, and 2384 perſons; 1103 being males, and 1281 females.

COLEBROOK, l. 2, for Grafton *r.* Coos; l. 6, add—containing, in 1810, 325 inhabitants; l. 10, add—In 1810, it contained 1243 inhabitants.

COLEBROOKEA, in *Botany*, ſo named, by the writer of this, in honour of Henry Thomas Colebrooke, eſq., chief judge in the courts for the natives of Bengal, a practical and accompliſhed botaniſt.—Sm. Exot. Bot. v. 2. 111.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Vitices*, Juſſ.

Eſſ. Ch. Calyx-teeth five, becoming feathery awns. Seed ſolitary, briſtly. Limb of the corolla unequally five-lobed.

1. C. *oppoſitifolia*. Oppoſite-leaved Colebrookea. Sm. as above, t. 115.—Leaves oppoſite.—Found by Dr. Buchanan, by road ſides in Nepaul. A downy, ſlightly aromatic, *ſhrub*, with ſtalked, elliptic-lanceolate, ſerrated *leaves*, and terminal, aggregate, whorled *ſpikes*, of innumerable minute white *flowers*.

2. C. *ternifolia*. Three-leaved Colebrookea. Roxb. Corom. v. 3. 40. t. 245.—Leaves three or four in a whorl.—Native of Myſore. The *leaves* are narrower and more drooping; the *ſpikes* much ſmaller than in the foregoing. Dr. Roxburgh ſays the *germens* are four, ſometimes all perfected; the *flowers* aggregate, with many common *bracteas*.

COLEFORD. In 1811, this tything in Newland pariſh contained 253 houſes, and 1551 perſons; 849 being males, and 702 females.

COLERAIN, l. 2, add—containing 834 inhabitants; l. 20, add—Alſo, a townſhip of Bedford county, in Pennſylvania, containing 1847 inhabitants.—Alſo, a townſhip of Belmont county, in Pennſylvania, containing 471 inhabitants.—Alſo, a town of Roſs county, in Ohio, having 846 inhabitants.

COLERAINE, l. 3, *r.* and in 1810, 2016 inhabitants.

COLESHILL. In 1811, this pariſh contained 330 houſes, and 1639 perſons; *viz.* 789 males, and 850 females: 119 being employed in agriculture, and 196 in trade and manufactures.

COLICA, or Colic, in *Farriery*, a diſeaſe to which brute animals are ſubject; for which Mr. Taplin recommends a ball made of the following ingredients; *viz.* 1 oz. of pulverized aniſeeds; ½ oz. of mithridate; ginger and grains of paradiſe, of each, in powder, 2 drs.; oil of aniſeed and oil of juniper, of each, 1 dr.; and ſyrup *q. ſ.*: the ball to be given, according to the ſtate of the diſeaſe, every two, four, or ſix hours. In ſome caſes, a mixture of ginger, pepper, aniſeeds, &c. ½ oz. of each, with the addition of a little brandy or gin, will give relief. In flatulent colics, a ball made of 6 drs. or 1 oz. of Venice turpentine, purified opium from 1 to 1½ dr., 1 dr. of oil of aniſeeds, and 2 drs. of powdered ginger, may be adminiſtered every two, three, or four hours, according to the urgency of the ſymptoms.

COLLEMA, in *Botany*, *κολλημα, a glutinous ſubſtance.* The name appears to have originated with Hill, and is adopted by Hoffmann and Acharius. The latter has only admitted this genus in his two laſt publications.—Ach. Lichenogr. 129. t. 14. f. 8—11. Syn. 308. Sm. in Engl. Bot. 2284. (Parmelia, ſect. 6; Ach. Meth. 221.)—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Lichenes*.

Eſſ. Ch. Shields orbicular, horizontal, nearly ſeſſile, ſuperficial, with a gelatinous acceſſory border.

Acharius reckons up ſixty-four ſpecies. Theſe are the gelatinous Lichens of former authors. (See Lichenes, ſect. 1.) They are all more or leſs pulpy, olive-green, or blackiſh; their *fronds* various in form and direction. Twenty-three Britiſh ſpecies are figured in Engl. Bot.

COLLEMORE's Ridge, in *Geography*, a townſhip of America, in the diſtrict of Maine, and county of Lincoln, having 40 inhabitants.

COLLETON, a diſtrict of South Carolina, containing 26,359 inhabitants, of whom 5238 are ſlaves.

Vol. IX.

COLLISION, col. 9, three laſt lines, for Z *r.* E.

COLNE. By the return of 1811, this townſhip contained 990 houſes, and 5336 perſons; *viz.* 2531 males, and 2805 females: 58 families being employed in agriculture, and 928 in trade and manufactures.

COLONSAY, l. 21, By the laſt act 786, and the number of houſes 138.

COLOUR, col. 12, l. 11, for cold *r.* colour. Col. 22, l. 18, for tube *r.* tub.

COLOURING *Principle of the Blood, Chemical Properties of.* See Blood.

COLUBER, l. *ult.* *r.* See Hydrus.

COLUGO, in *Zoology*. See Galeopithecus.

COLUMB, St. In 1811, the pariſh of St. Columb major contained 419 houſes, and 2070 perſons; *viz.* 988 males, and 1082 females: 225 being employed in agriculture, and 108 in trade, &c.: and the pariſh of St. Columb minor contained 229 houſes, and 1126 perſons; *viz.* 550 males, and 576 females: 147 families being employed in agriculture, and 72 in trade, &c.

COLUMBA, a military order, l. 2, *r.* 1379. Add—See Dove.

COLUMBIA, l. *ult.* *r.* in 1810, 32,390 inhabitants, of whom 879 are ſlaves; l. 8, add—It contains 11,242 inhabitants, including 5980 ſlaves; l. 11, add—It contains 518 inhabitants; l. 31, add—It contains 2057 inhabitants.—Alſo, a townſhip of Cayuhaga, in Ohio, having 205 inhabitants.

COLUMBIANA. Add—It contains 17 townſhips, and 10,878 inhabitants.—Alſo, a town of Kentucky, in Adair county, containing 175 inhabitants, of whom 45 are ſlaves.—Alſo, a diſtrict of America, containing 24,023 inhabitants, of whom 5395 are ſlaves.

COLUMBIUM, *Columbic Acid*, in *Chemiſtry*. See Tantalum.

COLUMBO, l. 6, *r.* Trincomalee.

COLUMBUS, in *Geography*, a county of North Carolina, containing 3022 inhabitants, of whom 703 are ſlaves.

COLUMNA, l. 10, for eliptic *r.* epileptic.

COLYTON, l. *penult.* *dele* arms; l. *ult.* *r.* 343 and 1774.

COMBINATION, col. 2, l. 8, *dele* *cc*; l. 38, for $\frac{6-1}{2}$ *r.* $\frac{6-1}{3}$.

COMBUSTION, *Theory of*, in *Chemiſtry*. See Acid, and Acidification.

COMEPHORUS, in *Ichthyology*, a genus of the apodes, the characters of which are, head large, with depreſſed ſnout; mouth large, with ſmall teeth; body elongated, compreſſed, the ſecond dorſal fin ſurrounded with ſeveral long naked rays.

This fiſh is a genus of Cepede, and referred by Pallas to the genus of callionymus among the jugular fiſhes. It is a native of the lake Baikal; and from its conformation ſeems to be capable of ſwimming ſwiftly, and of ſpringing out of the water like the flying-fiſh. See CALLIONYMUS *Baikalenſis* of Gmelin's Linnæan ſyſtem.

COMMIPHORA, in *Botany*, from *κομμι*, *gum*, and φερω, *to bear*, Jacq. Hort. Schoenbr. v. 2. 66. t. 249, a dioecious octandrous ſhrub, of which the male only is known, found in Madagaſcar, and ſaid to produce that kind of elaſtic gum, of which Fourcroy has given an analyſis. More information on this ſubject is very deſirable.

COMMON PRAYER, l. 15, add—2 & 3 Edw. VI.

COMPAGNIE ECOSSOISE. See GENDARMES, &c.

COMPASS, col. 6, l. 37 and 38, *r.* See MAGNETICAL DECLINATION, and MAGNETICAL VARIATION.

COMPENSATION, col. 18, l. 30 from the bottom, for but broader *r.* and narrower.

COMPOSTELLA, l. 2, after capital, inſert—(ſee CORUNNA).

COMPOUNDS, in *Chemiſtry*, are divided into *primary* and *ſecondary*.

Primary compounds, according to Dr. Thomſon, are thoſe formed by the union of combuſtibles with the four ſupporters of combuſtion, oxygen, chlorine, iodine, and fluorine, and with *cyanogen*. Dr. Thomſon alſo includes under this diviſion certain compounds of combuſtibles with one another, and with oxygen.

Secondary compounds are thoſe formed by the union of two or more primary compounds. Theſe include the four claſſes of ſubſtances, termed hydrates, ſalts, hydroſulphurets, and ſoaps.

COMREE, in *Geography*, a townſhip of Berks county, in Pennſylvania, containing 2017 inhabitants.

CONCORD, l. 10, inſert—and had, in 1810, 2396. At the cloſe, add—Alſo, a town of Grafton county, in New Hampſhire, containing 1126 inhabitants. At the cloſe of the next article, add—containing 677 inhabitants; l. 4 from the bottom, after upwards, add—By the cenſus of 1810, the number of inhabitants was 1633.

CONCORD, in Delaware county, add—containing 1061 inhabitants.—Alſo, a townſhip of Miami county, in Ohio, having 679 inhabitants.—Alſo, a town of Roſs county, in Ohio, containing 1277 inhabitants.

CONCORDIA. Add—Alſo, a county and pariſh of the territory of Orleans, containing 2895 inhabitants, of whom 1581 are ſlaves.

CONEMAUGH, a townſhip of Indiana county, in Pennſylvania, containing 1167 inhabitants.—Alſo, a townſhip of Somerſet county, in the ſame ſtate, having 381 inhabitants.

CONESTOGA. Add—containing 1506 inhabitants.

CONEWAGO, a townſhip of Adams county, in Pennſylvania, having 531 inhabitants.

CONEWANGO, a townſhip of Warren county, in Pennſylvania, having 448 inhabitants.

CONGLETON, 2 laſt lines, *r.* at 944, the inhabitants at 4616, of whom 2023 are males, and 2593 females.

CONGOON, a port of Lariſtan, in Perſia, containing 6000 or 7000 inhabitants, and having an excellent roadſtead, where a frigate may ride ſafely in the moſt tempeſtuous weather, and good water and fire-wood be procured.

CONIC SECTIONS, *Lemmas.* Def. l. 1, *r.* A E; l. 2, D and B; l. 3, A B. Cor. l. 1, *r.* A E in B; l. 3, B and D and in B; l. 5, D B and *d* E.

CONNECTICUT. At the cloſe, add—See UNITED STATES.

CONNELSVILLE, l. 2, for Waſhington *r.* Fayette; l. 4, *r.* 93 inhabitants.

CONNIOTT, a townſhip of Pennſylvania, in the county of Crawford, having 285 inhabitants.

CONON, l. 1, for ſon *r.* father; l. 2, after Athens, *r.* who died in the year B.C. 393.

CONOPLEA, in *Botany*, Perſ. Syn. Fung. 234, an obſcure genus of *Fungi*, conſiſting of compact, rigid, permanent fibres, generally black or browniſh, interſperſed with powder. Four ſpecies are deſcribed, found on rotten wood, branches, or leaves.

CONOSTYLIS, from the conical form of the ſtyle.—Br. Prodr. Nov. Holl. v. 1. 300. Purſh 224.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Hæmodoraceæ*, Brown.

Eſſ. Ch. Corolla ſuperior, in ſix deep equal ſegments, woolly with branched hairs, permanent. Anthers erect. Style conical, ſeparable into three parts. Stigma ſimple. Capſule of three cells, burſting at the top, with a triangular central receptacle, and many ſeeds.

Roots perennial, fibrous. *Stem* ſcarcely any. *Leaves* ſword-ſhaped, equitant, rough or briſtly at the edges. *Stalk* many-flowered, capitate or corymboſe, often woolly.

Four ſpecies are natives of the ſouth coaſt of New Holland; and one, *C. americana*, of the pine-barrens of New Jerſey and Carolina, bearing *flowers* of a golden yellow, in July. The *germen* is almoſt entirely ſuperior in this ſpecies. *Purſh.*

CONSTRUCTION *of Boats.* The plate referred to under this article has been ſuperſeded by *Plate* XIV. *of Naval Architecture;* and for the deſcription of the latter, as far as it relates to BOATS, the reader is referred to the article WHOLE-*Moulding*.

CONVOCATION, col. 3, l. 36, after repreſentatives, add—The ſummons to the convocation muſt not be confounded with that which we now mention, though the conſtituent parts are the ſame; and by modern uſage the aſſembly of both is ſuppoſed to have been on the ſame day. But the one may be eaſily diſtinguiſhed from the other by this difference; *viz.* that the convocation is provincial, and ſummoned by the metropolitans of Canterbury and York; whence the clauſe, commonly denominated *præmunientes*, (from its firſt word,) in the writ to each biſhop proceeds from the crown, and enjoins the attendance of the clergy at the national council of parliament.

CONWAY, col. 3, at the cloſe—Population in 1811 was 1053; the number of houſes 218.

CONWAY, in America, l. 8, *r.* 1080. Col. 4, l. 1, *r.* 1784.

COOLING *Powers of the Gaſes.* It is difficult to aſcertain the preciſe conducting powers of gaſeous ſubſtances, as the cooling of hot bodies in gaſes is influenced by a variety of circumſtances beſides their conducting properties. Count Rumford found, that a thermometer cooled nearly four times as faſt in water as in air of the ſame temperature. The ſame philoſopher alſo found, that rarefaction much diminiſhes the conducting power of air, and that hot bodies cool ſloweſt of all in a Torricellian vacuum. This ſubject, however, has been inveſtigated more lately with greater preciſion by Leſlie and Dalton. Mr. Leſlie aſcertained, that the conducting power of all gaſes is diminiſhed by rarefaction. He has endeavoured to deduce from his experiments, that the conducting power of air is nearly proportional to the fifth root of its denſity. Mr. Dalton, however, has rendered it probable, that it varies nearly as the cube root of its denſity. Vapours of all kinds, and every thing that has a tendency to dilate air, diminiſh their conducting powers. The conducting powers of common air, oxygen, and azote, as might be expected, are nearly equal. The conducting power of carbonic acid is rather inferior to that of air, but bodies cool in hydrogen more than twice as faſt as in common air; and Mr. Leſlie has endeavoured to ſhew, that the actual conducting power of hydrogen is no leſs than four times greater than that of common air.

Mr. Dalton's experiments were made with a ſtrong phial filled with the gas to be examined, into which he introduced a delicate thermometer through a perforated cube, and obſerved the time it took to cool 15° or 20°. The following table exhibits the reſult of his experiments:

	Time of cooling.
Carbonic acid - - - -	112″
Sulphuretted hydrogen Nitrous oxyd Olefiant gas - -	100″+
Common air Oxygen Azote - - - -	100″
Nitrous gas - - - -	90″
Gas from pit-coal - - -	70″
Hydrogen gas - - - -	40″

COOLSPRING, in *Geography*, a townſhip of Pennſylvania, in the county of Mercer, having 521 inhabitants.

COOS, in *Ancient Geography*. Add—See Cos.

Coos, in *Geography*. Add—Coos is a county of New Hampſhire, containing 24 townſhips, and 3991 inhabitants.

COPAL. Add—See Vateria.

COPPER, in *Chemiſtry*, the name of a metal. Some circumſtances omitted in our account of this metal require to be inſerted here.

There are two oxyds of copper, the protoxyd of an *orange* or *red* colour, and the peroxyd or *black* oxyd.

The protoxyd was obſerved by Prouſt; but Chenevix, who found it native in Cornwall, firſt accurately deſcribed its properties. It may be formed by mixing together 57.5 parts of black oxyd of copper, and 50 parts of copper in a ſtate of powder, formed by precipitating it from muriatic acid by an iron plate. This mixture is to be triturated in a mortar, and put with muriatic acid into a well-ſtopped phial. Potaſh dropped into this ſolution precipitates the oxyd of copper of an orange colour. It may be alſo formed with much leſs trouble by adding exceſs of copper to muriatic acid, and letting the whole remain till the green colour diſappears, and the ſolution becomes dark brown and opaque. In this ſtate, dirty-white cryſtals like ſand are depoſited. If potaſh be added to the brown ſolution, or a ſolution of the cryſtals above-mentioned, the protoxyd is precipitated in abundance. According to Berzelius, this oxyd is compoſed of

Copper -	100
Oxygen -	12.5

Hence the weight of the atom of copper will be 80.

The peroxyd or black oxyd of copper has been already deſcribed. It is compoſed, according to Prouſt and Berzelius, of

Copper -	100
Oxygen -	25

Hence the quantity of oxygen in theſe two oxyds is as one to two; or the protoxyd may be conſidered as compoſed of one atom copper and one of oxygen, and the peroxyd of one atom copper and two of oxygen. From theſe determinations, the compoſition and weights of the atoms of the different ſalts of copper may be accurately eſtimated.

COPTIS, in *Botany*, from κοπτω, *to divide*.—Saliſb. Tr. of Linn. Soc. v. 8. 305. De Cand. Syſt. v. 1. 321. Purſh. 390.—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Ranunculaceæ*, Juſſ.

Eſſ. Ch. Calyx none. Petals five or ſix, deciduous. Nectaries as many, hooded. Follicles membranous, ſtalked, beaked, with many ſeeds.

1. C. *trifolia*. Three-leaved Coptis. Purſh n. 1.—Leaves ternate, obovate. See Helleborus, n. 3.

2. C. *aſplenifolia*. Fern-leaved Coptis. Purſh n. 2.—Leaves twice ternate, pinnatifid.—Found by Mr. Menzies, on the weſt coaſt of North America, and by Thunberg in Japan, this being actually *Thalictrum japonicum* of that author, and of Willd. Sp. Pl. v. 2. 1303! The *flowers* are greeniſh.

CORACHIE, in *Geography*, a good ſea-port in the country of *Seind;* which ſee.

CORAL, *Chemical Properties of*. See Vermes.

CORALLORRHIZA, in *Botany*, an old name, alluding to the branching coral-like form of the root.—Hall. Hiſt. v. 2. 159. t. 44. Brown in Ait. Hort. Kew. v. 5. 209. See Cymbidium.

Eſſ. Ch. Lip elongated into a ſpur at the baſe. Column unconnected. Anther a terminal deciduous lid. Maſſes of pollen four, oblique.

We do not doubt the propriety of ſeparating this plant, and another of American origin, (ſee Purſh 593, n. 4.) from *Cymbidium;* but we have ſome nearly allied *Orchideæ* from Nepaul, which require to be examined before the limits of *Corallorrhiza* can be clearly defined.

CORDILLERAS. Add—The great body of the Cordilleras, as it extends from Quito northward, approaching the gulf of Mexico, and entering the kingdom of New Granada, is divided into three chains, which are almoſt parallel, and of which the two lateral branches are covered with ſand-ſtone, and other ſecondary formations, to a very conſiderable height. The eaſtern chain divides the valley of the river Magdalena from the great plains that are drained by the Orinoco and its branches. Incloſed by a circle of mountains belonging to this chain is the high valley of Bogota, the bottom of which is no leſs than 7460 feet above the level of the ſea. The waters of this valley are collected by the ſingle ſtream of Rio de Bogota, which finds its way through the mountains to the S.W. of the town of Santa Fé: the ſtream where it leaves the valley is about 144 feet wide; it then enters into a rocky channel not more than 40 feet wide, apparently formed, ſays M. Humboldt, by an earthquake. From this crevice, the river precipitates itſelf at two bounds to the depth of 574 feet; and after this fall purſues its courſe to the Magdalena, about 50 miles, ſtill deſcending with great rapidity, and at the rate of 150 feet to a mile. The natural bridges of Icononzo are on the weſtern declivity of this ridge. The central chain is the higheſt of the three, and often attains the limits of perpetual ſnow, and greatly ſurpaſſes it in the coloſſal ſummits of Guanneas, Baragan, and Quindiu. The weſtern chain ſeparates the valley of Cauca from the province of Choco, and the coaſts of the South ſea. This is lower than the others, and riſes ſo much as it approaches the iſthmus of Panama, that its courſe can hardly be aſcertained. In our ordinary maps, there is no trace of the higheſt or central chain; and Mr. Arrowſmith's map of America, in 1802, makes the valley of Magdalena occupy the whole interval between the eaſtern and weſtern chains. The moſt difficult paſſage of the Andes is that by the mountain Quindiu. It lies through a thick uninhabited foreſt, which cannot be traverſed, in the fineſt ſeaſon, in leſs than ten or twelve days. The ſummit of the paſs is at the prodigious height of 11,499 feet above the level of the ſea, and the paſſage from ten to ſixteen inches in breadth. Humboldt's Reſearches, &c. by H. M. Williams, 1814.

CORDYLINE, in *Botany*, an old name of Van Royen's, from κορδυλη, *a club or ſtaff*, ſuitable enough to the *Dracænæ* and *Yuccæ* to which it was originally applied, and which we preſume are included in the genus which now bears it.—Commerſ. in Juſſ. 41. Brown Prodr. Nov. Holl. v. 1. 280. —Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Aſparagi*, Juſſ. *Aſphodeleæ*, Br.

Eſſ. Ch. Corolla bell-ſhaped, in ſix equal ſegments, deciduous. Filaments inſerted into the throat, awl-ſhaped, ſmooth. Anthers verſatile, cloven at the baſe. Stigma three-cleft. Berry globular, of three cells, with ſeveral ſeeds, whoſe ſcar is bordered. *Br.*

The *ſtem* is ſhrubby. *Leaves* lanceolate, finely ribbed, elongated. *Panicle* terminal, of numerous, many-flowered, alternate ſpikes, with two unequal *bracteas* under each *flower*.

1. C. *cannifolia*. Br. n. 1.—Leaves ſtalked, pointed. Cluſters divided. Outer bracteas acute, twice as large as the inner, which hardly equal the partial ſtalks.—Found by Mr. Brown, in the tropical part of New Holland.

See Dracæna, of which our firſt and ſecond ſpecies belong to this genus.

CORFE-CASTLE, l. 29, *r.* after return—of 1811 was 161, and of inhabitants 744.

CORINTH, a townſhip of America, l. 2, *r.* 1876.

CORINTHIAN Order, l. 8, for convex *r.* concave.

CORN, col. 3, l. 18 from the bottom, *dele* l. 18 to l. 14.

Vol. X.

CORNEA, *Opacities of.* Opacity of the cornea is one of the worſt conſequences of obſtinate chronic ophthalmy. The ſlight, recent, and ſuperficial form of the diſeaſe is uſually known under the name of nebula; and it is preceded by and attended with chronic ophthalmy. The iris and pupil are diſcernible through a ſort of cloudineſs, and the patient is not entirely deprived of the power of viſion. The veins of the conjunctiva are greatly relaxed, turgid, irregular, and knotty, which change firſt affects their trunks, and then gradually extends to their ramifications near the union of the cornea with the ſclerotica, and ultimately to their moſt minute branches returning from the delicate layer of the conjunctiva, ſpread over the front of the cornea. When this happens, a milky albuminous ſecretion begins to be ſuperficially effuſed in the interſpaces between the red ſtreaks, and the ſpecks thus produced may cover only a part or the whole of the cornea.

The opacity of the cornea ſometimes occurring in violent ophthalmies is eſſentially different from the nebula, and ariſes from a deep extravaſation of coagulating lymph in the cellular texture of the cornea, or from an abſceſs between its layers. In the treatment of the nebula, the curative indications are to reſtore the varicoſe veſſels to their natural diameters; and if that be impracticable, to cut off all communication between the trunks of the moſt prominent veins of the conjunctiva and thoſe on the cornea. The firſt object is performed by uſing Janin's ophthalmic ointment, or the ung. hydrarg. nitrati, together with aſtringent collyria. The ſecond deſideratum is fulfilled by the exciſion of the faſciculus of varicoſe veins, juſt at the baſe of the opacity, with a pair of diſſecting ſciſſars and forceps. With reſpect to the deeper and more obſtinate opacities, which are frequently called *albugo* and *leucoma*, they are conſequences of ſevere acute ophthalmy, though ſometimes the effects of an ulcer or wound of the cornea, when they are commonly known only by the latter appellation.

The recent albugo may ſometimes be diſperſed by the ſame treatment, which is applicable to violent ophthalmy; and when the inflammation has been ſubdued, the ung. hydrarg. nitrat. is the beſt local remedy for promoting the abſorption of the extravaſated opaque lymph. The eye may alſo be frequently waſhed with a collyrium, compoſed of two ſcruples of the muriate of ammonia, and four grains of verdigreaſe, in eight ounces of lime-water. The treatment muſt be continued three or four months before the caſe is to be abandoned as hopeleſs. With reſpect to the leucoma ariſing from a cicatrix, Scarpa ſets it down as abſolutely incurable.

CORNISH, l. 5, *r.* 1810, and 1606. Add—Alſo, a town of York county, in the diſtrict of Maine, having 974 inhabitants.

CORNVILLE, a town of America, in the diſtrict of Maine, and county of Somerſet, having 504 inhabitants.

CORNWALL, col. 8, l. 31, *r.* 1811; l. 32, *r.* 37,971, and 216,667.

Cornwall, in America, l. 3, *r.* 1279; l. 8, add—containing 1602 inhabitants.

CORO, l. 7, after perſons, add—The little commerce that is carried on is in mules, goats, hides, ſheep-ſkins, cheeſe, &c. obtained from the interior of the country, and more particularly from Carora. At the cloſe, *r.* N. lat. 10° 8′ from Paris.

CORSHAM, l. 17, add—By the return of 1811, the number of houſes was 478, and that of inhabitants 2395.

CORTLANDTS, a county of New York, having 8809 inhabitants.

CORUNDUM. See Mineralogy, *Addenda*, and Adamantine *Spar*.

CORUNNA. Add—See Compostella.

CORVUS, col. 2, l. 20, add—The African or Cape raven, deſcribed by Le Vaillant, is, according to Dr. Shaw, the only variety worthy of notice.

CORWEN, l. *ult.* *r.* 51 Geo. III. 288 houſes, and 1417 inhabitants.

CORYSANTHES, in *Botany*, from κορυς, *a helmet*, and ανθος, *a flower*.—Brown Prodr. Nov. Holl. v. 1. 328.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ringent; upper lip vaulted, very large; lower in two linear ſegments, combined with the linear petals. Lip dilated, concave. Anther terminal, of one cell, and two connected valves, permanent. Maſſes of pollen four. Curious little ſmooth plants, each with a ſingle *bulb*, one roundiſh radical *leaf*, and a large, deep red, ſolitary *flower*. Nearly related to Lyperanthus *nigricans*; ſee that article.

1. C. *fimbriata*. Fringed Helmet-orchis. Br. Terr. Auſtr. 78. t. 10.—Lip without a ſpur, hooded, fringed.—In ſhady places, under rocks, at Port Jackſon. *Br.* Hardly two inches high, its beautiful purple variegated *flower*

ſubtended by an almoſt orbicular, heart-ſhaped, pointed *leaf*.

2. C. *unguiculata*. Stalked Helmet-orchis. Br. n. 2.—Lip without a ſpur, tubular, dilated and oblique. Hood ſtalked. Flower pendulous.—Found by Mr. Bauer, at Port Jackſon.

3. C. *bicalcarata*. Double-ſpurred Helmet-orchis. Br. n. 3. (Corybas aconitiflorus; Saliſ. Parad. t. 83.)—Lip tubular, with two ſpurs at the baſe.—Found near Port Jackſon, but, according to Mr. Brown, very rarely, nor does he ſeem to think it has ever been brought alive to England. We received a ſpecimen in ſpirits, from Dr. White, about the year 1793. Mr. Brown's remarks on this ſubject are curious.

COSMEA, a name certainly much improved from *Coſmos* of Cavanilles, Ic. v. 1. 9.—Ait. Hort. Kew. v. 5. 132.—This genus comes next to *Coreopſis*, and we ſhould ſcarcely ſcruple to unite them.

COSMELIA, from κοσμεω, *to adorn*, alluding to its beauty.—Br. Prodr. Nov. Holl. v. 1. 553.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Eſſ. Ch. Calyx leafy. Corolla tubular, bearing the ſtamens. Anthers united lengthwiſe to the fringed tops of the filaments. Nectary of five ſcales. Capſule with a central receptacle.

1. C. *rubra*. Found by Mr. Brown, in bogs on the ſouth coaſt of New Holland. An upright *ſhrub*, without ſcars on the denudated *branches*. *Leaves* ſheathing at the baſe. *Flowers* terminal, bright red, drooping. *Calyx* accompanied by imbricated leafy *bracteas*. *Br.*

Nearly akin to ANDERSONIA; ſee that article.

COTAISIS. Add—This town, called Cotais or Cotatis, is now an inconſiderable place, inhabited by about 80 Jewiſh, Armenian, and Turkiſh families. Its rivers are extenſive, and it is ſituated on a beautiful and fertile plain.

COTCHUNG. See DERAGUZ.

COTENTIN for CONTENTIN.

COTOPAXI. This is the loftieſt of thoſe volcanoes of the Andes, which in recent epochas have undergone eruptions. Its abſolute height, according to Humboldt, is 18,874 feet; ſo that it is double that of Canigou, and 2600 feet higher than Veſuvius would be if it were placed on the top of the peak of Teneriffe. This is alſo the moſt dreadful volcano of the kingdom of Quito, and its exploſions are the moſt frequent and diſaſtrous. The maſs of ſcoriæ, and the huge fragments of rock thrown out of this volcano, cover a ſurface of ſeveral ſquare leagues; and would form, if they were heaped together, a coloſſal mountain. In 1758, the flames roſe 2900 feet above the brink of the crater. In 1744, the roaring of the volcano was heard on the borders of the Magdalena, a diſtance of 200 leagues. In April 1768, the quantity of aſhes ejected by the volcano was ſo great, that in the towns of Haunbato and Tacunga the inhabitants were obliged to uſe lanthorns in walking the ſtreets at noon-day. The exploſion in January 1803 was preceded by the ſudden melting of the ſnow which covered the mountain. For twenty years before, no ſmoke or vapour had been obſerved to iſſue from the crater; and in a ſingle night, the ſubterraneous fire became ſo active, that at ſun-riſe the external walls of the cone were heated to ſuch a degree as to appear quite naked, and of the dark colour peculiar to vitrified ſcoriæ. At the port of Guayaquil, fifty-two leagues diſtant, Meſſrs. Humboldt and Bonpland heard the noiſe of the volcano day and night, like the continued diſcharges of artillery. In this part of the Andes, a longitudinal valley ſeparates the Cordilleras into two parallel chains; the bottom of this valley is 9843 feet above the level of the ocean, ſo that Chimborazo and Cotopaxi appear no higher than the Col du Geant, as meaſured by Sauſſure. The ſummit of the mountain of Chimborazo is 21,430 feet above the level of the ſea, and therefore a good part is above the circle of perpetual congelation, which, in the latitude almoſt under the line, is ſomewhat higher than the ſummit of Mont Blanc. Humboldt's Reſearches. See VOLCANO.

COTTAGE, col. 13, l. 15 from the bottom, for ſeed *r.* reed.

COVENTRY. By the return in 1811, this city contained 3448 houſes, and 17,293 perſons; *viz.* 8197 males, and 9726 females: 123 families being employed in agriculture, and 3207 in trade, manufactures, and handicraft.

COVENTRY, in America, l. 4, add—containing 1938 inhabitants; l. 6, *r.* 2928; l. 8, *r.* 162; l. 12, add—In 1810 it contained 178 perſons; l. 13, *r.* having 1608 inhabitants.

COUGHING, in *Phyſiology*. See LUNGS.

COUNSEL, col. 2, l. 5, *r.* the king's premier, &c.

COURONNE *des Taſſes*, an apparatus conſtructed by profeſſor Volta, in which he arranges the component parts of the galvanic pile in a different form. (See GALVANISM.) This apparatus conſiſts of a ſet of ſmall glaſſes, placed ſideways of one another, and containing water or ſome ſaline ſolution. Metallic arcs are then procured, having one end compoſed of zinc, and the other of ſilver or copper: theſe arcs are inſerted into the glaſſes in an uniform order; each glaſs having the zinc leg of one arc, and the copper or ſilver leg of another arc immerſed in the fluid. The zinc and copper legs are not in contact, and they are always to be diſpoſed in the ſame ſituation with reſpect to each other; *i. e.* one is always to be at the right-hand, and the other at the left. The pile and this apparatus operate in the ſame manner, and their operation is referred by the profeſſor to his new principle (ſee VOLTAISM), by which he conceived different metals, when placed in contact, to deſtroy the electric equilibrium, or, in his phraſe, to become movers of electricity, producing that electric motion which is ſuppoſed to be the primary and eſſential cauſe of the galvanic action.

COURT, *Univerſity*, col. 2, l. 4, *r.* 14th.

COURUPITA for COURAPITA.

COWBRIDGE. In 1811, the pariſh contained 158 houſes, and 850 perſons; 425 being males, and 425 females.

COW-TAIL RIVER. See WAU-CA-HATCHO.

CRACKS, col. 4, l. 15, for bone *r.* cone.

CRAFTSBURY, in *Geography*, a town of Orleans county, in the ſtate of Vermont.

CRAIL. In 1811, the burgh and pariſh of Crail contained 316 houſes, and 1600 perſons; *viz.* 673 being males, and 927 females.

CRANBERRY. Add—Alſo, a town of Butler county, in Pennſylvania, having 543 inhabitants.

CRANBORNE. In 1811, the pariſh of Cranborne contained 144 houſes, and 816 perſons; *viz.* 429 being males, and 387 females.

CRANBROOK. Add—The pariſh of Cranbrook, by the returns of 1811, has 511 houſes, and 2994 perſons.

CRAVEN, l. 4 and 5, *r.* 12,676, and 5050.

CRAWFORD, a county of Pennſylvania, containing fourteen townſhips, and 6178 inhabitants.

CRAYFORD. In 1811, the pariſh contained 233 houſes, and 1553 perſons; *viz.* 769 being males, and 784 females.

CREAM, *Chemical Analyſis of.* See MILK.

CREDITON, l. 8 from the end, *r.* and the hundred contains, by the return of 1811, 2130 houſes, and 10,648 inhabitants; l. 5, after extent, add—But the borough of Crediton contains only 425 houſes, and 1846 inhabitants.

CREWKERNE, col. 2, l. 4, for 41 *r.* 51; l. 5, *r.* of houſes was 589, and of perſons 3021, of whom 1346 are males, and 1675 females; 281 families employed in agriculture, and 308 in trade, &c.

CRIBRARIA, in *Botany*, from its perforated ſtructure, Perſ. Syn. Fung. 189; one of thoſe beautiful, though minute, genera of *Fungi*, whoſe *head* is formed of reticulated fibres, encloſing the powdery *ſeeds*. Perſoon reckons up eleven ſpecies.

CRICKHOWEL. In 1811, the pariſh contained 137 houſes, and 611 inhabitants. In the hundred of Crickhowel is a Roman encampment, called the Gaer, ſituated at the extremity of the vale, on a riſing ground. The dimenſions are much the ſame with thoſe of Caer-Bannau (ſee BANNIUM), and it is nearly of a ſquare form. It lies on the Via Julia, which paſſed in this direction from Caerleon to Caermarthen. We are informed that the old practice of ſinging carols in the church at cock-crowing, or the earlieſt dawn of the morning, on Chriſtmas-day, is ſtill continued in the church at Crickhowel; but it merits any other appellation than that of a religious rite.

CRICKLADE, l. 14, *r.* 51; l. 15, *r.* 1939, and 2095; l. 16, 10,403; l. 17, 4894, and 5509; 1483 families chiefly, &c.; l. 18, *r.* 411.

CRISTARIA, in *Botany*, from the wings or *creſts* of the aggregate capſules, by which alone it is diſtinguiſhed from SIDA (ſee that article).—Cavan. Ic. v. 5. 10. Purſh 453. Sims in Curt. Mag. 1673.—We can hardly aſſent to the eſtabliſhment of this genus, its character being entirely artificial, and unaccompanied by any thing diſcriminative in the habit. The only ſpecies mentioned are, 1. C. *glaucophylla*, Cavan. Ic. t. 418. 2. C. *multifida*, which is our SIDA *pteroſperma*, the laſt ſpecies but one in that article. 3. C. *coccinea*, Purſh n. 1. Curt. Mag. t. 1673, a native of the dry plains of the Miſſouri, perennial and hardy in our gardens, adorned with beautiful ſcarlet *flowers*. 4. C. *betonicifolia*, Cav. as above, 11, which is Malacoides betonicæ folio, &c. Feuill. Voy. v. 3. 40. t. 27.

CROMER. At the cloſe, add—the pariſh contains, by the returns of 1811, 170 houſes, and 848 inhabitants.

CROSBY, a townſhip of Hamilton county, in Ohio, having 981 inhabitants.

CROSS-CREEK. Add—containing 1847 inhabitants.—Alſo, a townſhip of Ohio, in Jefferſon county, having 1152 inhabitants.

CROSS-*Wort*. Add—and VALENTIA.

CROTALUS, col. 3, l. 19, *r.* to have them come, &c.

CROTONOPSIS, in *Botany*, from κροτων, *Croton*, and οψις, *appearance;* but the principle of the name is incorrect, inaſmuch as the Greek κροτων is our *Ricinus*, to which the genus in queſtion bears no reſemblance; and if the *Croton* of modern botaniſts be intended, ſuch a comparative appellation is contrary to rule.—Michaux Boreal.-Amer. v. 2. 185. Willd. Sp. Pl. v. 4. 380. Purſh 206.—Claſs and order, *Monoecia Pentandria.* Nat. Ord.?

Eſſ. Ch. Male, Calyx in five deep ſegments. Petals five. Female, Cal. and Cor. like the male. Stigmas divided. Capſule ſuperior, not burſting, with one ſeed.

1. C. *argentea.* Silvery Crotonopſis. Purſh n. 1. (C. linearis; Michaux 186. t. 46. Willd. n. 1. C. elliptica; Willd. n. 2.)—Native of North America, in ſandy ground near the coaſt, in the Illinois country and on the Miſſouri, flowering in July. *Purſh.* A ſlender annual *herb* a ſpan high, with oppoſite or alternate entire *leaves*, variable in breadth, and looſe *ſpikes* of minute white *flowers*. The pubeſcence conſiſts of fringed ſilvery ſcales, as in *Croton.*

CROUPADE, *r.* See BALLOTADE.

CROW'S NEST, in *Naval Language*, is a kind of box, ſufficient to hold a man; generally a caſk, fixed near the maſt-head, to protect the obſerver from cold, and enable him to look out for whales, or open pieces of water.

CROYDON. The pariſh of Croydon, in 1811, contained 1394 houſes, and 7801 inhabitants; 3616 being males, and 4185 females: 397 families employed in agriculture, and 662 in trade, &c.

CROYDON. Add—and in 1810, 802 inhabitants.

CROYDON *Canal*, l. 3, *r.* Surry.

CRUCIROSTRA, CROSS-BILL, in *Ornithology*, a genus of birds of the order Paſſeres; the characters of which are, beak thick and forked; mandibles, when at reſt, inverſely curved; noſtrils ſmall, rounded, ſituated at the baſe of the beak; tongue entire. Mr. Stephens, the continuator of Dr. Shaw's Zoology, mentions and deſcribes two ſpecies; one of which, or common croſs-bill, with a variable red body, quills and tail-feathers brown, beak externally olive-green, and tail forked; the Loxia curviroſtra of Linnæus; and the croſs-bill with a dull crimſon body, wings black, with two white faſciæ, ſecondary quills white at the tips, and tail black, the Loxia leucoptera of Gmelin, and white-winged croſs-bill of Latham and Pennant.

CRUSTS, *Animal, Chemical Properties of.* See VERMES.

CRYPHIA, in *Botany*, κρυφια, *clandeſtine*, alluding to the concealed corolla.—Br. Prodr. Nov. Holl. v. 1. 508.—A genus, of which there is perhaps but one certain ſpecies, a ſmall thyme-leaved herb, with ſolitary axillary flowers, found on the ſouth coaſt of New Holland, intermediate between CHILODIA and PROSTANTHERA; ſee thoſe articles. The ringent *corolla* is ſhut up in the cloſed two-lipped *calyx.* Poſſibly the *flowers* were not fully evolved, owing to the climate or ſeaſon.

CRYPTOCARYA, Brown Prodr. Nov. Holl. v. 1. 402, a genus of the order of *Laurinæ*, reſembling the Cinnamon-tree in habit, as well as infloreſcence, but differing from *Laurus* in having only two cells in each *anther*, and from the whole order in having the *nut concealed*, (whence the name,) in the enlarged tube of the *calyx*, become cloſed above it at the top. *C. glauceſcens* and *obovata* are natives of Port Jackſon; *C. triplinervis* of the tropical part of New Holland.

CRYPTOSTEMMA, κρυπτον, *concealed*, and στεμμα, *a crown*, the ſcaly crown of the ſeeds being involved in wool.—Brown in Ait. Hort. Kew. v. 5. 141.—Claſs and order, *Syngeneſia Polygamia-fruſtranea.* Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Eſſ. Ch. Receptacle cellular. Seed-down chaffy, concealed by the entangled wool of the ſeed. Calyx imbricated.

1. C. *calendulaceum.* Marygold Cryptoſtemma. Ait. n. 1. (ARCTOTIS calendulacea; ſee that article, ſp. 1. Jacq. Hort. Schoenbr. v. 2. 16. t. 157.)—Radiant florets undivided. Leaves pinnatifid, toothed; downy beneath.

2. C. *hypochondriacum.* Divided-rayed Cryptoſtemma. Ait. n. 2. (Arctotis hypochondriaca; ſee ſp. 1, β. Willd. Sp. Pl. v. 3. 2348.)—Radiant florets in three or five deep ſegments. Leaves lyrate, downy.

3. C. *runcinatum.* Dandelion-leaved Cryptoſtemma. Ait. n. 3.—Radiant florets in three or five deep ſegments. Leaves runcinate; toothed; downy beneath.

All the ſpecies are natives of the Cape of Good Hope, rather tender annuals in our gardens, of no ſtriking appearance.

CRYPTOSTYLIS, κρυπτος, *concealed*, and ϛυλις, *a ſmall pillar*.—Brown Prodr. Nov. Holl. v. 1. 317.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx-leaves and petals linear, ſpreading. Flower reverſed. Lip erect, ſeſſile, dilated, undivided; concave at the baſe, concealing the very ſhort column. Anther parallel to the ſtigma, ſubtended at each ſide by a lobe of the column.

Bulbs cluſtered. *Leaves* few, radical, ſtalked, flat. *Flowers* in a terminal ſpike, dull red, ſcentleſs.

1. C. *longifolia*. (Malaxis ſubulata; Labill. Nov. Holl. v. 2. 62. t. 212,) found at Port Jackſon, as well as on the ſouth coaſt;

2. C. *ovata;* and 3. C. *erecta;* are the only deſcribed ſpecies.

CRYSTAL, col. 5, l. 19, for changed *r.* charged.

CRYSTALLOGRAPHY is the ſcience which treats of the form and ſtructure of cryſtals. (See CRYSTAL.) The beautiful ſymmetrical forms, which frequently occur in the deep receſſes of mines or the fiſſures of alpine rocks, cannot fail to ſtrike the moſt common obſerver with ſurpriſe. Amidſt the almoſt infinite variety which they preſent, it will be found, on a more attentive examination, that there are certain definite forms which ſome minerals moſt frequently aſſume, and which are rarely, if ever, ſeen in other minerals. Hence we might at firſt be led to infer, that cryſtallization depends on the definite action of ſome general law, by which the conſtituent parts of each mineral ſpecies are invariably arranged in the ſame form. When, however, it is farther diſcovered that, beſides the prevailing forms peculiar to certain minerals, the ſame ſpecies are not unfrequently cryſtallized in a variety of diſſimilar forms, and that minerals of different ſpecies often preſent cryſtals of the ſame form, we muſt retract our firſt concluſion, and ſhall be more diſpoſed to believe that the mineral kingdom has not yet emerged from a chaotic ſtate, or that the reign of order is ſubject to the invaſion of diſturbing forces, the extent of which we have no means of aſcertaining.

The labours of a few enlightened and indefatigable philoſophers have recently removed, in a great degree, the obſcurity in which this department of ſcience was involved, and have demonſtrated that the laws by which the particles of the minuteſt cryſtal are arranged act with unerring preciſion, and are not leſs regular than thoſe which govern the motions of the planets or the ſolar ſyſtem.

Under the article CRYSTAL (which ſee), ſome account is given of the diſcoveries of Romé de Liſle, Bergmann, and Haüy. The latter has ably demonſtrated that all the varieties of cryſtalline forms are reducible to a few ſimple primitive forms, ſome one of which may be regarded as the nucleus of each cryſtal, however complicated its form may be. The conſtituent particles, or what Haüy denominates the *integrant molecules*, of all cryſtals, may be conceived as arranged in rows, and a number of theſe rows as forming thin laminæ or plates. When theſe laminæ are parallel with all the faces or planes of a cryſtal, they may be removed without changing the form of the cryſtal; but if the laminæ divide in any other direction than that which is parallel to the faces, a change of form will be produced by every diviſion, until at laſt we obtain a nucleus which is diviſible in a direction parallel to its ſides.

In the former caſe, the primitive form is the form of the cryſtal itſelf. Thus, if a cubic cryſtal be diviſible only by laminæ parallel to its ſix ſides, we may continue diminiſhing the magnitude of the cryſtal, as long as mechanical diviſion is poſſible without any change of form.

When the laminæ of a cryſtal divide in any other direction than parallel to its faces, it is called a ſecondary form or derivative cryſtal.

The primitive forms of all cryſtals which have been hitherto examined are ſix.

1. The parallelopiped, bounded by ſix planes, the oppoſite planes being parallel. This includes the cube, and varieties of the rectangular priſm, the oblique angular priſm, and the rhomboid.

2. The octahedron. This is a double four-ſided pyramid. When the triangular faces are equilateral, it is called a regular octahedron. (*Plate* VII. *fig*. 27, *Cryſtallography.*) There are, beſides this, other varieties of the primitive octahedron, in which the pyramids are longer or ſhorter than the regular one, or have a rhomboidal baſe, or a rectangular baſe, longer in one direction than the other.

3. The regular tetrahedron (*Plate* VII. *fig*. 13.) is bounded by four equilateral triangles.

4. The regular hexahedral priſm, or equiangular ſix-ſided priſm, *fig*. 5.

5. Rhomboidal dodecahedron, bounded by twelve equal rhombs, *fig*. 12.

6. The pyramidal dodecahedron, conſiſting of two ſix-ſided pyramids joined baſe to baſe, *fig*. 14.

The primitive forms which moſt frequently occur are, the parallelopiped and the octahedron. The tetrahedron and dodecahedron are very rare as primitive forms, though common as the ſecondary forms of cryſtals.

The diviſion of ſecondary cryſtals by ſections in the direction of the laminæ is, in ſome minerals, effected with facility; in others, the joints are indiſtinct, and require the cryſtal to be heated and plunged into cold water to make them viſible. The direction of the laminæ is frequently rendered obvious by turning a mineral ſlowly round in the ſunſhine, when the reflections from the internal parts will ſhew its ſtructure. Where no joints are diſcoverable, Haüy determines their direction and the form of the primitive nucleus by conjecture, from the appearances offered by the ſecondary cryſtal.

The actual mechanical diſſection of an hexahedral cryſtal of calcareous ſpar, and the extraction of the primitive, is repreſented in *Plate* II. *figs*. 17, 18, 19, 20, *Cryſtallography*, and is deſcribed under the article CRYSTAL; but the references are erroneouſly made to *Plate* I. *figs*. 1, 2, 3, 4, 5.

The primitive nucleus is repreſented *fig*. 21, E A, O I, G H, A K. The diſcovery of it in this cryſtal was firſt made by the abbé Haüy in looking over the cabinet of M. Defiance, a hexahedral priſm of calcareous ſpar having fallen from the group to which it was attached. M. Defiance made him a preſent of it. One of the corners being off from the baſe, he attempted to detach ſimilar corners from the other angles, and after ſome time he ſucceeded in bringing to view its rhomboidal nucleus. This firſt ſuggeſted to him the theory of the ſtructure of cryſtals. The ſituation of the primitive form, in another variety of calcareous ſpar, called the dog-tooth ſpar, may be ſeen *Plate* II. *figs*. 22 and 23. This is deſcribed under the article CRYSTAL, with the mode of extracting the nucleus; but the reference is erroneouſly made to *Plate* I. *figs*. 6 and 7. The angles of the primitive rhomb are invariably 105° 5′ and 74° 55′. Rhomboids of calcareous ſpar, indeed, occur with different angular admeaſurements; but theſe are ſecondary cryſtals, and will not ſplit in directions parallel to their faces. One of theſe, with the primitive nucleus, is repreſented *fig.* 24. The theory of their formation will be explained as we proceed.

The primitive form is not in all caſes the ultimate form to which cryſtals can be reduced; for where the primitive form is not a parallelopiped, the diviſion parallel to the faces neceſſarily produces forms which muſt vary from that of the primitive nucleus. See *Plate* V. *fig.* 56. *Cryſtallography*, which repreſents the baſe of a ſix-ſided priſm, divided by ſections parallel to each of its ſides: from this diviſion the ultimate form which we can ever obtain muſt be that of a triangular priſm; for by carrying on the diviſion we may conceive the particles to become ſmaller, but their form will remain the ſame. We have therefore obtained the form of the integrant molecule. In parallelopipeds, the form of the nucleus is alſo that of the molecule itſelf.

Thus in the cube, as repreſented *Plate* IV. *figs.* 48 and 49, the diviſions parallel to the ſides produce a ſeries of ſmaller cubes, which muſt be the form of the integrant molecule. In ſome inſtances, the primitive forms themſelves admit of diviſion by laminæ not parallel to that of the faces, from which muſt neceſſarily reſult a new form of the integrant molecule.

Plate II. *fig.* 26. repreſents a primitive rhomboid of tourmaline A E, O I, G H, A K, which is diviſible both in the direction of its ſix faces and in that of the ſhort diagonals A O, I A′, A K. Theſe latter ſections divide the rhomboid into ſix tetrahedrons, which are repreſented ſurrounding the nucleus. Haüy conceives, that by theſe diviſions, we obtain the form of the integrant molecule, or of the ultimate integrant atom of the cryſtallized mineral. It has been obſerved, that no proof can be advanced to confirm this conjecture, except the impoſſibility of altering the form, how far ſoever we carry the diviſions; and the obvious conſequence is, that if theſe diviſions be carried far enough, we muſt at laſt reduce the cryſtal to its integrant particles. It is not, however, neceſſary to ſuppoſe, that the conſtituent particles themſelves have any other form than that of ſpheres; becauſe all the forms of the integrant molecule, which are the tetrahedron, the triangular priſm, and the cube, may be readily conceived to be conſtructed with four, ſix, and eight ſpherical particles, arranged in their forms by cryſtalline polarity. It deſerves attention, that the forms of the integrant molecule are the moſt ſimple which can exiſt among ſolids with plane ſurfaces, being bounded reſpectively by the ſmalleſt poſſible number of ſides, *viz.* four, five, and ſix.

If we conceive the integrant molecules to be arranged in rows, and a number of theſe rows to be arranged in the ſame planes, they will form laminæ of any conceivable ſize. Now by a ſucceſſion of plates increaſing in ſize, the magnitude of the primitive cryſtal will be increaſed; but if theſe laminæ decreaſe in extent by one or more rows of particles, the reſult will be a change of form, or the production of a ſecondary cryſtal. Now the laminæ may either decreaſe on the edges by one or more rows, or may decreaſe diagonally on the angles by a determinate number of rows, or the decreaſe may take place in ſome intermediate direction. Theſe are called by Haüy, decrements on the edges, decrements on the angles, and intermediate decrements. Sometimes decrements take place at once on all the edges, ſometimes upon all the angles, and ſometimes only on certain edges and angles. In ſome inſtances the decrements are uniform, and the ſame number of rows decreaſe from the different edges or angles. Sometimes the law of decrement varies from one edge to another, or from one angle to the other; and this happens chiefly when the nucleus has not a ſymmetrical form, or when it is a parallelopiped, whoſe faces differ in the reſpective inclinations of their faces, or in the meaſure of their angles. In certain caſes, the decrements on the edges concur with thoſe on the angles to produce the ſame cryſtalline form. It happens alſo, that the ſame edge, or the ſame angle, ſometimes undergoes different laws of decrement that ſucceed each other; and, finally, there are a great many caſes where the ſecondary cryſtal preſerves faces parallel to thoſe of the primitive form, and which combine with the faces produced by the decrement, to modify the figure of the cryſtal.

If, in the midſt of ſuch a diverſity of laws, ſometimes acting ſolitarily, and ſometimes in combination upon the ſame primitive form, the number of ranges ſubtracted were likewiſe variable; if, for inſtance, there were decrements of twenty, thirty, forty, or a greater number of ranges of molecules, of which it is very poſſible to conceive, the multitude of forms which might exiſt in each mineral ſpecies would be ſufficient to appal the imagination, and the ſtudy of cryſtallography would preſent an immenſe labyrinth, from which even the aſſiſtance of theory could not extricate the learner.

But the force which produces the decrements of ranges appears to have a very limited action. Generally theſe ſubtractions take place by only one or two rows of molecules. None have hitherto been found beyond ſix rows; but ſuch is the fecundity united with this ſimplicity, that were we to confine ourſelves to decrements by one, two, three, and four rows, and to exclude thoſe that are mixed or intermediate, we find that the rhomboid is ſuſceptible of 8,388,604 varieties of cryſtallization. Doubtleſs many of theſe varieties do not exiſt in nature; but there is reaſon to expect that diſcoveries in the field of inquiry will be made for many years to come.

The tetrahedron and the triangular priſm, when they occur as integrant molecules, are always arranged in ſuch a manner in the interior of cryſtals, that, taking them in groups of two, four, ſix, eight, they compoſe parallelopipeds. Theſe parallelopipeds are, by Haüy, named *ſubtractive molecules*. They are always ſubſtituted in the place of tetrahedrons and triangular priſms in conſidering the decrements where they produce the ſecondary forms.

Decrements of the Edges.—The moſt ſimple caſe of change of form produced by the ſuperpoſition of decreaſing laminæ, is that which ſuppoſes ranges of molecules to be taken away on all the edges of a parallelopiped, in a direction parallel to the edges. Yet this caſe, ſo ſimple in appearance, may give riſe to forms of conſiderable complexity. Thus the rhomboidal dodecahedron (*Plate* II. *fig.* 27. or *Plate* III. *fig.* 28. *Cryſtallography*) may be formed in this way from a cubic nucleus. If the integrant molecule of this ſpecies be a cube, it follows that the primitive cryſtal E A, O I, and E′ A′, O′ I′, is formed by a congeries of cubes. Suppoſe theſe cubes of ſuch a ſize, that an edge of the primitive cryſtal is compoſed of a row of ſeventeen cubes, placed ſide by ſide, as repreſented *fig.* 29. I O, O E: of courſe each face of the primitive cryſtal will be a congeries of 289 ſquares, conſiſting of ſo many integrant molecules; and the primitive cryſtal or cube will be a congeries of 4913 cubes. Let us ſuppoſe that a ſquare ſurface or plate, of the thickneſs of one integrant molecule, be applied to every face of cube; but that inſtead of being of the ſame ſize as the face of that cryſtal it is leſs by a ſingle row of molecules all round; ſo that the ſides, inſtead of containing ſeventeen little cubes, contain only fifteen each (ſee *fig.* 29.); of courſe this ſquare will contain only 225 little cubes, inſtead of the 289 that form the ſurface of the primitive cryſtal. Upon each of theſe firſt plates applied to every face, let another plate be applied ſimilar to the firſt, but leſs than it by a row of integrant molecules; ſo that each ſide contains only thirteen ſquares, and the whole only 169 ſquares. Let ſix other plates be applied in ſucceſſion to each of the faces, decreaſing by a row of little cubes all round; ſo that the ſides conſiſt of eleven, nine, ſeven, five, three, and one ſquares reſpectively. It is obvious, that by this proceſs we have raiſed upon each of ſix faces of the cube a four-ſided pyramid, the faces of which, inſtead of being ſmooth, will, by their conſtant diminution of bulk, repreſent the ſteps of ſtairs. If, however, we conceive the molecules to be extremely ſmall, and the number of decreaſing laminæ to be increaſed, the ſteps of the ſtairs may be ſo ſmall as to be imperceptible to the eye, in which caſe the ſurfaces of the pyramids will appear ſmooth.

Theſe pyramids having each four faces conſtitute twenty-four triangular faces, ſo that the cube is converted into a new cryſtal. Inſtead, however, of having twenty-four faces, the decrements having been equal on each edge, the triangular faces in each adjacent pyramid will be in the ſame plane, and form together a rhomb, which will be evident from the inſpection of *figs.* 28 and 29; the cube will therefore be converted into a rhomboidal dodecahedron. The cubic nucleus I′ I′, O O′, E E′, *fig.* 29. is repreſented with the pyramids raiſed on three of its faces. When complete, it will have the form repreſented in *Plate* II. *fig.* 27. If the decrement had taken place by two ranges on each of the laminæ, when applied to the cube the pyramids would have been lower; and their adjacent faces being no longer in the ſame plane, the ſecondary cryſtal would have terminated in twenty-four diſtinct triangles.

In the example given (*fig.* 29.) it will be ſeen, that as each of the laminæ decreaſes by one row on each of its edges, *viz.* one on I O, and another on the inferior row I′ O′, and the ſame on the other edges, it is obvious that the pyramid decreaſes by two rows in breadth for every row in height; therefore the height will be equal to half the breadth at the baſe.

The terms *decrement in breadth*, and *decrement in height*, are thus explained by Haüy. Decrements in breadth are thoſe in which the thickneſs or height of each plate or lamina is only equal to one integrant molecule; and the reſult of the decrement is by one, two, three, or more ranges in the direction of the breadth.

Decrement in height implies a decrement of one row in breadth on each of the ſucceſſive plates; but each of theſe rows may have the thickneſs or height of two, three, or more molecules. In the latter caſe, the decrement is ſaid to take place by two, three, or more ranges in height.

Theſe two kinds of decrement are often combined together, of which we have an example in iron pyrites with twelve pentagonal faces. (*Plate* III. *fig.* 30.) This variety has a cube for the nucleus, as repreſented *fig.* 31; and may be conceived to be formed, as repreſented *fig.* 32, by decrements of two ranges in breadth in one direction, and by decrements of two ranges in height in the other. The decrements in breadth by two ranges tend to produce a more inclined face than the decrements by two ranges in height; the conſequence reſulting is, that the cryſtal will not terminate in pyramidal points, but in wedges, as is ſeen at *q p*, *fig.* 32. The ſtructure of this cryſtal is more particularly deſcribed under the article Crystal; but for *Plate* I. Nos. 14, 15, 16. *r. Plate* II. *fig.* 30, 31, 32. *Cryſtallography.*

Another example of decrements on the edges is deſerving particular attention: it is afforded by that peculiar kind of cryſtal of calcareous ſpar, commonly called dog-tooth ſpar, or which Haüy denominates the metaſtatic cryſtal. (*Plate* II. *fig.* 22.) In this cryſtal, the edges E O, O I, I K, where the two oppoſite pyramids join, coincide with the edges of the primitive nucleus, as may be ſeen in *fig.* 23. The decrements ſet out from theſe edges, and do not take place on the other ſix edges of the nucleus. Now it is eaſy to conceive, that the edges of the plates, laid upon the primitive nucleus, form as many triangles, E *s* O, I *s* O, E *s*′ O, &c. reſting upon the edges from which they ſet out; and as there are ſix in number, there will be twelve triangles, ſix above and ſix below; and theſe will all be ſcalene, in conſequence of the obliquity of the edges from which they ſet out.

With reſpect to the other edges of the plates of ſuperpoſition, ſo far from experiencing any decrement they will increaſe; becauſe they muſt always remain contiguous to the axis of the cryſtal, which is an imaginary line drawn from *s* to *s*. It is from calculation combined with obſervation, that we muſt determine the law of decrement on which this dodecahedral form depends. If we ſuppoſe a decrement by one range, it may be demonſtrated, that the two faces produced on each ſide of the edge from which the decrement takes place will be in the ſame plane, and parallel to the axis of the primitive cryſtal, conditions which do not apply to the preſent form. The moſt ſimple hypotheſis is that which ſuppoſes a decrement by two ranges in breadth. This will be more clear from inſpecting *Plate* III. *fig.* 33: it repreſents the upper pyramid of this cryſtal, placed on the upper planes of the primitive nucleus, which being partly viſible, admits us to perceive more clearly the progreſſive effects of the decrement by two ranges.

Each edge of the nucleus, as K I, I O, O E, is divided into ten; from whence it follows, that each face is an aſſemblage of one hundred ſmall rhombs, which are the exterior planes of ſo many molecules. This conſtruction requires only eight plates of ſuperpoſition for each face of the nucleus; and theſe plates being joined to each other, three and three on the edges, which correſpond with the upper edges of the nucleus, form decreaſing envelopes, covering each other in ſucceſſion; the laſt of which is compoſed of eight little rhomboids. If we conſider the poſition of the line E *s*, which repreſents an edge of this pyramid, as it appears to the eye, and E *s*′, ſuch as it really exiſts, we may obſerve that the geometrical ſummit of the pyramid *s* is placed a little above the true ſummit *s*′; but this difference is imperceptible, on account of the extreme minuteneſs of the molecules: and for the ſame reaſon, the channels or ſteps upon the pyramid are not viſible. There are caſes, however, in which the channels may be perceived by the naked eye.

For determining the form of ſecondary cryſtals by calculation, it is only neceſſary to take the decrements at their commencement, in order to have as many planes, which, if we conceive them to be extended until they meet, would form a complete polyhedral cryſtal; and in this manner we only conſider the initial effects of decrements mathematically, a method more ſimple and expeditious than that of reaſoning. It is uſeful, however, to explain in detail the ſtructure of a cryſtal, in ſuch a manner as may enable us to arrange a number of ſmall ſolids ſimilar to primitive molecules to form a nucleus, in an order conformable to that of nature, and thus to imitate the proceſs of cryſtallization. We ſhall give another example from that variety of calcareous ſpar, called by Haüy equiaxe.

This variety, the ſecondary cryſtal, is a rhomboid, much more obtuſe than the necleus, the greater angle being 114° 18′ 56″. It is repreſented (*Plate* III. *fig.* 34.) ſurrounding the nucleus. To extract the latter at once, it is only neceſſary to make ſections cutting through the oblique diagonals of the different faces of the ſecondary rhomboid. One of the ſections, for inſtance, that which paſſes through the diagonals drawn from *a* to *t*, and from *a* to *u*, and which cuts off the ſolid angle *z*, coincides with the face *a b*, *d f*, of the nucleus. But there are ſix lateral ſolid angles *z*, *c*, *y*, and *t*, *m*, *u*. We have, therefore, ſix ſections to make, inclined three and three towards each ſummit; and becauſe the upper ſolid angles alternate with the inferior, the ſections which cut them off preſerve the ſame alternation, and croſs in ſuch a manner as to preſent the ſix rhomboidal faces of the nucleus.

To conceive the ſtructure of this ſecondary rhomboid, let us refer to the rhomboidal dodecahedron (*Plate* III. *fig.* 29.) before deſcribed. We have ſeen that by a decrement of one range in breadth on all the edges, there reſulted two triangular faces on each edge, which being in the ſame plane formed a rhomb, the ſhort diagonal of which is I O.

Let us ſuppoſe, that the nucleus was the primitive rhomb of carbonate of lime (*a b*, *d f*, *fig.* 34.), and that the laminæ of ſuperpoſition decreaſe by one range of little rhomboids ſimilar to the nucleus; but the decrements to take place only on the edges *a b*, *a f*, *a n*, which meet at the ſummit *a*, and on the oppoſite edges, which meet at the oppoſite point *a′*. Then inſtead of twelve rhombs there will only be ſix, of which the ſhorter diagonals will coincide with the edges *a b*, *a f*, *a n′*, &c. The other parts of the laminæ of ſuperpoſition, that is, thoſe which are ſituated near the lower edges, *b d*, *d f*, *f x*, &c. will not undergo any decrement, but will ſuffer variations that will tend to prolong the faces produced by theſe decrements, until they interſect each other. From hence it reſults, that the laminæ, inſtead of preſerving the figure of a rhomb, as would have been the caſe if the decrement had taken place on all the edges, will, as they are further and further removed from the nucleus, paſs ſucceſſively from the figure of a pentagon to that of a triangle.

Fig. 35. A, *a b*, *d f*, is the face of the ſame nucleus or rhomb as in *fig.* 34, and what is ſaid of this face may eaſily be applied to the others. Suppoſe this face divided into 81 rhombs, which repreſent the faces of ſo many molecules, or 729 in the whole. The firſt lamina of ſuperpoſition, which we apply to the face *a b*, *d f*, will be B, *fig.* 35, in which U *l*, Z′ *d*, repreſent the upper face, and C U *l h*, X Z *l h*, the facets of the two upper edges. We muſt place this lamina in ſuch a manner on the face *a b*, *d f*, that the point *h′* ſhall unite with the point *h*, the point A′ with the point A, and the point B′ with the point B. We ſhall perceive immediately, that the two upper ranges of the face *a b*, *d f*, *fig.* 35. A, that is, thoſe included between *a b*, A *h*, on one ſide, and *a f*, B *h*, on the other, will remain uncovered, the neceſſary reſult of a decrement by one range of molecules. The lamina B is a pentagon reſulting from the ſubtraction of the three little rhombs neceſſary to complete the rhomb. This ſubtraction was required, that the lamina by its figure might aid the effect of the decrement, as will be afterwards explained.

The two ranges of rhomboids on each ſide of the lines D *d′*, E *d′*, are added, that the nucleus may be covered and continue to increaſe on the edges *b d*, *f d*, A, *fig.* 35, which correſpond with theſe lines. Theſe two ranges being ſufficient to fill up the void, it is not neceſſary to add ſimilar ranges towards the adjacent edges of the laminæ of ſuperpoſition, applied on the neighbouring faces. The operation will indicate of itſelf what is required in theſe kinds of additions.

The *fig.* C, 35. repreſents the ſecond lamina of ſuperpoſition, which is to be applied to the former in ſuch a manner, that the points *i′*, D′, E, *d*, ſhall unite with thoſe which are marked with the ſame letters in *fig.* B. As the cryſtal will receive another increaſe towards the edges, which correſpond with F *d′*, C *d′*, we may conceive that inſtead of one range added on each ſide D *d′*, E *d*, *fig.* B, it will be neceſſary to add two on each of the two lines E *d′*, C *d′*, *fig.* C, 35.

We muſt place in the ſame manner, in ſucceſſion, the two laminæ repreſented D and E, *fig.* 34; obſerving that the letters marked with an accent in each figure ſhall coincide with the ſame letters not accented in the preceding figure. Beyond the ſeries which anſwers to *fig.* E, the laminæ of ſuperpoſition will ceaſe to envelope the lower edges of the cryſtal, and will be reduced to ſimple triangles, which may be perceived on examining the figures E, F, G, H, whoſe poſition will be determined according to the conditions before ſtated.

The number of rhomboids which compoſe the laminæ being now progreſſively decreaſing, is reduced at laſt to a a ſingle rhomboid *d′* (*fig.* D, 35.), which being applied on that which is deſignated by the ſame letter in *fig.* H, will form the ſummit of one of the lateral ſolid angles of the ſecondary rhomboid. It will now be ſeen why the laminæ of ſuperpoſition take ſucceſſively pentagonal and triangular faces as they recede from the nucleus. For example, every lamina, detached from the cryſtal (*fig.* 34.) by a ſection which paſſes any where between the angle *z*, and the middle of the lines Z *t*, Z *u*, is neceſſarily triangular, and has the ſame ſtructure as P′ *t* R′, *fig.* G, 35; namely, it is really furrowed at its baſe, but the ridges are imperceptible on account of their extreme minuteneſs.

Decrements on the Angles.—To explain the formation of ſecondary cryſtals, in many inſtances it is neceſſary to admit that the decrements take place on the ſolid angles. The formation of the regular octahedron formed on the cube is repreſented *Plate* III. *fig.* 36. *Cryſtallography*, and an account of it given under the article CRYSTAL, but the reference is erroneouſly to *Plate* I. *fig.* 20.

The effect of decrement on the angles by one range of molecules in breadth is explained in the article CRYSTAL, and a reference made to *Plate* I. *fig.* 21, for which ſee *Plate* II. *fig.* 21, *Miſcellany*, O I, I′ O′; where the face of a cubic nucleus is repreſented as divided into a number of leſſer ſquares; and *fig.* 23, A, B, C, D, E, F, G, H, I, in the ſame plate, repreſent a ſucceſſive ſeries of plates, or laminæ, placed on the cubic nucleus, each decreaſing by one row on the angles. Theſe are deſcribed under the article CRYSTAL, but referred to *Plate* I. *fig.* 23: by applying that deſcription to the proper figures as here given, the reader will be able to comprehend this caſe of decrement, where a regular octahedron is formed on a cubic nucleus. The arrangement of the integrant molecules on one of the triangular faces of the octahedron is repreſented *Plate* IV. *fig.* 37. *Cryſtallography.*

If the decrements on the angles of a cube were to ſtop before they terminated in a point, there would remain faces parallel with that of the cube, which will be evident from inſpecting *Plate* III. *fig.* 36. The cryſtal would then have fourteen faces, eight thoſe of the octahedron, and ſix thoſe of the cube. Nothing is more common than to find ſuch cryſtals both in iron pyrites and in galena.

As another example of decrements on the angles, let us take the rhomboid (*Plate* IV. *fig.* 38.), which differs ſomewhat from the cube. If the plates applied ſucceſſively upon all the faces of this rhomboid ſuffer decrements only at the angles contiguous to the ſummits A and O′, and that theſe decrements take place by two ranges, then inſtead of twenty-four faces, only ſix would be formed ; and if we conceive theſe prolonged till they meet each other, they would conjointly form a very obtuſe rhomboid (*fig.* 39.) encircling the nucleus. The ſummits A, O', coincide with the ſummits of the nucleus, from which the decrements commenced, and each of the faces $A\,eio$ correſponds with one of the faces of the nucleus ; ſo that the diagonal which paſſes through the points ei is parallel with the diagonal E I of the nucleus, but ſomewhat more elevated. This kind of cryſtal is found among the ſecondary cryſtals of oligiſte iron-ore.

As a further illuſtration of the different variations of which the decrements, whether of the ſuperior or inferior angle, are ſuſceptible, let $G\,g$ be any rhomboid whatever (*Plate* IV. *fig.* 45.), the ſummits of which are $S\,s$. Let Sg'', $s\,G''$, *fig.* 46, be a quadrilateral figure formed by cutting through the rhomboid $G\,g$ in the direction of a plane, formed by the two oblique diagonals Sg'', $s\,G''$, *fig.* 45, and the edges S G, Sg''. This quadrilateral figure, termed by Haüy the principal ſection of the rhomboid, is divided in the figure into a number of ſmall quadrilaterals repreſenting the principal ſection of as many molecules. Let $SG, g''G'$, *fig.* 47, be the face of the rhomboid, *fig.* 45, marked with the ſame letters, and ſubdivided into the baſes of the molecules of which it is compoſed. If we ſuppoſe that the angle g'' undergoes a decrement by a ſingle row of molecules, the ſmall rhomboid repreſented by $onzg''$ will be wanting ; hence it is obvious, that the edges of that plate will have the direction oz, and that the diſtance between the angle g'', from which the decrement ſets out, and the edge oz, will be meaſured by the ſemidiagonal of a molecule, or rg. If the decrement took place by two ranges, the edge q, the firſt plate of ſuperpoſition, will correſpond with cd, and the diſtance between it and the angle g'' will be meaſured by the diagonal molecule gn. Hence we may conclude, that in the decrements on the angles, the diſtance between one plate and the ſucceeding one, which is the ſame as between the point of departure and the edge of the firſt lamina, is equivalent to as many ſemidiagonals of a molecule as there are ranges taken away, as will be further evident by inſpecting *fig.* 37. But in decrements on the edges, the diſtance between two ſucceſſive plates is equal to the breadth of as many molecules as are taken away.

This being underſtood, let us ſuppoſe a decrement of two rows upon the angle g''. In that caſe, the quadrilateral $neap$, *fig.* 46, being a ſection made in the firſt plate of ſuperpoſition, the decreaſing edge of this plate will coincide with the little edge en, ſince gn is the ſame diagonal as in *fig.* 47 ; therefore if we draw the ſtraight line $g''eh$, it will coincide with the face produced by the decrement. But $g''h$ being, in this caſe, parallel to the axis $S\,s$, as may be demonſtrated geometrically, hence it follows that the ſecondary faces conſtitute the faces of a priſm. If the decrements went on more rapidly, the faces of the ſecondary cryſtal would have different angles of inclination to the axis, as will be evident from inſpecting *Plate* IV. *fig.* 46. If the decrement were by four ranges, for inſtance, the edge of the firſt plate of ſuperpoſition would coincide with the line yg ; then the line $gq\,S'$ indicates the poſition of the face produced by the decrement. What has been ſtated, where the plane is parallel to the axis, holds true with reſpect to all poſſible varieties of the primitive rhomboid.

Mixed Decrements are thoſe in which the number of ranges taken away in breadth and height give ratios, the two terms of which ſurpaſs unity. As, for example, decrements by two ranges of molecules in breadth, and three in height, or by three ranges in breadth and two in height, &c. It is eaſy to ſee, that the theory may with facility be reduced to that of decrements, in which there is only one row of molecules taken away in one of the two directions.

Intermediate Decrements.—Theſe will be beſt explained by references to the figures.

Let AA', *Plate* IV. *fig.* 48. be a parallelopiped of any kind, which undergoes a decrement by two ranges on the angle E O I of its baſe A E, O I. It is obvious, that the edges of the plates of ſuperpoſition will have the directions bc, rs, parallel to the diagonal E I, and ſo ſituated that theſe will be upon the ſides O E, O I, two rows of molecules comprehended between the angle O and the line bc, and likewiſe between bc and rs. But, as has been already ſaid, the plates applied upon the adjacent faces I O, $A'K$, E O, $A'H$, undergo likewiſe auxiliary decrements, which continue the effect of the decrement upon the angle E O I. But ſuch, in this caſe, are the effects of theſe decrements, that the edges of the plates applied upon I O, $A'K$ have the directions cg, st, and thoſe of the plates applied upon E O, $A'H$, the directions bg, nt ; for ſince the lower edge of the firſt plate applied upon E O I coincides with bc, and the height of this plate correſponds to that of a ſingle molecule, a little attention will ſatiſfy us, that the plane bcg, which, on one part, coincides likewiſe with bc, and, on the other, ſeparates from the baſe A E, O I by a quantity meaſured by $O\,g$, the height of a ſingle molecule, is neceſſarily parallel to the face produced by the decrement. The ſame holds with the plane rts. From this it follows, that if we ſuppreſs the part ſituated above rts, we ſhall have a ſolid on which the face rts will repreſent the effect of the decrement which we are conſidering.

Now the direction cg, st, of the plates applied upon the face I O, $A'K$, (and the ſame may be ſaid of the face E O, $A'H$,) in conſequence of the auxiliary decrements, are neither parallel to the edge, nor to the diagonal of the face, but intermediate between the one and the other. This want of paralleliſm will become ſtill greater, if we ſuppoſe the decrements upon the angle of the baſe E O I to take place by three or four ranges. This is the kind of decrement to which the name of intermediate has been given. It is obvious, that it may take place in an infinite number of different directions, according as it deviates more or leſs from its two limits, the paralleliſm with the edge and the diagonal of the face.

In caſes ſimilar to thoſe of *Plate* IV. *fig.* 48. we avoid the complication introduced by theſe intermediate decrements, by ſuppoſing them comprehended under the principal decrement. But certain cryſtals exiſt in which all the three decrements round the ſame ſolid angle are intermediate. In ſuch a caſe, the ſimpleſt of the three is choſen as the principal decrement, and the other two conſidered as auxiliary. *Fig.* 49. repreſents a caſe of this kind : cn, which is the edge of the firſt of the plates applied upon A E, O I, is ſo ſituated, that on the ſide of O I there are three molecules ſubtracted, while on the ſide O E there is only one : np, which is the edge of the firſt plate applied upon I O, $A'K$, indicates three molecules ſubtracted from O I, and two from OA' : cp, which is the edge of the firſt plate applied upon E O, A H, ſhews the ſubtraction of two molecules on OA', and only one on O E.

It is eaſy to ſee, that the decrements take place relatively to the different faces ſituated round the angle O, as if the molecules that compoſe the different plates of ſuperpoſition being united invariably ſeveral together, compoſe other molecules of a higher order, and as if the ſubtraction took place by ſingle ranges of theſe compound molecules. Thus there will be on the baſe A E, O I, a decrement of triple molecules by two ranges in height, ſince on one part, the quadrilateral figure *c* O *n z*, which repreſents the baſe of a compound molecule, is equivalent to the baſes of three ſimple molecules; and on the other, the line O *p*, which correſponds to the height of a plate of ſuperpoſition, is equivalent to the height of two ſimple molecules. It is eaſy to conceive likewiſe, that the decrement relative to the face E O, A′ K, takes place by two ranges in height of double molecules; becauſe *c* O *p x* contains the baſes of two ſimple molecules, and O *n* is equal to the length of three ſimple molecules. In the decrement which takes place upon I O, A′ K, there is a ſubtraction of one row of molecules, triple in one direction, and double in the other.

Among theſe three decrements, the one which it appears natural to adopt as the principal, is the ſecond which takes place upon the face E O, A′ H; becauſe it is the one whoſe direction deviates the leaſt from that of the diagonal E A′, or becauſe it takes place by double molecules, which is a more ſimple decrement than the other two.

To give ſome further examples of intermediate decrements, let us ſuppoſe O I, I′ O′, one of the faces of cubic nucleus (ſee *Plate* IV. *fig.* 50. *Cryſtallography*); and that the decrement took place on the angles by the ſubtraction of double molecules: in this caſe, the edges of the laminæ of ſuperpoſition will be in the direction of the lines *d n*, *k m*, *a b*, *c h*, &c.

Let E I′, *fig.* 51. be a cubic nucleus, and ſuppoſe the decrements are made parallel to the lines *k m*, *l m*, *k r*, *l r*, always by ſubtraction of double molecules, but in ſuch a manner, that there ſhall be three ranges taken away in the direction of the breadth, and one in that of the height: in this caſe, the decrements will be both intermediate and mixed. Suppoſe alſo that the edges of the laminæ of ſuperpoſition, ſituated around one ſolid angle O, had directions which croſſed, ſo that with reſpect to the face O I, I′ O′, the greateſt number of the faces of the molecules ſhould be taken away on the ſide O I′; but on the face E O, O E, it ſhould be on the ſide O O′, and with reſpect to face E A, I O, it ſhould be on the ſide E O; the effect of theſe different decrements would produce three faces round each ſolid angle, which would be ſituated in an inclined manner with reſpect to the faces of the nucleus; and becauſe the cube has eight ſolid angles, the ſecondary cryſtal would have twenty-four faces, which would tend to unite four and four, and form the ſummit of a pyramid round each face of the nucleus. But if we ſuppoſe the decrement to ceaſe before theſe are completed, there will remain ſix faces parallel to thoſe of the nucleus, and we ſhall have a polyhedral cryſtal of thirty faces, as repreſented *fig.* 52. The angles *k m*, *l r*, correſponding with thoſe of the nucleus, are rhombs; and the faces *m l′*, *r o*, are equal and ſimilar trapeziums. This form is that of one of the varieties of iron pyrites.

Suppoſe intermediate decrements on the two lateral angles of a rhomboid G G′, *Plate* IV. *fig.* 47, and that theſe decrements take place by ranges of double molecules, parallel to the faces *u m*, *x y*, *u′ m′*, *x′ y′*. It is evident, that theſe decrements will produce above each rhomb of the primitive nucleus S G, *g″* G′, two faces, which, commencing at the angles G G′, will converge towards each other, and come in contact in a line ſituated above the diagonal S *g″*, but inclined to that diagonal; ſo that the complete reſult of the decrement will be the formation of twelve faces, diſpoſed ſix and ſix towards each ſummit. *Plate* IV. *fig.* 53. repreſents one of theſe ſolids, with its nucleus inſcribed. It is a variety of calcareous ſpar which ſometimes occurs. The lines *a b a′* ſhew the direction of a fracture parallel to the face G *g″*, G′ S, of the primitive nucleus. It appears from this figure, that the nucleus does not touch the ſecondary cryſtal, except by its lateral angles, which are ſituated in the edges B S′, D *s′*, C *s′*, &c. while in the dodecahedron of Bergmann, repreſented in *Plate* II. *fig.* 22, and called by Haüy *metaſtatic calcareous ſpar*, the lateral edges of the nucleus coincide with thoſe edges of the ſecondary cryſtal that conſtitute the common baſis of the two pyramids, as is evident from inſpecting *Plate* II. *fig.* 23.

Hitherto immediate decrements have been obſerved only in a ſmall number of inſtances, but they lead to forms as ſimple as the other, and give ſome curious reſults, which deſerve to be ſtudied in a mathematical point of view, without any reference to cryſtallography.

Compound ſecondary Forms.—Simple ſecondary forms are thoſe which proceed from a ſingle law of decrement, the effect of which covers and conceals the nucleus, which only touches the ſecondary cryſtal by certain angles or edges. Compound ſecondary forms are thoſe which are produced by ſeveral ſimultaneous laws of decrement, or by one law which has not reached its limit; ſo that faces remain parallel to the original faces of the nucleus, which further modify the faces of the cryſtal.

Suppoſe, for inſtance, the law which produces the octahedron from the cube (*Plate* III. *fig.* 36.) ſhould concur with that from which reſults the dodecahedron with pentagonal faces. (*Plate* III. *fig.* 31.) The firſt of theſe laws would produce eight faces, which would have for centres the eight angles of the cubic nucleus. Each of theſe faces, as, for inſtance, that whoſe centre coincides with the ſolid angle O, *fig.* 31, will be parallel to the equilateral triangle, whoſe ſides paſs through the points *p s t*, *fig.* 34; in like manner, the centre that coincides with the front O′ will be parallel to the equilateral triangle, whoſe ſides paſs through the points *s n p*, *Plate* IV. *fig.* 54. But the ſecond law produces faces ſituated as the pentagon, cut by the ſides of the triangles *p s t*, *s n p′*. Now the ſection of theſe triangles upon the pentagon *t* O *s*, O′ *n*, *fig.* 31, reduces the pentagon to an iſoſceles triangle, which has the line *t n* for the baſe: the two other ſides are thoſe which paſs through the points *t s*, *n s*. The ſame takes place with the other pentagons. Hence it follows, that the ſecondary cryſtal produced will be an icoſahedron, bounded by eight equilateral triangles, and twelve iſoſceles triangles. (See *Plate* IV. *fig.* 54.) This icoſahedron occurs in iron pyrites; it is different in its form from the regular icoſahedron of geometers: the latter form does not exiſt among cryſtals, and cannot be produced by any law of decrement. The ſame remark applies to the dodecahedron, bounded by twelve regular and equal pentagons.

Another illuſtration of a compound ſecondary form is offered in the regular ſix-ſided priſm of calcareous ſpar. (*Plate* II. *fig.* 17.) From the manner of diſſecting this priſm, (ſee CRYSTAL,) it is eaſy to conceive that the rhomboidal nucleus, *fig.* 21, has ſix of its ſolid angles E, O, I, K, G, H, ſituated in the middle of the lateral faces of the priſm: hence it follows, that theſe angles are the points from whence the decrements ſet out from the three plane angles of the rhomb E O I, E O A′, I O A′, which form the ſolid angle O; but it is only neceſſary to conſider the decrements on one of them, ſuppoſing the ſame decrement extends on the two adjacent planes that form the ſolid angle. Let us then refer all the decrements to the ſix angles E O I, E H G, I K G, H G K, O I K, H G O, the firſt of which are turned towards the ſummit A, and the three laſt to the ſummit A'. If we ſuppoſe a decrement by two ranges of rhomboidal molecules on theſe different angles, ſix faces will be produced parallel to the axis, as has been already obſerved.

The plates of ſuperpoſition, at the ſame time that they undergo a decrement towards the inferior angles, will extend by their ſuperior parts, ſo as to remain always contiguous to the axis, the length of which will progreſſively be augmented. The ſmall faces produced by the decrements on the angles will gradually increaſe till they touch each other; we ſhall then have the ſolid repreſented A A, *fig.* 20, where each of theſe ſmall faces, as oOo, is marked with the ſame letters as the angle to which it belongs, and which is now ſituated in the middle of the triangle, becauſe it conſtitutes the point from which the decrements ſet out. As new plates are applied, the points or line oo riſe up, and the point O ſinks down; ſo that at a certain period we ſhall have the ſolid repreſented *fig.* 19, where the faces produced by the decrements become pentagons ooi, Oe.

Let us now ſuppoſe a ſecond decrement to concur with the firſt, and to take place by a ſingle range upon the ſuperior angle E A I and the inferior angle $H'AK$, and alſo on the other faces of the rhomb which form the ſolid angles A and A'; the effect of this will be to produce two faces perpendicular to the axis; and when it has reached the point at which theſe faces cut the ſix faces parallel to the axis which are produced by the firſt decrement, the ſecondary ſolid will be completed, and will be a regular ſix-ſided priſm. (*Plate* II. *fig.* 17.) It has been already ſaid, that the reſult is general, whatever be the form of the primitive rhomboid. It may now be ſeen why, in the mechanical diviſion of the priſm, the ſection pp, oo, has the ſides pp, oo, parallel to each other, and to the diagonal of the nucleus E F, *fig.* 21. Since the two decrements taking place, one upon the angle E O I, the other upon the angle E A I, the plates of ſuperpoſition ought to have the edges formed by the decrements parallel to the ſame diagonal, or to E I.

In the caſe we have been conſidering, and which is the moſt common, the axis of the ſecondary cryſtal is longer than that of the nucleus; but if we ſuppoſe the two decrements to commence at the ſame time, then the axis of the priſm being equal to that of the nucleus, both the lateral angles and the ſummits of the nucleus would touch the priſm, the one on the ſides, and the other the baſes. If the decrement were to commence on the ſuperior angles prior to the lateral decrements, the ſummits of the nucleus would then be contiguous to the baſes of the priſm, whilſt its lateral angles would be wholly within the priſm, between its planes and axis. This is the caſe with certain cryſtals, in which the priſm is very ſhort, and reſembles an hexagonal plate.

Another remarkable example is offered in that variety of calcareous ſpar, called by Haüy *analogique.* (See *Plate* IV. *fig.* 55.) It is compoſed of twenty-four trapezoidal faces, of which ſix are vertical faces, as $dabc$, $da'bc'$, and twelve others, diſpoſed ſix and ſix, as $c'pa$, and $c'pa''b$, &c. and ſix terminal faces, as $pap's$. The vertical trapezoids reſult from the ſame law that produces the hexahedral priſm (*Plate* II. *fig.* 17.); the ſecond reſult from the law which produces the metaſtatic cryſtal, *fig.* 22. In comparing *fig.* 55 with *fig.* 21, we may ſee that the vertical faces cut thoſe of the metaſtatic cryſtal, ſo as to intereſt the lateral ſolid angles E O, I K, &c. *figs.* 22 and 23; and, laſtly, the terminal faces reſult from a decrement ſimilar to what produced the equiaxe cryſtal. (*Plate* III. *fig.* 34.) *Fig.* 55. A, B, C, D, repreſents the different trapezoidal faces of this cryſtal. Various relations of proportion between their ſides and angles are given by Haüy, Minèralogie, tom. i. p. 85, 86.

It is a character common to all the primitive forms to be diviſible, parallel to their faces. In the parallelopiped, where this diviſion is not joined with ſome other in a different direction, it leads us obviouſly to the form of molecule ſimilar to that of the primitive cryſtal. In the regular ſix-ſided priſm, it gives us for a molecule the triangular priſm, as has been before obſerved. (See *Plate* V. *fig.* 56.) In the octahedrons, it appears to produce two kinds of molecules, tetrahedrons and octahedrons. Haüy, in this caſe, conceives that the tetrahedron is the integrant molecule, and that the octahedrons are empty ſpaces between them. The difficulty is removed, by conceiving the molecules to be an aſſemblage of ſpherical particles, as we have before obſerved. The dodecahedron, with iſoſceles triangular faces, cannot have molecules extracted, without dividing it in directions different from thoſe which are parallel to the face. The cutting-planes muſt paſs through the axis, and through the edges contiguous to the ſummits, from whence will reſult irregular tetrahedrons. Some other primitive forms divide alſo in directions which are not parallel to the faces, as we have ſeen in the caſe of the tourmaline. See *Plate* III. *fig.* 26.

Thus, beſides parallelopipeds, there are two other forms which integrant molecules aſſume, namely, the tetrahedron and the triangular priſm; but it deſerves particular attention, that the tetrahedral and priſmatic molecules are always arranged in ſuch a manner in the interior of cryſtals, that, taking them in groups of two, four, ſix, or eight, they compoſe parallelopipeds, ſo that the ranges ſubtracted by decrements are no other than theſe parallelopipeds; and we may conſider ſuch decrements as taking place by one or more ranges of rhomboidal molecules. If, for example, we take the regular ſix-ſided priſm (*Plate* V. *fig.* 56.), ſuppoſe one baſe of this priſm divided by ſections parallel to its ſides into ſmall triangles, which form the baſes of the integrant molecule; it is evident that any two adjoining triangles, Api, AOi, compoſe a rhomb, and by their union the two little triangular priſms to which theſe baſes belong would form by their union a rhomboidal priſm or parallelopiped. It is obvious, therefore, that we may conceive the larger priſm to be compoſed of ſimilar rhombs. Now, if we conceive a ſeries of plates piled upon the hexagon A, B, C, D, F, G, and which undergo, for example, on their different edges, a ſubtraction of one range of theſe parallelopipeds, theſe edges will ſucceſſively correſpond with the lines of the hexagon $ilmnrhi$, $kuxyge$, &c. from which we ſee that the quantity by which each plate decreaſes is a ſum of parallelopipeds, or priſms with rhomboidal baſes; and if the decrement attains its limit, we ſhall have a right ſix-ſided pyramid, which will have for its baſe the hexagon A, B, C, D, F, G. Theſe parallelopipeds, compoſed of tetrahedrons or triangular priſms, are called by Haüy *ſubtractive molecules;* and as far as the theory of cryſtals is concerned, we may conceive all cryſtals to be compoſed of parallelopipeds.

Plate V. *fig.* 58. refers to a particular caſe deſcribed in a note by Haüy (tom. i. p. 96.), to explain the vacuities on the edges h, c, l, m; but being of leſs importance, we proceed to ſtate the obſervations of M. Haüy on ſome apparent anomalies in cryſtallization.

In common cryſtals, the faces adjacent to each other always form ſalient and never re-entering angles; but certain cryſtalline forms exiſt, which preſent the latter angles. Let B d, *Plate* V. *fig.* 60. repreſent an oblique priſm with rhomboidal baſes, ſituated in ſuch a manner, that the faces A D, *a d*, and C D, *c d*, are vertical, and B, D, are the acute angles of the baſe, and that theſe proceed in an aſcending direction from A to C. Let us ſuppoſe alſo, that the priſm is cut into two equal parts by a plane which paſſes through the diagonals drawn from B to D, and from *b* to *d*, and that the one half remained fixed, whilſt the other is reverſed without being ſeparated from the former. The cryſtal will then be preſented under the aſpect ſeen in *fig.* 61, where the triangle *b′*, *d′*, *c*, which was one of the halves of the inferior baſe, *fig.* 60, is now ſituated in the upper part, *fig.* 61, and forms a ſalient angle or projecting edge with the triangle A B D. Whilſt the triangle B D C, *fig.* 61, which was one of the halves of the ſuperior baſe, *fig.* 60, is tranſported into the lower part, *fig.* 61, and forms a re-entering angle with the triangle *a b d*, we may eaſily conceive that the plane of junction D B, *b d*, of the two halves of a rhomboid is ſituated like a plane drawn, formed by a decrement on one range or other of the edges A *a*, C *c*, *fig.* 60, and thus the manner in which theſe halves join is in ſtrict relation with the ſtructure.

Now if we imagine a ſecondary form, which has for its nucleus a ſimilar priſm to the above, and if we ſuppoſe that it has been cut in the direction of the plane D B, *b d*, and that one of the halves has been reverſed as in *fig.* 61, the arrangement may be ſuch, that there will ſtill be a re-entering angle at one termination, and a ſalient angle at the other, reſulting from the mutual incidences of the faces produced by the decrements.

In certain caſes, the plane of junction on which the two halves of the cryſtals are joined is ſituated parallel to one of the faces of the nucleus, and the arrangement does not admit of preſenting a re-entering angle oppoſite to a ſalient one.

Theſe cryſtals which are here deſcribed are called by Haüy *hemiſtropes*, or half reverſed. Romé de Liſle has called ſuch cryſtals marles.

Another accident extremely common is the manner in which cryſtals in groups are inſerted into each other. This kind of penetration is ſubject to many diverſities; but on accurate examination, we ſhall find that they are ſubject to certain laws always analogous to thoſe of ſtructure, and that theſe cryſtals, inſtead of being precipitated confuſedly on each other, have a certain kind of arrangement. In illuſtration of this, let *Plate* V. *fig.* 62. be a cube, and M N *r* an equilateral triangular facet, produced by a decrement of one range round the angle A: let us ſuppoſe a ſecond cube modified in the ſame manner, and attached to the former by a facet reſulting from a ſimilar decrement; we ſhall have the combination repreſented *fig.* 63.

We may alſo conceive that one of theſe cubes, for inſtance the lower one, is increaſed in all its dimenſions, except in thoſe places where the other forms an obſtacle to its progreſs. As the increment continues increaſing, it will more and more envelope the upper cryſtal, and may finiſh by covering it entirely. We obſerve cryſtals ſunk into each other at different degrees of depth, but always in ſuch a manner, that their plane of junction has a poſition analogous to planes reſulting from decrement; ſo that both follow their common progreſs to this plane, which ſerves as their reſpective limit. Cubes of fluor ſpar inſerted into each other have the laminæ of each extended without interruption, until they are ſtopped by the common plane of junction.

The example here ſtated relates to a very ſimple and regular law of decrement. But frequently the laws which determine the plane of junction are more or leſs complicated, and there are a few which are rather extraordinary. When two priſms croſs towards the middle of their axis, there are two planes of junction which unite croſſing each other, as in the mineral called ſtaurotide, and theſe planes have poſitions analogous to thoſe which would be determined by the known laws of decrement.

In the preceding theory of cryſtallography it has been conſtantly ſuppoſed, that the laminæ compoſing cryſtals of the ſame ſpecies proceed from a common nucleus, undergoing decrements ſubject to certain laws, on which the forms of theſe ſecondary cryſtals depend. But this, ſays Haüy, is only a conception adopted to make us more eaſily perceive the mutual relations of the forms we are treating of. Properly ſpeaking, a cryſtal taken as a whole is only a regular group of ſimilar molecules. It does not commence by a nucleus of a ſize proportioned to what it afterwards acquires, or that which we can extract from it by mechanical diviſion; and the laminæ which cover this nucleus are not applied ſucceſſively over each other in which the theory conſiders them. The proof of this is, that among cryſtals of different ſizes that are often attached to the ſame ſupport, thoſe which can only be diſtinguiſhed with the microſcope are as complete as the largeſt; from whence it follows that they have the ſame ſtructure, that is to ſay, they have already within them a ſmall nucleus proportioned to their diameter, and enveloped by the requiſite number of decreaſing laminæ to form the faces of the ſecondary cryſtal. We muſt therefore conceive, that from the firſt commencement a cryſtal ſimilar to the rhomboidal dodecahedron is already a ſmall dodecahedron, and contains a cubical nucleus proportionally ſmall, and that this kind of embryo continues to increaſe without changing its form by the addition of new laminæ on all the ſides, ſo that the nucleus increaſes on its part, always preſerving the ſame relation with the entire cryſtal.

We ſhall render this idea diſtinct by a conſtruction which refers to the dodecahedron, and repreſented by a plane figure. What is ſaid of this figure may eaſily be applied to a ſolid, ſince we can always conceive a plane figure to be a ſection made in a ſolid: let *t s*, *z s″*, *Plate* V. *fig.* 59. A, be an aſſemblage of ſmall ſquares, in which the ſquare B N, D G, compoſed of forty-nine ſquares, repreſents a ſection of the nucleus, and the extreme ſquare *l p i b f c s*, &c. the ſteps formed by the laminæ of ſuperpoſition. We may conceive that the aſſemblage commenced by the ſquare B N, D G, and that different piles of ſmall ſquares are afterwards applied on each of the ſides of the central ſquare; for inſtance, on the ſide B N, the five ſquares comprehended between *f* and *h*, afterwards the three ſquares contained between *c* and *c*, and then the ſquare *s*. This progreſs correſponds with what would take place if the dodecahedron commenced with a cube proportioned to its volume, and which afterwards increaſed by an addition of laminæ conſtantly decreaſing.

But we may alſo ſuppoſe, that the aſſemblage of molecules commenced as repreſented *Plate* V. *fig.* 59. C, in which the ſquare B N, D G, is only compoſed of nine molecules, and had on each ſide of it only a ſingle ſquare, *s t*, *s′ z*. If we refer this aſſemblage in imagination to the ſolid, of which it is a ſection, we ſhall eaſily perceive that this ſolid had for its nucleus a cube compoſed of twenty-ſeven molecules, and that each face compoſed of nine ſquares had placed on the middle one a little cube, ſo that the decrement of one range is already ſeen in the initial dodecahedron.

By the addition of new ſquares, this aſſemblage will become that of B, *fig.* 59, in which the central ſquare B N, D G, is formed of twenty-five ſmall ſquares, and ſupports on each of its ſides a range of three ſquares, beſides the terminal ſquares *s t*, *s′ z*. Here we have already two laminæ of ſuperpoſition inſtead of one only. Laſtly, by a further

further application, the aſſemblage B, *fig.* 59, will be changed into that of A, *fig.* 59, where we have on each ſide three laminæ of ſuperpoſition. Theſe different tranſitions, of which we may continue the ſeries as far as we pleaſe, will convey an idea of the manner in which ſecondary cryſtals may increaſe in magnitude and ſtill preſerve their form, from which we may judge that the ſtructure combines with this augmentation of volume in ſuch a manner, that the law was already ſketched in the naſcent cryſtal, according to which the laminæ of ſuperpoſition ſucceſſively decreaſe when the nucleus has attained its greateſt dimenſions.

The inſtrument by which the angles of cryſtals are meaſured is called a goniometer. For a deſcription of Dr. Wollaſton's reflecting goniometer, ſee GONIOMETER. A more ſimple inſtrument was employed by Haüy. (See *Plate* VI. *fig.* 93. *Cryſtallography.*) It conſiſts of a ſemicircle of braſs divided into degrees. At the centre is fixed a pin, upon which ſlide the two arms A B, G F. The laſt of theſe, by means of a ſcrew, may be fixed in any poſition, ſo that the diſtance between the end G and the centre may correſpond with the face of the cryſtal to be meaſured. The other arm A B is drawn up till the diſtance between B and the centre correſponds as nearly as poſſible with the ſize of the other face of the cryſtal. It is then turned round till the angle of the cryſtal to be meaſured correſponds exactly with the angle B *c* G; the arm A B then cuts the ſemicircle in the angle, which correſponds with that of the cryſtal. This inſtrument is found to be not ſufficiently accurate for delicate obſervations, but it is truly ſurpriſing that Haüy was enabled by it to approximate ſo nearly to the correct admeaſurement of the various cryſtals which he has deſcribed. The inſtrument for determining the electricity of cryſtals (*Plate* VI. *fig.* 92.) is deſcribed in the article MINERALOGY, *Addenda.*

On the Notation of Cryſtals.—To facilitate and abridge the deſcription of the ſtructure of ſecondary cryſtals, Haüy has invented ſymbols which denote the particular laws of decrement, that produce the various forms that may occur. This mode of notation will be eaſily underſtood by a reference to the figures in *Plates* V. and VI. *Cryſtallography.* Let *Plate* V. *fig.* 64. repreſent any oblique parallelopiped, the faces of which have angles of different meaſures; let it be the primitive form of ſome mineral, as felſpar. The vowels are to repreſent the ſolid angles. The four firſt, A, E, I, O, are placed at the four angles of the upper baſe, following the order of the alphabet. The conſonants are choſen to deſignate the edges. The ſix firſt are placed on the middle of the edges of the upper baſe, and upon the two longitudinal edges of the lateral faces, B C, D F, G H. The letters P, M, T, which are the initials of the ſyllables of the word *Primitive*, are placed in the middle of the upper baſe, and of the two lateral planes or faces exhibited to view.

Each of the ſolid angles, or of the ſix edges marked by letters, is ſuſceptible of undergoing particular laws of decrement, on account of the irregular form of the parallelopiped. For this reaſon, they are marked each with a different letter. But as the laws of decrement act with the greateſt poſſible ſymmetry, every thing which takes place with reſpect to the angles and edges that undergo diſtinct decrements, takes place alſo on the angles and edges that are diametrically oppoſite, and are perfectly equal, but which are not viſible, or are not marked. Thus in *fig.* 66. the edges A I, *p s*, A E, and *p u*, and the ſolid angles I and *s*, O and *r*, are equal. It is, therefore, only neceſſary to mark the number of ſolid angles or edges that have diſtinct decrements, becauſe theſe are underſtood to include all thoſe which take place on analogous edges or angles.

In ſome caſes, it is neceſſary to indicate the analogous edges and angles; this is done by ſimilar ſmall letters: the angles analogous by A E, I O, are repreſented by *a e*, *i o*, and the ſame with the edges. But it is ſeldom neceſſary to mark theſe ſmall letters in the figure; it is ſufficient to introduce them into the ſymbol of the cryſtal, becauſe the place which every one ſhould occupy in the figure may eaſily be conceived.

To indicate the effects of decrements by one, two, three, or more ranges in breadth, the figures 1, 2, 3, 4, &c. are employed in a manner to be immediately explained; and to indicate the effects of decrements by two, three, &c. ranges in height, the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c. are employed.

The three letters P, M, T, ſerve to diſtinguiſh either the form of the nucleus without any modification when they alone conſtitute the ſymbol of the cryſtal, or the faces parallel to thoſe of the nucleus in the caſe where the decrements do not reach their limit; and then theſe letters are combined in the ſymbol of the cryſtal with thoſe which relate to the angles or edges that have undergone decrements.

Let us ſuppoſe that one of the ſolid angles O, *fig.* 64. is intercepted by a ſingle additional face. The decrement which produces this face may take place either on the upper baſe P, or on the plane T, which is on the left of the obſerver, or on the face M, which is on the right. In the firſt place, the figure marking the decrement is placed above the letter O; in the ſecond caſe, the figure is placed on the left-hand, a little above the letter; and in the third caſe, it is placed on the right-hand. Thus $\overset{2}{O}$ denotes the effect of a decrement by two ranges in breadth, parallel to the diagonal of the baſe P, that paſſes through I, E; O^3 indicates the effect of a decrement by three ranges in breadth, parallel to the diagonal of the face M, which paſſes through the angle E; and ${}^4O$ indicates the effect of a decrement by four ranges in breadth, parallel to the diagonal of the face T, that paſſes through the angle O.

When the decrement takes place on one of the three other ſolid angles I, A, E, the obſerver is ſuppoſed to move round the cryſtal till he is oppoſite to that angle, or to turn round the cryſtal till the ſolid angles E, A, I, are exactly oppoſite to him; and it is relative to that poſition that the decrement is ſaid to take place to the right or the left.

For example, if we are ſpeaking of the ſolid angle A, the ſign ${}^2A$ will repreſent a decrement by two ranges on the ſurface A E, *s r*, *fig.* 66. or oppoſite to T; and A^3 will repreſent the effect of a decrement by three ranges upon the face A I *n r*, oppoſite to M.

As to the decrements on the edges, thoſe which take place towards the boundary of the upper baſe B, C, F, D, are expreſſed by a letter placed above or below the letter as the effects occur above or below the terminal edge, ſuppoſing them to ſet off from the edge to which they are referred, whilſt thoſe which take place on the lateral edges are conducted by an exponent placed on the right or the left of the letter, according as they occur in one direction or the other. Thus $\overset{2}{D}$ expreſſes a decrement by two ranges proceeding from D towards C: $\overset{2}{C}$, a decrement by two ranges proceeding from C towards D: $\underset{2}{D}$, a decrement by two ranges deſcending upon the face M: H^3, a decrement by three ranges, proceeding from H towards G: and G^4, a decrement of four ranges proceeding from G towards the edge oppoſite to H, or A *r*, *fig.* 66. When it is neceſſary to denote by a ſmall letter, ſuch as *d*, a decrement upon the edge *u r*, *fig.* 66. oppoſite to the edge denoted by the capital letter D, *fig.* 64, D, *fig.* 64, we muſt ſuppoſe the faces of the cryſtals reverſed. Hence, $\overset{2}{d}$ will expreſs a decrement by two ranges upon the other baſe *p*, juſt as $\overset{2}{D}$ expreſſes a ſimilar decrement on the baſe P. For the ſame reaſon, $\underset{3}{c}$ will expreſs a decrement by three ranges proceeding from *r u*, to E O.

If the ſame ſolid angle, or the ſame edge, undergo ſeveral ſucceſſive decrements on the ſame ſide, or different decrements which take place on different ſides, the letter pointing out the angle or edge is repeated as often as the decrements, varying the figure each time, to make it correſpond with the particular decrements denoted. Thus, $\overset{2}{D}$, $\underset{3}{D}$, will denote two decrements upon the edge D, one of two ranges on the baſe P, and another of three ranges upon the face M; and ${}^{2}H$, H^{4}, will denominate two decrements, one by two ranges on the left, the other by four on the right of the edge H.

Mixed decrements are marked according to the ſame principles, employing the fractions $\frac{2}{3}$, $\frac{3}{4}$, which repreſent them; the numerator referring to decrements in breadth, and the denominator to decrements in height.

The intermediate decrements are thus deſcribed. Let A E, I O, (*Plate* V. *fig.* 67.) be the ſame face as in *fig.* 66, but divided into rows or ranges; let us ſuppoſe a decrement by one range of double molecules, according to the lines parallel to *x y*; ſo that O *y* meaſures the double length of a molecule, and O *x* that of a ſingle molecule.

This kind of decrement is thus expreſſed, ($\overset{1}{O}$, D^{1}, F^{2},) the parentheſis indicates that the decrement is intermediate; $\overset{1}{O}$, that it takes place by one range on the ſolid angle marked by that letter in *fig.* 64; D^{1}, that there is one length of a molecule taken away along the edge D; and F^{2}, that two lengths are taken away along the edge F.

The written language to denote the ſymbols, that they may be eaſily expreſſed when dictated, would be thus: for O^{2}, ${}^{3}O$, read, O *two on the right*, O *three on the left*; $\overset{2}{O}$, $\underset{4}{O}$, read, O *under two*, O *above four*. And the ſymbol ($\overset{1}{O}$, D^{1}, F^{2},) read, *in a parentheſis*, O *under one*, D *one*, F *two*.

The order in which theſe letters muſt be placed to denote a ſecondary cryſtal remains to be explained. If the alphabetical order were adopted, there would reſult a degree of confuſion in the picture which the formula preſents. It is more natural to conform to the order that would direct an obſerver in the deſcription of the cryſtal; that is, to begin with the priſm or middle part, and to indicate its different faces as they preſent themſelves ſucceſſively to the eye; then to paſs to the faces of the ſummit or the pyramid.

Suppoſe (*Plate* VI. *fig.* 68.) that variety of felſpar which Haüy calls bibinary, *viz.* where there are two decrements by two rows each. The primitive form is repreſented *figs.* 64 and 66. In this form of the cryſtal, the face *l* reſults from a decrement by two ranges on the edge G, *fig.* 64, going towards H; the face M, *fig.* 68. correſponds with M, *fig.* 64; the face T, *fig.* 68, is parallel to T, *fig.* 64; the pentagon *x* comes by a decrement of two ranges on the angle, correſponding with the angle I, *fig.* 64. and parallel to the diagonal A O. As this decrement does not reach its limit, the ſummit exhibits a ſecond pentagon P, parallel to the baſe P, *fig.* 64. All this deſcription may be exhibited by five letters in ſymbolic language: thus ${}^{2}G$ M T $\overset{2}{I}$ P denoting a decrement by two ranges on the edge G, and a decrement by two ranges on the angle I, *fig.* 64.

It is cuſtomary, in order to prevent any ambiguity, to place under the different letters that compoſe the ſymbol thoſe that correſpond to them in the figure. Thus in the bibinary felſpar, *fig.* 68. $\begin{matrix} {}^{2}G & M & T & \overset{2}{I} & P \\ l & M & T & x & P \end{matrix}$, the letters in the line below thoſe of the ſymbol enable us to compare the ſymbol with the figure, and thus to decypher the meaning with facility, however complicated it may be.

Where the primitive form has great ſimplicity, as in the cube and rectangular priſm, when the oppoſite angles are equal, one letter will denote them both, and when the oppoſite edges are equiangular, the ſame letter will denote either; for every thing that denotes one of them, takes place alſo in the other. If, for inſtance, we ſuppoſe *fig.* 64. to become more ſymmetrical, and that certain ſolid angles which were before unequal are become equal, they ſhould be marked with the ſame letter. If, for inſtance, the primitive form be a rectangular priſm, which has oblique-angled parallelograms for its baſes, one ſide of which is longer than the other, *fig.* 69; in this caſe, we have the angle O = A, I = E; we may ſubſtitute in each caſe the ſecond letter for the firſt, as is done *fig.* 69.

If we review the different kinds of parallelograms we ſhall find them acquire different degrees of ſimplicity, which occaſions new equalities in the angles and edges, and new ſubſtitutions of letters. The oblique priſm with rhomboidal baſes is repreſented *fig.* 70. The rectangular priſm with rectangular baſes *fig.* 71. The rectangular priſm with rhomboidal faces *fig.* 72. The rectangular priſm with ſquare baſes *fig.* 73.

The cube is repreſented *fig.* 74; here only the ſuperior baſe is marked, becauſe what takes place with reſpect to this may be applied indifferently to any of the other faces.

The ſame mode is employed in writing the ſymbols for theſe regular forms, only the letters that have the ſame name and the ſame figure are not repeated. An example will render this method evident. *Fig.* 75. repreſents the moſt common variety of the chryſoberyl, or cymophane, (ſee CHRYSOBERYL,) the nucleus of which is a rectangular parallelopiped, ſuch as repreſented *fig.* 71. The ſymbol of the ſecondary cryſtal, *fig.* 75, will be $\begin{matrix} M & T & {}^{2}G & G^{2} & \overset{1}{B} & A^{\frac{3}{2}} & {}^{\frac{3}{2}}A \\ M & T & & s & i & & o \end{matrix}$. This variety is called by Haüy annular cymophane.

To underſtand this expreſſion better, let us mark each angle and edge with a particular letter, as in *fig.* 76. In this caſe, the ſymbol would become M T ${}^{2}G$ H^{2}, $\overset{1}{B}$ $\overset{1}{F}$ $E^{\frac{3}{2}}$ ${}^{\frac{3}{2}}O$; but if we compare *fig.* 71. with 76, we ſhall ſee that H = G, F = B, O = A: hence if we ſubſtitute inſtead of their firſt letters their equal values, we get M T ${}^{2}G$ G^{2} $\overset{1}{B}$ $\overset{1}{B}$ $A^{\frac{2}{3}}$ ${}^{\frac{2}{3}}A$, which becomes the ſame as the one before given, when the uſeleſs repetition of $\overset{1}{B}$ is ſuppreſſed.

From the preceding ſtatement, it is evident that we muſt not confound ſuch ſymbols as ${}^{2}G$ G^{2} with G^{2} ${}^{2}G$; the firſt ſymbol indicates the decrements which take place on the face T, *fig.* 71. and on the edge oppoſite to it, going from the edges G towards thoſe that correſpond with them behind the parallelopiped. The ſecond ſymbol indicates the decrements which take place upon the face M, and which meet each other in the middle of that face. If theſe two decrements took place ſimultaneouſly, theſe ſymbols would be ${}^{2}G^{2}$.

In the preceding ſymbols, each letter, ſuch as on G^{2} or ${}^{2}G$, can only be applied to a ſingle edge ſituated to the right or left, as the letter is itſelf; but ${}^{2}G^{2}$ applies indifferently to the one edge or the other: hence it is needleſs to repeat the letter.

If we take *Plate* VI. *fig*. 77. as another example, and ſuppoſe *fig*. 70. to repreſent its primitive form, we ſhall have for the ſymbol of the variety of cryſtal here repreſented,

$$\begin{array}{ccccccc} {}^{3}G^{3} & M & \overset{2}{B} & \overset{3}{B} & \overset{1}{E} & \overset{2}{E} & P \\ o & M & r & s & z & u & P. \end{array}$$

In this ſymbol, ${}^{3}G^{3}$ indicates two diſtinct faces formed on each ſide of each edge G, but it is not neceſſary to place two letters under that ſymbol, becauſe all the faces ſituated in the ſame manner being diſtinguiſhed by the ſame letter in the figure; it is ſufficient to point out that the ſymbol ${}^{3}G^{3}$ applies to the faces marked with the letter *o*, and this requires only to write the letter *o* under the ſymbol.

From the ſame principles it follows, that the rhomboidal dodecahedron derived from the cube, *fig*. 74. is expreſſed by the ſymbol $\overset{1}{B}\;\underset{1}{B}$. The octahedron derived from the cube is thus expreſſed $\overset{1}{A}\;{}^{1}A^{1}$.

The rhomboid, ſuppoſing it placed in the moſt natural aſpect, ſo that the two ſolid angles, compoſed of three ſimilar plane angles, are in the ſame vertical line, has, properly ſpeaking, no baſe, but merely ſummits, which are the extremities of its axis. Its angles and edges are marked as in *Plate* VI. *fig*. 78.

If all the lateral angles were indicated by letters, thoſe that are neareſt the ſummit A would have the letter E, and thoſe which are neareſt the inferior ſummit the letter *e*. As the rhomboid has ſix faces equal and ſimilar, it is only neceſſary to conſider the decrements relative to one of theſe faces; as, for example, that marked P, *fig*. 78, becauſe all the others are mere repetitions of this. The decrements which ſet out from the ſuperior angle A, or the ſuperior edge B, will have the figure indicating the number of ranges placed below A and B. Thoſe which ſet out from the lateral angles E, will have their figures ſituated at the ſide and towards the top of the letter. Thoſe decrements which ſet out from the inferior angle *e*, or the inferior edge D, will have the figure placed above the letter *e* or D.

Suppoſe, for example, that *fig*. 79. repreſents the variety of calcareous ſpar, called analogie by Haüy, its ſymbol would be $\begin{array}{ccc} \overset{2}{e} & \overset{2}{D} & \underset{1}{B} \\ c & r & g \end{array}$, the interpretation of which will be eaſy. What has been ſaid of the rhomboid may be applied to the other primitive forms, of which we ſhall give examples: *fig*. 80. repreſents the octahedron with ſcalene triangles; *fig*. 82. the regular octahedron. In placing the figures that accompany the letters in the ſymbols in *fig*. 80, the figure denoting the decrement is placed below the letter A or B, to repreſent decrements ſetting out from the angle A, or the edge B. The figure is placed above for thoſe which ſet out from the edge D, and at the ſide for thoſe which ſet out from the angle E.

If we want to denote a decrement by one range upon all the angles of the regular octahedron, *fig*. 82, we have only to write $\overset{1}{A}\;{}^{1}A^{1}$. To indicate a decrement by one range on all the edges we write $\underset{1}{B}\;\overset{1}{B}$. The firſt of theſe decrements produces a cube, the ſecond a rhomboidal dodecahedron. In ſome mineral ſpecies, as in the nitrate of potaſh, the primitive octahedron, which is compoſed of eight iſoſceles triangles, ſimilar four and four to each, ought to have the poſition repreſented as in *fig*. 83, that the ſecondary cryſtal may have the moſt natural attitude. The edges which join the two pyramids ought to have two of them a vertical direction, as F, F; and two an horizontal direction, as B. By comparing *fig*. 83. with *fig*. 84, in which the letters are placed as if all the edges and angles had different functions, it will be eaſy to conceive the arrangement of the letters adopted in *fig*. 83; for in the preſent caſe we have E=A, D=B, G=F.

The tetrahedron being always regular when it becomes a primitive form, it will be expreſſed as in *fig*. 85, and the decrements marked as in the octahedron.

In the regular ſix-ſided priſm, *fig*. 86, the figures are written preciſely in the manner already deſcribed for the four-ſided priſm. But it happens ſometimes, that three of the ſolid angles taken alternately are replaced by faces, whilſt the intermediate angles remain untouched. In that caſe, the priſm is diſtinguiſhed as in *fig*. 87. In the rhomboidal dodecahedron, *fig*. 88, each ſolid angle compoſed of three planes may be aſſimilated to a ſummit of the obtuſe rhomboid: hence it is only neceſſary to give letters to one face, as may be ſeen in the *fig*. A A, E E, B B, P. Where the parts of cryſtals oppoſite to thoſe which undergo certain decrements remain untouched, it is eaſy to mark this peculiarity by zeros. This caſe belongs chiefly to the tourmaline. One variety of the tourmaline is repreſented *fig*. 90, and the primitive form *fig*. 89. The priſm, which is nine-ſided, has ſix of its faces, namely *s s*, produced by the ſubtraction of one range upon the edges D D, *fig*. 89, and the three others, as *l*, by the ſubtraction of two ranges only on three angles *e*. The inferior ſummit has ſimply three faces parallel to thoſe of the nucleus; while on the ſuperior ſummit the three edges B, *fig*. 89, are replaced each by a facet *n n n*, *fig*. 90, in conſequence of a decrement which has not reached its limit. This cryſtal is repreſented by the following ſymbol:

$$\begin{array}{cccccc} \overset{1}{D} & \overset{2}{e} & \overset{2\cdot 0}{E} & P & \underset{1}{B} & \underset{1\cdot 0}{b} \\ s & b & & P & n & \end{array}$$

$\overset{2\cdot 0}{E}\;\underset{1\cdot 0}{b}$ indicate, the one that the angles E, *fig*. 89, oppoſite to *e*, undergo no decrement; the other, that the edges parallel to B remain alſo untouched. If theſe edges underwent a different law of decrement, for inſtance, that which produced a ſubtraction by two ranges, the ſymbol would be, $\overset{1}{D}\;\overset{2}{e}\;\overset{2\cdot 0}{E}\;P\;\underset{1}{B}\;\underset{2}{b}$: hence it may be underſtood, that the decrements repreſented by a capital letter, accompanied with a figure, do not always include ſimilar decrements repreſented by a ſmall letter of the ſame name. Thus $\underset{2}{B}$ does not implicitly imply $\underset{2}{b}$, or *vice verſâ;* it is only when the ſecond letter is not introduced into the ſymbol with a different figure, or a zero, that we imply that the ſame decrements take place on the analogous ſides or angles.

In the ſymbol $\overset{1}{D}\;\overset{2}{e}\;\overset{2\cdot 0}{E}\;P\;\underset{1}{B}\;\underset{2}{b}$, by $\underset{1}{B}$ is implied a decrement by one range, which takes place only on the edges contiguous to the ſuperior ſummit A, *fig*. 89: $\underset{2}{b}$ indicates a decrement by two ranges, which only takes place on the edges contiguous to the inferior ſummit. The quantities $\overset{2}{e}$ and $\overset{2\cdot 0}{E}$ indicate two ranges on the angles *e* only, and that no decrement whatever takes place upon the oppoſite angles E.

The preceding illuſtrations of M. Haüy's mode of denoting the ſtructure of cryſtals by ſymbols, are given in detail to enable the ſtudent to make a figure of a cryſtal from the ſymbol repreſenting the laws of its formation. Shorter rules for enabling the ſtudent merely to read and underſtand this mode of notation will ſuffice.

1. The letters P, M, T, denote the faces of the nucleus or primitive cryſtal, or indicate that the faces are parallel to the faces of the primitive cryſtal marked with the ſame letters.

2. Every vowel in the ſymbol indicates a ſolid angle, marked with the ſame letter as in the nucleus. Every conſonant indicates the edge which has the ſame letter in the figure.

3. Each letter contained in the ſymbol is underſtood with the figure belonging to it to repreſent all the ſame letters, and the angles or edges which have the ſame function.

4. Every number joined to a letter indicates a decrement ſetting out from the angle or the edge denoted by that letter. If the number be a whole one, it indicates the ranges in breadth, ſuppoſing each plate to have only the thickneſs of one molecule. If the number be a fraction, the numerator indicates the number of ranges ſubtracted in breadth, and the denominator the number of ranges ſubtracted in height.

5. The number is placed above the letter to ſhew that the decrement aſcends, or below it to ſhew that it deſcends, ſetting out from the angle or edge marked by the letter. If it be placed either on the right or left hand of the letter, it indicates a decrement to the right or left of the edge or angle marked by the letter.

6. When a letter is twice repeated with the ſame number placed on different ſides, as ${}^{2}G\ G^{2}$ or $G^{2}\ {}^{2}G$, ${}^{2}A\ A^{2}$ or $A^{2}\ {}^{2}A$, the two edges or two angles which it marks ſhould be conſidered in the figure in the ſame relative poſitions. Thus, ${}^{2}G\ G^{2}$ indicates the effect of decrement by two ranges on the edge G ſituated at the left, and of a ſimilar decrement on the edge G ſituated at the right.

7. When a letter has the ſame number both on the right and left ſide, as ${}^{3}G^{3}$, it applies equally to all the edges G. The ſame applies to the letters which denote the angles.

8. The parentheſis, as, for example, $(\overset{3}{O}\ D^{1},\ F^{2},)$ indicates an intermediate decrement. The letter $\overset{3}{O}$ indicates, that an aſcending decrement of three ranges takes place on the angle O; D^{1}, that one molecule is ſubtracted along the edge D; and F^{2}, that two molecules are ſubtracted on the edge F.

9. Every ſmall letter in the ſymbol indicates the angle or the edge diametrically oppoſite to that which has the ſame capital letter in the figure, where the ſmall letter is omitted as ſuperfluous. The letter *e* is, however, never omitted in the rhomboid; it indicates, according to the principle, the letter oppoſite to E.

10. When the large and ſmall letters of the ſame name are introduced into the ſymbol with different numbers attached to them, the two oppoſite edges or angles denoted by theſe letters are conceived to undergo excluſively the law of decrement, indicated by the number attached to the letter.

11. Every letter, whether large or ſmall, marked by a number having a zero attached to it, as $\overset{2.0}{E}$, indicates that the decrement denoted by that number does not take place on the angle or edge which the letter repreſents.

The above account of the theory of cryſtallization, and the notation of cryſtals, may ſuffice with what has been before given under the article Crystal, to convey ample information of the abbé Haüy's ingenious ſyſtem, ſo far as relates to the ſtructure of cryſtals, and the ſymbolic mode of deſcribing the decrements by which the ſecondary cryſtals are formed. The figures in *Plates* II. III. IV. V. VI. *Cryſtallography*, which we have deſcribed, are copied from Haüy's Traité de Minéralogie, tom. i., and contain what he has given in illuſtration of the 'theory of cryſtallization.' The application of geometry and analyſis, to determine the laws of decrement from the meaſurement of the angles, which has been ſo ably made in the above-named work by this illuſtrious cryſtallographer, would require for its explanation a more ample ſpace than would be conſiſtent with the preſent article, which is intended to ſupply what was defective in the explanation of the plates under the article Crystal, and to correct the references that were there erroneouſly given. (See Crystal.) We omitted to ſtate, that *Plate* II. *fig.* 25. repreſents the ſecondary rhomb, *fig.* 24. with the three ſuperior edges, and the three inferior ones cut off or truncated *r*, *r*, *r*, *r'*, *r'*, *r'*; by cutting other laminæ parallel to each of the faces *r*, *r*, *r*, &c. we ſhall at length extract the primitive nucleus A E, O I, *fig.* 24.

CSHATRIYA, or Chatterie, denotes in India a man of the ſecond or military caſt. See Cast.

CUCKFIELD. In 1811, the pariſh of Cuckfield contained 300 houſes, and 2088 perſons; *viz.* 1063 males, and 1025 females: 251 families being employed in agriculture, and 123 in trade, &c.

CUCKOW-Spit. Add—This cuckow-ſpittle encompaſſes the larva of a ſpecies of cicada, which is denominated C. ſpumaria, or cuckow-ſpit cicada, from the circumſtance of its larva being conſtantly found enveloped in a maſs of white froth adhering to the leaves and ſtems of vegetables. This froth, called cuckow-ſpittle, is found during the advanced ſtate of ſummer, and is the production of the included larva, which, from the time of its hatching from the egg depoſited by the parent inſect, continues occaſionally to ſuck the juices of the ſtem on which it reſides, and to diſcharge them from its vent in the form of very minute bubbles, till it covers itſelf with a large maſs of froth, and it is ſometimes ſo overcharged with moiſture that a drop may be ſeen hanging from its under ſurface. Shaw's Zoology, vol. vi.

CUCULUS, l. 4, add—Dr. Leach, however, obſerves, that this property does not belong to this kind of feet, which can be conſidered merely as ſimple feet, having two toes before and two behind. Col. 2, l. 21, after inſects, add—and on larvæ or caterpillars; l. 35, add—For the natural hiſtory of this bird, ſee Dr. Jenner's curious paper in the Phil. Tranſ. for 1788, pt. ii.

CUD-BEAR. See Lichen *Tartareus.*

CULLUMIA, in *Botany*, dedicated by Mr. Brown, to the honour of the late ſir John Cullum, bart., an elegant and accompliſhed ſcholar and botaniſt; as well as of his brother the preſent ſir Thomas Gery Cullum, bart. F.L.S. an excellent Britiſh botaniſt, one of the moſt ardent cultivators of this lovely ſcience, whoſe friendſhip alone can be more valued than his various and extenſive information.—Br. in Ait. Hort. Kew. v. 5. 137.—Claſs and order, *Polygamia-fruſtranea*. Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Eſſ. Ch. Receptacle cellular. Seeds ſmooth. Down none. Common calyx of one leaf, covered with imbricated ſcales.

1. C. *ciliaris*. Fringed Cullumia. Ait. n. 1. (Berkheya ciliaris; Willd. Sp. Pl. v. 3. 2273. Gorteria ciliaris; Linn. Sp. Pl. 1284. Carlina foliis imbricatis, &c.; 151. t. 54. f. 1.)—Leaves ovate, ſmooth, imbricated, fringed with a double row of briſtles, and tipped with a reflexed ſpine.

2. C. *ſetoſa*. Recurved ſmooth-leaved Cullumia. Ait. n. 2. (Berkheya ſetoſa; Willd. ibid. excluding Commelin's

lin's ſyn.)—Leaves ovato-lanceolate, ſmooth, recurved, fringed with prickles.

3. C. *ſquarroſa.* Recurved awl-leaved Cullumia. Ait. n. 3. (Berkheya ſquarroſa; Willd. 2272. "Rohria ſquarroſa; Thunb. in Act. Soc. Nat. Scrut. Hafn. v. 3. part 1. 100. t. 5.")—Leaves awl-ſhaped, recurved or ſpreading, fringed with prickles; furrowed beneath; nearly ſmooth like the branches.

Theſe are green-houſe ſhrubs, with yellow radiant *flowers*, all natives of the Cape of Good Hope.

CULLUMPTON. By the return of 1811, the pariſh contains 609 houſes, and 2917 inhabitants.

CULPEPPER, l. 3, *r.* 1810, 18,967, and 8312.

CULROSS. In 1811, the burgh and pariſh contained 279 houſes, and 1611 perſons; *viz.* 725 males, and 886 females: 78 families being employed in agriculture, and 183 in trade, manufactures, and handicraft.

CUMANA, l. 4, *r.* Welſees.

CUMBERLAND, l. 23, *r.* and by the return of 1811, 24,002 houſes, and 133,344 inhabitants.

CUMBERLAND, in Maine, l. 7, *r.* 24 townſhips; l. 9, *r.* 1810, is 42,831.

CUMBERLAND, in New Jerſey, l. 5, *r.* 12,678, and 42.

CUMBERLAND, a county of Pennſylvania, l. *ult.* *r.* 26,757, and 307.

CUMBERLAND, a county of Virginia, l. 3 and 4, *r.* 9992, and 6102.

CUMBERLAND, a county of N. Carolina, l. 2, *r.* 9382, and 2796.

CUMBERLAND, a county of Kentucky, l. 1 and 2, *r.* 6085, and 902.

CUMBERLAND, in Rhode iſland, l. 2, *r.* 2140.

CUMBERLAND, in Pennſylvania, *r.* 1591. And at the cloſe, after Bedford, add—containing 570 inhabitants.

CUMMINGTON, l. 3, *r.* 1009.

CURCULIO, l. 17, add—Mr. Marſham, in his "Entomologia Britannica," enumerates no fewer than 234 Britiſh ſpecies; l. 27, add—The larva, when properly fried and boiled, is conſidered as one of the beſt dainties in the Weſt Indies. P. 3, C. GRANARIUS, add—See WEEVIL. P. 5, col. 2, NUCUM, add—The various changes which the nut-maggot paſſes through, from its introduction into the nut in Auguſt to its eſcape, are worthy of attention. Dr. Darwin, in his "Botanical Garden," thus beautifully deſcribes the egreſs of this inſect from the cavity of the nut:

> "So ſleeps in ſilence the curculio, ſhut
> In the dark chambers of the cavern'd nut;
> Erodes with ivory beak the vaulted ſhell,
> And quits on filmy wings its narrow cell."

CURD, *Chemical Properties of.* See MILK.

CURIA CLAUDENDA, a writ that lies againſt him who ſhould fence and incloſe the ground, but refuſes or defers to do it.

CURIA *Adviſare vult*, a deliberation which the court ſometimes takes, before judgment is given in a cauſe, with regard to which there ſeems to be any point of difficulty.

CURRIE, JAMES, M.D., in *Biography*, diſtinguiſhed both as a phyſician and a writer, was the ſon of an eſtabliſhed miniſter at Kirkpatrick-Fleming, in Dumfriesſhire, in which pariſh he was born in the year 1756. Originally deſigned for commerce, he was educated with that view; but upon a change of his deſtination, he commenced, in 1776, a courſe of medical ſtudy at Edinburgh: and having graduated in that univerſity, ſettled, in 1781, at Liverpool, where he ſoon roſe to eminence in his profeſſion and in his literary character. His firſt performance as a writer was an elegant tribute to the memory of his intimate friend, Dr. Bell of Mancheſter, publiſhed in 1785 in the firſt volume of the Mancheſter Tranſactions. His paper on Tetanus, &c. was publiſhed in the Memoirs of the London Medical Society, vol. iii. In 1792 he was elected a member of the Royal Society; and his curious paper on the lamentable effects of a ſhipwreck was printed in the Phil. Tranſ. for that year. Diſapproving of the war between this country and France in conſequence of the revolution, he was ſuppoſed to be the author of an intereſting pamphlet, which appeared in 1793 under the title of "A Letter, Commercial and Political, addreſſed to the Right Honourable William Pitt, by Jaſper Wilſon." In 1797 his medical reputation was much advanced by a treatiſe in 8vo., entitled "Medical Reports on the Effects of Water, cold and warm, as a Remedy in Febrile Diſeaſes, &c." by which the practice of effuſion of cold water in fevers, ſuggeſted by Dr. Wright's narrative in the London Journal, was much extended. With a view to the relief of the diſtreſſed family of the ruſtic poet, Robert Burns, with whom he became acquainted in 1792, he publiſhed in 1800 an edition of his works, with an account of his life, &c. in 4 vols. 8vo. It is with real regret we farther report, that Dr. Currie's health began to decline in 1804, and that his friends and patients at Liverpool were deprived of the pleaſure of his ſociety and advice by his removal, towards the cloſe of the year, to Clifton and Bath. His diſorder, which was of the pulmonary kind, ſomewhat abated in conſequence of the change of his ſituation, and at the commencement of the following year he began to practiſe in his profeſſion with encouraging proſpects of ſucceſs. But it again recurred with alarming ſymptoms, and he was under a neceſſity of removing to Sidmouth, where his valuable life terminated on the 31ſt of Auguſt, 1805, in the 50th year of his age. The cauſe of literature and ſcience, and the intereſts of humanity and benevolence, ſuffered great loſs by his death.

CURVO, in *Geography*, a townſhip of America, in the diſtrict of Maine, and county of Somerſet, containing 275 inhabitants.

CUSERUND, a town of Mekran in Perſia, ſituated in a fertile valley, about 21 miles broad, with a river running through it. It contains 500 huts, and a large mud fort. Wheat, rice, and dates, are abundant; and the town belongs to an independent chief, whoſe revenue is about 1000 rupees a year.

CUSHING, l. 3, *r.* 532.

CUTIS, *Chemical Properties of.* See INTEGUMENTS.

CYANOGEN, in *Chemiſtry*, the name given by M. Gay Luſſac to the recently-diſcovered baſis of the pruſſic acid, and which he has demonſtrated to be a compound of carbon and azote. The name is derived from κυανος, *blue*. Cyanogen may be obtained by expoſing dry pruſſiate of mercury in a ſmall retort, to a heat rather under redneſs. The ſalt blackens, and a gaſeous fluid is extracted in abundance, which muſt be collected over mercury. This gas is cyanogen. It is colourleſs, and poſſeſſes the mechanical properties of common air. Its ſmell is quite peculiar, and very ſtrong and diſagreeable. Its ſpecific gravity, as aſcertained by Gay Luſſac, is 1.8064. It is inflammable, and burns with a purpliſh-blue flame. It is not decompoſed by expoſure to a red heat. Water diſſolves 4½ times its volume, and alcohol 23 times its volume of this gas. It reddens tincture of litmus. Phoſphorus, ſulphur, and iodine, may be volatilized in it without alteration. Potaſſium burns in it, and abſorbs it. For complete combuſtion, it requires twice its volume of oxygen gas; and the products are twice its volume of carbonic acid, and its own volume of azotic gas. Hence it is obviouſly compoſed of two atoms or volumes of carbon, and one atom or volume of azote, or *per cent.* of

Carbon - - -	70.0
Azote - - -	30.0
	100.0

See Atomic *Theory*, Table III.

Cyanogen is capable of combining with chlorine, and forming an acid which has been named *chlorocyanic* acid. It alſo combines with hydrogen, forming *hydrocyanic* acid ; with ſulphur, forming *ſulphocyanic* acid ; and with iron, forming *ferrocyanic* acid: of each of which acids we ſhall here give a brief account.

Chlorocyanic Acid. — This is the *oxypruſſic* acid of Berthollet, who firſt demonſtrated its exiſtence. Its properties were afterwards more thoroughly inveſtigated, and its true compoſition pointed out by M. Gay Luſſac, who gave it the above name. The acid was formed by M. Gay Luſſac by paſſing a current of chlorine gas through a ſolution of hydrocyanic acid (pruſſic acid, ſee below) in water, till the liquid diſcoloured indigo diſſolved in ſulphuric acid. To ſeparate the exceſs of chlorine, the mixture was agitated with mercury. The chlorocyanic acid was ſubſequently ſeparated by an ingenious proceſs. A glaſs cylinder, filled two-thirds with mercury, was filled to the brim with the above mixture, and then inverted into a baſin of mercury. The apparatus was put under the receiver of an air-pump, and the exhauſtion carried on till the whole of the mercury and liquid was diſplaced, and the cylinder filled with chlorocyanic acid in a ſtate of vapour. On letting the air again into the receiver the vapour was condenſed into a liquid, and thus collected upon the ſurface of the mercury in the cylinder. Chlorocyanic acid thus obtained is a colourleſs liquid, having a ſtrong and peculiar odour, which excites ſuch irritation as to induce a flow of tears. It reddens litmus, is not inflammable, and does not detonate when mixed with hydrogen or oxygen. Its ſolution in water does not precipitate nitrate of ſilver, nor barytes water. The alkalies abſorb it rapidly, but it requires an exceſs of them to deſtroy its odour completely. It throws down iron from its ſolution of a green colour. But ſome of its compounds appear of a very permanent nature. Gay Luſſac has ſhewn that this acid is a compound of one atom or volume of cyanogen, and one atom or volume of chlorine, united together without change of bulk. Hence it will be compoſed *per cent.* of

Cyanogen - -	41.93
Chlorine - - -	58.07
	100.00

And its ſpecific gravity in a ſtate of vapour will be 2.152.

Hydrocyanic Acid. — This was formerly denominated Pruſſic *Acid;* which ſee. Hydrocyanic acid may be prepared in the manner pointed out in the above article; but the method more lately recommended by Gay Luſſac conſiſts in decompoſing the pruſſiate of mercury by means of muriatic acid in a retort with heat. The products are to be paſſed through a tube two feet long, the firſt one-third of whoſe length is to be filled with fragments of marble, to retain the muriatic acid that may come over, and the remaining two-thirds with dry muriate of lime. A ſmall receiver covered with ice is to be adapted to the end of this tube in which the hydrocyanic acid may be collected on application of a moderate heat to the retort. The properties of this acid are correctly deſcribed under Pruſſic *Acid.* It is a moſt virulent poiſon. From Gay Luſſac's experiments, it appears to be compoſed of one atom or volume of cyanogen, and one atom or volume of hydrogen, united together without condenſation. Hence it is compoſed *per cent.* of

Cyanogen - - -	96.3
Hydrogen - - -	3.7
	100.0

And the ſpecific gravity of its vapour will be .9367.

Hydrocyanic acid cannot be preſerved for any length of time without undergoing decompoſition, ammonia is formed, and a quantity of charry matter is depoſited. Iodine volatilized in this acid ſuffers no change. Oxygen decompoſing it with combuſtion. Chlorine diſplaces the hydrogen, and forms chlorocyanic acid. Neither azote, hydrogen, carbon, boron, ſilica, nor phoſphorus, have any known action upon it. Sulphur decompoſes it, appearing to diſplace the hydrogen and combine with the cyanogen, and thus forming ſulphocyanic acid. Potaſſium, ſodium, potaſh, ſoda, and barytes, combine with the cyanogen and liberate the hydrogen. The vapour of hydrocyanic acid is decompoſed when paſſed through red-hot iron or platina ; alſo when paſſed through the peroxyd of copper. The peroxyd of manganeſe completely abſorbs the vapour of hydrocyanic acid in a few hours, water is formed, but cyanogen is not evolved. When the red oxyd of mercury is heated in hydrocyanic acid vapour, ſo much heat is evolved from the violent action that takes place that the compound is deſtroyed. If heat be not applied, the vapour is abſorbed by the oxyd, and when the compound is afterwards ſubmitted to heat, water is diſengaged, and the cyanide, or *pruſſiate* of mercury, as it was formerly termed, is left behind. See further under Pruſſic *Acid.*

Sulphocyanic Acid. — This is the *ſulphuretted chyazic* acid of Mr. Porrett, who diſcovered it in 1808. It may be formed by diſſolving one part of ſulphuret of potaſh in water, and boiling in this ſolution three or four parts of pruſſian blue, added at intervals. Sulphuret of iron is formed, and a colourleſs neutral liquid containing a conſiderable quantity of ſulphocyanic acid combined with potaſh. This liquid is then to be rendered decidedly acid by ſulphuric acid, and the mixture kept at the boiling point for ſome time. When cold, a little peroxyd of manganeſe is to be added, which will give to the ſolution a fine crimſon colour. This crimſon liquid is to be filtered, and a ſolution compoſed of two parts of the perſulphate of copper and three of the protoſulphate of iron is to be added, till the crimſon colour diſappears. A copious white precipitate, compoſed of ſulphocyanic acid and protoxyd of copper, takes place. The copper may be ſeparated by boiling with a ſolution of potaſh, and the ſulphocyanate of potaſh thus formed afterwards decompoſed by ſulphuric acid ; the ſulphocyanic acid may be then obtained by diſtillation in a retort. If any ſulphuric acid adheres to it, this is to be ſeparated by a little carbonate of barytes.

Sulphocyanic acid thus formed is a tranſparent colourleſs liquid, having an odour as ſtrong, and ſomewhat reſembling acetic acid. Its ſpecific gravity when moſt concentrated was 1.022. According to Mr. Porrett's analyſis, it is compoſed of

Sulphur - - -	65.2
Hydrocyanic acid -	34.8
	100.0

Dr. Thomſon ſeems inclined to conſider this acid as compoſed of cyanogen and ſulphur, but it is probable that Mr. Porrett's view of its compoſition will be hereafter found correct.

The *ſulphocyanates* of potaſh, ſoda, ammonia, barytes, ſtrontian, lime, and magneſia, are all deliqueſcent ſalts ſoluble in alcohol. The ſulphocyanate of ſoda, lime, barytes, and ſtrontian, are capable of cryſtallizing, the others are not. The ſulphocyanate of alumina is not deliqueſcent, and readily cryſtallizes. The ſulphocyanate of the protoxyd of iron is colourleſs, and very ſoluble. The ſulphocyanate of the peroxyd of this metal is of a beautiful crimſon colour, deliqueſcent, and does not cryſtallize, and this is one of the moſt ſtriking characteriſtics of this acid. The ſulphocyanate of the peroxyd of copper is a white powder inſoluble in water and moſt acids. The other ſalts are not remarkable, and conſequently poſſeſs little intereſt. The following is a ſhort account of ſome of the ſalts formed by this acid.

Ferrocyanic Acid; the Ferruretted Chyazic Acid of Mr. Porrett its Diſcoverer. — This is the acid which combines with different baſes, and forms what were formerly denominated *triple pruſſiates*, iron being ſuppoſed to form part of their baſe, whereas Mr. Porrett has demonſtrated that this metal forms a conſtituent of the acid itſelf. This acid may be obtained by the following ſimple proceſs: — Diſſolve in cold water any quantity of the *triple pruſſiate of barytes*, and for every ten grains of the ſalt add about 2.5 grains of real ſulphuric acid, agitate the mixture and ſet it aſide ſome time. The barytes will be precipitated in union with the ſulphuric acid, and leave the ferrocyanic acid in ſolution in the water. When obtained, it has a pale lemon colour, and is deſtitute of ſmell. It is decompoſed by a gentle heat and expoſure to a ſtrong light, hydrocyanic acid being formed, and the white triple pruſſiate of iron depoſited. When combined with the different baſes, it forms at once the ſalts formerly termed triple pruſſiates. It diſplaces acetic acid from all its combinations without heat, and diſplaces all other acids when it forms inſoluble compounds with the baſes to which they were united. Mr. Porrett, from his analyſis, concludes that this acid is compoſed of

Hydrocyanic acid - -	63.79
Black oxyd of iron - -	36.21
	100.00

Dr. Thomſon, however, from analogy, is diſpoſed to conſider it as a compound of cyanogen and iron, but it is probable that Mr. Porrett's views are correct. Moſt of the *ferrocyanates* have been already deſcribed under the different baſes, by the old name of the *triple pruſſiates*. For the moſt important of theſe, or the *triple pruſſiate* of *iron*, ſee IRON and PRUSSIAN *Blue*.

CYATHODES, in *Botany*, κυαθωδης, *cup-like*, alluding to the ſhape of the nectary.—Labill. Nov. Holl. v. 1. 57. Brown Prodr. Nov. Holl. v. 1. 539.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eſſ. Ch. Calyx five-cleft, with numerous ſcales at the baſe. Corolla funnel-ſhaped; tube ſcarcely longer than the calyx, naked and ſmooth within; limb ſpreading. Filaments within the tube. Drupa pulpy. Nut with five or ten cells.

Stem ſhrubby, erect, branched, ſometimes almoſt arboreſcent. *Leaves* ſtriated at the back. *Flowers* axillary, erect, or ſlightly drooping, ſmall. *Nectary* a five-toothed cup-ſhaped diſk, beneath the *germen*.

Mr. Brown differs from Labillardiere in his ideas of the ſpecies which properly belong to this genus. He defines ſix New Holland ſpecies. 1. *C. glauca*, Labill. t. 81; 2. *C. ſtraminea*; 3. *C. dealbata*. All theſe have ſome degree of hairineſs on the *corolla*. 4. *C. parvifolia*; 5. *C. oxycedrus*, (Styphelia oxycedrus, Labill. t. 69.); and 6. *C. abietina*, (Styphelia abietina, Labill. t. 68.) Theſe have a ſmooth *corolla*. *Ardiſia aceroſa*, Gærtn. t. 94, belongs to this ſecond ſection, and Mr. Brown has ſeen three South-ſea ſpecies in ſir Joſeph Banks's herbarium.

The preſent genus ſtands between MELICHRUS and LISSANTHE; ſee thoſe articles.

CYATHUS, κυαθος, *a cup*, Perſ. Syn. Fung. 236, a genus of rather ſmall *Fungi*, to which ſome botaniſts have given a ſtill more expreſſive name, *Nidularia*, (ſee Sowerb. Fung. t. 29.) The whole plant conſiſts of a leathery cup, containing ſeveral lenticular bodies, ſuppoſed to contain the ſeeds, and all together reſembling a bird's neſt with eggs. Perſoon has ſeven ſpecies.

CYCLOPIA, from κυκλος, *a circle*, and πους, *a foot*, becauſe of the circular fold round the ſtalk of the legume — Venten. Dec. Gen. Nov. 8. Brown in Ait. Hort. Kew. v. 3. 5. (Ibbetſonia; Sims in Curt. Mag. 1259.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-cleft, unequal; intruded at the baſe. Corolla papilionaceous; ſtandard furrowed lengthwiſe; wings with a tranſverſe plait. Stamens deciduous. Stigma bearded at one ſide. Legume compreſſed, with many ſeeds.

1. C. *geneſtoides*. Narrow-leaved Cyclopia. Ait. n. 1. (Sophora geniſtoides; Linn. Sp. Pl. 534. Podalyria geniſtoides; Willd. Sp. Pl. v. 2. 502. Ibbetſonia geniſtoides; Curt. Mag. t. 1259. Gompholobium maculatum; Andr. Repoſ. t. 427.)—Leaflets awl-ſhaped, pointleſs as well as the calyx. Bracteas oblong-ovate, ſhorter than the flower-ſtalks. Young branches ſmooth.—Native of the Cape of Good Hope. A buſhy *ſhrub*, denſely clothed with ternate, ſeſſile, narrow, ſmooth *leaves*. The *flowers* are axillary, large, yellow, with crimſon ſtreaks at the baſe of the *ſtandard*.

Of the remaining ſpecies we have no account.

CYNODON, from κυων, *a dog*, and οδων, *a tooth*, a genus founded by ſome authors on the *Panicum Dactylon* of Linnæus, a graſs known in moſt of the temperate or warm parts of the globe, to which Mr. Brown adds two tropical New Holland ſpecies. See his Prodr. v. 1. 187. This genus is cloſely related to the *Chloris* of Swartz. See PANICUM, at the end of ſect. 1. of that article.

CYNTHEANA, in *Geography*, a town of Kentucky, in Harriſon county, containing 369 inhabitants, of whom 116 are ſlaves.

CYRTOSTYLIS, in *Botany*, from κυρτος, *curved*, or *convex*, and στυλις, *the ſtyle*, or *column*.—Brown Prodr. Nov. Holl. v. 1. 322.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ringent, pointleſs. Petals ſpreading, nearly equal to the lower calyx-leaves. Lip diſſimilar, direct, flat, obtuſe, undivided, with two calloſities at the baſe. Anther a terminal permanent lid; the cells cloſe together. Maſſes of pollen two in each cell, powdery, compreſſed.

1. C. *reniformis*.—Gathered by Mr. Brown, at Port Jackſon, New South Wales. Habit like ACIANTHUS, (ſee that article,) to which this plant is perhaps too near akin. *Leaf* kidney-ſhaped, many-ribbed. *Flowers* generally turned, or, in one ſenſe, reverſed. MALAXIS *lilifolia* (ſee that article, n. 11.) is thought by Mr. Brown to approach this plant in ſtructure of *flowers*, though different in habit. We have already obſerved how imperfectly that ſpecies, with our *Cordifolia* and *Loeſelii*, anſwer to *Malaxis*.

CYSTANTHE, from κυϛις, *a bladder*, and ανθη, *a flower*, expreſſing the appearance of the corolla.—Brown Prodr. Nov. Holl. v. 1. 555.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eſſ. Ch. Calyx leafy. Corolla cloſed, like a lid, ſplitting tranſverſely; the torn baſe permanent. Stamens inſerted into the receptacle, permanent. Nectariferous ſcales none. Capſule with many ſeeds; receptacles pendulous from the top of the central column.

1. C. *ſprengeliana.*—Native of Van Diemen's iſland. A *ſhrub*, reſembling *Sprengelia*, *Ponceletia*, and *Coſmelia*, except the *branches* being marked with annular ſcars after the fall of the *leaves*. A ſhort-leaved variety grows on the mountain tops, but on their ſhady ſides the plant bears more elongated, ſpreading, recurved *leaves*.

CYSTITIS. Inflammation of the bladder is rarely a primary diſeaſe, but generally comes on as a conſequence of ſome other affection in the neighbouring parts; or of lithotomy, accidental injuries, &c. The ſymptoms attending it are, tenſion and pain over the pubes, with a frequent deſire to make water, difficulty in voiding it, or a total retention, with teneſmus and fever.

The treatment recommended for Nephritis is here alſo applicable. In particular, veneſection, leeches to the hypogaſtric region, the warm bath, aperient medicines, and emollient clyſters, muſt be employed. When the bladder and peritoneum inflame after wounds, or the ſurgical operation of lithotomy, bliſters are often of great ſervice; but bleeding ſhould be firſt practiſed. In chronic inflammation and thickening of the bladder, the ſymptoms and pain may be allayed with anodyne emollient clyſters, which are far better than injections into that organ itſelf. Opium, cicuta, hyoſcyamus, the uva urſi, &c. with a perpetual bliſter, may alſo be tried.

CYSTOTOMY, Cystotomia, from κυστις, *the bladder*, and τεμνω, *to cut*, the operation of cutting into the bladder. See Lithotomy.

D.

Vol. XI.

DAGESTAN, l. 2, after Aſia, inſert—almoſt entirely mountainous, as its name implies.

DAGOTI. See Gauthier.

DALIBARDA, in *Botany*, a genus originally dedicated by Kalm and Linnæus to M. Dalibard, author of the *Floræ Pariſienſis Prodromus*, claſſed in the Linnæan method.—Linn. Gen. ed. 5. 217. Sp. Pl. ed. 1. 491.—It was afterwards reduced to *Rubus*, but is ſince reſtored by Michaux and others. (See the two ſpecies under Rubus, n. 54 and 55.) The ſpecific names of Michaux are inadmiſſible, for ſeveral reaſons.

DALTON, col. 2, l. 15, after government, *dele* to houſes in l. 18, and inſert—in 1811, the pariſh of Dalton in Furneſs contained four townſhips; *viz.* Dalton having 156 houſes, and 643 inhabitants; Hawcoat having 107 houſes, and 583 inhabitants; Ireleth with 75 houſes, and 445 inhabitants; and Yarleſide with 68 houſes, and 403 inhabitants.

Dalton, in America, l. 3, *r.* 779; l. 7, for Grafton *r.* Coos; l. 8, for 62 *r.* 235.

DALTONIA, in *Botany*, ſo named in juſt commemoration of the Rev. James Dalton, F.L.S., an eminent Britiſh botaniſt.—Hook. and Tayl. Muſc. Brit. 80. t. 3.—However deſirous we may be to admit this genus, it affords a freſh proof in ſupport of the opinion we have always maintained, that the inner fringes of Moſſes give, in general, no ſound generic characters. Nothing can be leſs excluſively allied than the two ſuppoſed ſpecies, either in habit or character. They are, *Neckera ſplachnoides*, Engl. Bot. t. 2564; and *N. heteromalla*, Hedw. Crypt. v. 3. t. 15. Engl. Bot. t. 1180. The teeth of their *inner fringe*, it ſeems, want the ſlight connecting baſe, more or leſs viſible in ſeveral ſpecies of Neckera (ſee that article), and are attached, ſcarce viſibly, to the teeth of the *outer fringe*.

DAMASONIUM, Schreb. Gen. 242. Willd. Sp. Pl. v. 2. 276. Ait. Hort. Kew. v. 2. 331. Brown Prodr. Nov. Holl. v. 1. 344. See Stratiotes, n. 4.

DAMGAN. See Sumnum.

DAMPIERA, in *Botany*, dedicated by Mr. Brown, to the memory of William Dampier, the famous navigator, who firſt brought one of the ſpecies, *D. incana*, Br. n. 7, from the weſt coaſt of New Holland, along with ſeveral other ſpecimens preſerved at Oxford, the earlieſt botanical tribute from that remote country.—Br. Prodr. Nov. Holl. v. 1. 587.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Goodenoviæ*, Br.

Eſſ. Ch. Corolla two-lipped; tube ſplit at one ſide; ſegments of the upper lip auricled at their inner margin. Anthers cloſely combined. Cover of the ſtigma naked at the edge. Nut inferior, cruſtaceous, with a ſolitary kernel. Dry, downy, perennial *herbs*, or *ſhrubs*, with undivided, alternate, often toothed, coriaceous *leaves*. *Flowers* blue or *purple*. *Calyx* ſmall, or none. *Stamens* permanent, ſheathing the *ſtyle*.

Thirteen ſpecies, from various parts of New Holland, are deſcribed, among which is D. *ſtricta*, Goodenia ſtricta; Sm. Tr. of L. Soc. v. 2. 349. Willd. Sp. Pl. v. 1. 955.

DANA. Add—containing 625 perſons.

DANBURY, l. 3, *r.* 345; l. 8, *r.* 3606.

DANBY, l. 2, *r.* 1730.

DANTHONIA, in *Botany*, ſo named by M. De Candolle, after M. Danthon, a French botaniſt, is a genus ſeparated by that eminent writer, in his *Flore Françaiſe*, v. 3. 32, from *Avena*, on account of the three awns to the outer valve of the *corolla*, and, as far as we can perceive, for no other reaſon. He is however followed by Mr. Brown, Prodr. Nov. Holl. v. 1. 176, who defines eight New Holland ſpecies, and mentions having gathered ten or more in Southern Africa; but with a hint that this genus is too near to *Avena*, which it almoſt entirely reſembles. The *awn* being acknowledged very treacherous in graſſes, we would preſume to offer another hint, that ANISOPOGON (we wiſh to ſay nothing of DIPLOPOGON and AMPHIPOGON, ſee thoſe articles,) may poſſibly require reviſion.

DANVERS, l. *ult. r.* 3127.

DANVILLE, l. 6, *r.* 432 and 166; l. 9, *r.* 2240.

DAOURIAN. See NERTSKINSKOI.

DARABGERD. Add—Although a great part be in ruins, it is ſaid to contain between 15,000 and 20,000 inhabitants. It is beautifully ſituated on an extenſive plain, and ſurrounded with groves of orange and almon trees, the juice of which is exported to every part of Perſia. Its tobacco is highly eſteemed for its mildneſs.

DARBY. Add—The former containing 966, and the latter 1085 inhabitants.

DARIEN. Add—It contains 107 inhabitants, of whom 10 are ſlaves.

DARK-RAYS, l. 17, *r.* ſee HEAT and RAYS *of Heat.*

DARLINGTON, l. 6 from bottom, after Darlington, inſert—ward, conſiſting of three diviſions, contained 7184 houſes, and 39,001 perſons; 18,725 being males, and 20,276 females: and the townſhip of Darlington contained 818 houſes, and 5059 perſons; 2351 being males, and 2708 females.

DARLINGTON, in Carolina. Add—It contained, in 1810, 9047 inhabitants, of whom 2731 are ſlaves.

DARRYFIELD. Add—See DEERFIELD.

DARTAN, in *Rural Economy*, a kind of ſcabs or ulcers to which lambs are ſubject, and which extending to the mouth often prove fatal. The remedy propoſed is waſhing the ſores with vinegar, and applying a ſalve made with equal parts of tar and hog's-lard.

DARTFORD, col. 1, l. *ult. r.* 1811; col. 2, l. 1, *r.* 526 and 3177.

DARTMOUTH, l. 31, after houſes, inſert—in the pariſhes of St. Petrox, St. Saviour, and Townſtall, which form the borough of Clifton Dartmouth Hardneſs, was 364 houſes, and that of inhabitants 3595.

DARTMOUTH, in America, l. 9, for 2660 *r.* 3219.

DARWINIA, in *Botany*, in memory of the late ERASMUS DARWIN, M.D. the elegant poet, and ingenious botanical phyſiologiſt; ſee that article.—Rudge Tr. of Linn. Soc. v. 11. 299.—Claſs and order, *Decandria Monogynia.* Nat. Ord. . . . .

Eſſ. Ch. Calyx none. Corolla tubular, funnel-ſhaped, tumid, with five marginal imbricated ſegments. Stamens concealed, inſerted in two rows into the throat. Anthers kidney-ſhaped. Germen ſomewhat oblique. Style prominent. Stigma ſimple.

1. D. *faſcicularis.* Ibid. t. 22.—Found in New South Wales, by ſir Joſeph Banks and Dr. Solander. A branched *ſhrub*, with crowded needle-like *leaves*, and terminal denſe tufts, of elegant, ſmall, red *flowers.*

DASYPOGON, from δασυς, *thick and briſtly*, and πωγων, *a beard.*—Brown Prodr. Nov. Holl. v. 1. 263.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Junceæ?* Br.

Eſſ. Ch. Calyx inferior, tubular, three-cleft. Petals three, with long claws, connected with the ſtamens. Anthers incumbent. Stigma ſimple. Capſule of one cell, not burſting, inveſted with the hardened calyx.

1. D. *bromeliifolius.* Br. n. 1. Terr. Auſtr. 76. t. 8.—Found on the ſhores of King George's ſound, New Holland. *Herb* one and a half or two feet high, ſomewhat ſhrubby, with rigid, ſimple, ſharply and finely toothed *leaves. Flowers* in a denſe, globular, briſtly head. The figure ſeems to exhibit three *ſeeds.*

DATOLITE. See MINERALOGY, *Addenda.*

DAVENTRY, l. 2, *r.* Fawſley; l. 4 and 5, inſert—51 Geo. III., 534 houſes, and 2758 inhabitants.

DAVID'S, ST. col. 2, l. 3, inſert after act—51 Geo. III. In 1811, the number of houſes for the pariſh, containing four hamlets, was 437, and that of inhabitants 1816.

DAVIDSON, l. 2, inſert—Weſt Tenneſſee; l. 6, *r.* 15,608, and 6305.

DAUM, or DAM, a copper coin in India, equal in value to the fourth part of a rupee.

DAUPHIN, in America, l. 6, for nine *r.* fifteen; l. 8, for 22,270 *r.* 31,883, of whom, in 1810, 26 were ſlaves.

DAWLISH. Add—By the returns in 1811, the pariſh of Dawliſh contained 328 houſes, and 1882 perſons.

DAWSONIA, in *Botany*, a new and moſt curious genus of Moſſes, dedicated, by Mr. Brown, to our valued friend Mr. Dawſon Turner, an eminent Engliſh botaniſt, particularly diſtinguiſhed by his cryptogamic writings.—Br. Tr. of Linn. Soc. v. 10. 316.—Claſs and order, *Cryptogamia Muſci.* Nat. Ord. *Muſci.*

Eſſ. Ch. Fringe a tuft of very numerous, ſtraight, equal hairs, originating from the central column, as well as from the mouth of the capſule. Outer veil of entangled hairs: inner rough at the ſummit. Capſule flat at one ſide.

1. D. *polytrichoides.* Br. t. 23. f. 1.—Found by Mr. Brown, on the ſhady banks of rivers, at the foot of the mountains, near Port Jackſon, New South Wales. This moſs exactly reſembles ſome of our larger ſpecies of POLYTRICHUM, (ſee that article,) while the figure of the *capſule* approaches *Buxbaumia.* The *fringe* is totally unlike every thing previouſly known. The *leaves* are linear, flat, fringed with ſharp teeth.

DAYTON. Add—It contains 1746 perſons.

DEAL, col. 3, l. 14, *r.* 7351, and 1340.

DEAN, MICHEL. In 1811 the pariſh contained 121 houſes, and 535 perſons; *viz.* 270 males, and 265 females: 31 families being employed in agriculture, and 77 in trade, &c.

DEBENHAM, l. *ult. r.* 167 and 1224.

DECADIA, in *Botany*, a tree of Amboina and Cochinchina, ſo named by Loureiro on account of its ten petals.—Loureir. Cochinch. 315. (Arbor aluminoſa; Rumph. Amb. v. 3. 160. t. 100. Loureiro moreover cites Bobu; Burm. Zeyl. 26, which is alſo Laurus ferrata, floribus ſpicatis, ex foliorum alis provenientibus; ibid. 139. t. 62; Eugenioides; Linn. Zeyl. 192: but this does not agree with the plant of Rumphius.)—Claſs and order, *Icoſandria Monogynia*, according to Loureiro, but by his deſcription it belongs to *Polyandria.* Nat. Ord. *Guttiferis affine.* It ſeems nearly allied to *Elæocarpus.*

Gen. Ch. *Cal.* Perianth of three permanent, roundiſh, hairy, keeled, ſpreading, unequal leaves. *Cor.* Petals ten, nearly ovate, ſomewhat ſerrated, erect, longer than the calyx; the outer ones largeſt. *Stam.* Filaments about 30, almoſt as long as the petals, into whoſe baſes they are inſerted; anthers two-lobed, roundiſh, permanent. *Piſt.* Germen roundiſh, ſuperior; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma rather thick. *Peric.* Drupa ovate, rugged, ſmall. *Seed* an ovate nut, of three cells.

Eſſ. Ch. Calyx of three leaves, inferior. Petals ten. Drupa with a nut of three cells.

1. D. *aluminoſa*, called in Cochinchina *Cây Deung ſe*, is the only ſpecies. This is a middling-ſized *tree*, with a ſmooth bark and ſpreading branches. *Leaves* alternate, ſtalked, lanceolate, ſerrated, ſmooth, of a bright green.

Flowers in ſmall, nearly ſimple, cluſters, about the ends of the branches, white, minute. Rumphius relates that the bark and leaves, which may be preſerved dry for the purpoſe, are of great uſe, inſtead of alum, in dyeing, to improve and fix the red colours afforded by ſeveral Indian woods and roots.

DECAGON. Add—See Dodecagon.

DECANDRIA, in *Botany*, from δεκα, *ten*, and ανηρ, *a man*, the tenth claſs of the ſexual or artificial ſyſtem of Linnæus, containing ſuch plants as have ten ſeparate or diſtinct ſtamens, in the ſame flower with the piſtil. Hence it admits ſeveral papilionaceous plants ſo circumſtanced, notwithſtanding their natural affinity to others which belong to the ſeventeenth claſs, *Diadelphia*, the latter containing only ſuch as have ſome ſort of union or combination in their filaments, and thoſe filaments are moreover of a peculiarly flat membranaceous ſtructure, altogether different from thoſe of proper decandrous flowers. (See Diadelphia.) The tenth claſs is divided into five orders, and compriſes various natural tribes or families, many of which have allies in other parts of the ſyſtem, and ſeveral of the genera have ſpecies whoſe parts of fructification are irregular in number.

DECASPORA, from δεκα, *ten*, and σπορα, *ſeed*.—Brown Prodr. Nov. Holl. v. 1. 548.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*. Br.

Eſſ. Ch. Calyx with two ſcales at the baſe. Corolla bell-ſhaped; limb looſely bearded. Stamens prominent. Berry with ten ſeeds.

A genus of elegant *ſhrubs*, found on the ſouth coaſt of New Holland, with ſcattered ſtalked *leaves*, and terminal drooping *ſpikes* of red *flowers*. *Berries* violet.

1. D. *diſticha*, (Cyathodes diſticha; Labill. Nov. Holl. t. 82.), and 2. D. *thymifolia*, are all the ſpecies mentioned.

DEDDINGTON. In 1811, the pariſh contained 252 houſes, and 1296 perſons; 635 being males, and 661 females.

DEDHAM. In 1811, the pariſh contained 264 houſes, and 1432 perſons; 697 being males, and 735 females.

DEEPING-Market. In 1811, the pariſh contained 166 houſes, and 899 perſons; 426 being males, and 473 females.

DEER, in America, l. 2, *r*. 674. Add—Alſo, a townſhip of Weſtmoreland county, in Pennſylvania, having 2380 inhabitants.

Deer *Creek*, a town of Ohio, in the county of Pickaway, having 853 inhabitants.

Deer *Iſle*, col. 2, l. 1, *r*. 1057.

DEERFIELD, l. 10, *r*. 1570; l. 16, *r*. 1851. Add—Alſo, a town of Ohio, in Portage county, having 394 inhabitants.—Alſo, a town of Ohio, in Roſs county, having 629 perſons.—Alſo, a town of Ohio, in Warren county, having 1181 perſons.

DEERING, l. 3, *r*. 1363.

DEERINGIA, in *Botany*, in memory of Charles Deering, M. D., author of the *Flora Nottinghamenſis*, a botaniſt commended by Dillenius.—Brown Prodr. Nov. Holl. v. 1. 413.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Amaranthi*, Juſſ.

Eſſ. Ch. Calyx in five deep ſegments. *Cor*. none. Stamens united by an entire membrane. Anthers of two cells. Style deeply three-cleft. Berry ſuperior, with many ſeeds.

1. D. *celoſioides*. Br. n. 1. (Celoſia baccata; Retz. Obſ. faſc. 5. 23. Willd. Sp. Pl. v. 1. 1202.)—Native of New Holland and the Eaſt Indies. A ſmooth weak *ſhrub*, with alternate *leaves*. *Spikes* axillary and terminal. *Bracteas* three to each flower. *Fruit* pulpy, tumid.

DELAGOA, col. 2, l. 8, *r*. Kaffers.

DELAWARE. Add—See United States.

Delaware *County*, l. 4, *r*. 14,734.—In New York, l. 2, *r*. 20,303 inhabitants, 55 in 1810 being ſlaves.

Delaware *Townſhip*, l. 2, *r*. 472. Add—Alſo, a townſhip in Mercer county, in Pennſylvania, having 218 inhabitants.—Alſo, a county of Ohio, containing ſeven townſhips, and 2000 inhabitants.—Alſo, a townſhip of the ſame county, having 200 inhabitants.

DELI, a river of Perſia, in Schirvan, which has its ſource in the Leſgean hills, and diſembogues into the Caſpian ſea, about 20 miles S. of the Samur.

DELMER, a townſhip of Tioga county, in Pennſylvania, having 884 inhabitants.

DELOS, col. 6, l. 21, *r*. ruin.

DEMBEA, col. 2, l. 16, *r*. Gorgora.

DE MURIS, John, for Muris, John de.

DENBIGH, col. 2, l. 45 and 46, *r*. 617 and 2714.

DENBIGHSHIRE, col. 2, l. 22, *r*. and 13,078 houſes, inhabited by 64,240 perſons; 31,129 being males, and 33,111 females: of whom 3447 families are employed in trade and manufactures, and 7973 in agriculture.

DENMARK, a town of America, in the diſtrict of Maine, and county of Oxford, containing 436 inhabitants.

DENNIS, l. 4, *r*. 1739.

DEPTFORD, col. 3, l. 24, *r*. 1811, 19,833; l. 25, *r*. 3463.

Deptford, in America, l. 2, add—containing 2978 inhabitants.

DERAGUZ, a diſtrict of Khoraſſan, which, as well as that of Cotchung, is ſituated between Meſhed and Merv. Cotchung is governed by an independent chieftain, who can bring into the field 12,000 men, and who reſides in the town of Cotchung, 23 furſungs from Meſhed. The diſtrict of Deraguz touches on the W. the dependencies of Kelat; on the N. the country of the Turkomans of Tak, ſometimes called Attok; and on the E. a branch of the Aſhdur Koh. It is the property of Lutf Ali Khan, whoſe ſubjects are reckoned the braveſt and moſt polite of the natives of Khoraſſan; and the ſoil which they inhabit is ſo fruitful, that dry grain yields a hundred, and rice four hundred fold.

DERBANE, a beautiful little river which riſes in the ſtate of Louiſiana, and has its principal ſource in N. lat. 32° 50′. W. long. 93° 10′, and purſues nearly an eaſtern courſe of 60 miles, entering Ouachitta from the weſt. It is navigable about one-half of its courſe for large boats. Its water, which is very pure, is ſupplied from numerous ſprings by many creeks, that are bordered by fine land.

DERBY, col. 6, l. 5 from the bottom, *r*. 2644, and 13,043.

Derby, in America, in the cenſus of 1810, probably called Derley by miſtake. It has 114 inhabitants.—L. *ult*. *r*. 2051. Add—Alſo, a townſhip of Ohio, in Madiſon county, having 257 inhabitants.—Alſo, a townſhip of Ohio, in the county of Pickaway, having 475 inhabitants.

Derby. See Darby.

DERBYSHIRE, l. 12 and 13, *r*. 35,658, and 185,487.

DEREHAM, East, l. 4 and 5, *r*. 551 houſes, and 2888 inhabitants.

Dereham, *Weſt*, a pariſh in the hundred of Clackcloſe, having 58 houſes, and 428 inhabitants.

DERLEY. See Derby.

DERRY, in America, l. 4, *r*. 2431; l. 5, 1341; l. 7, 2283; l. 8, 2380.

DESERT ISLAND, *Mount*. Add—Mount Deſert contains 1047 inhabitants. See EDEN.

DESMANTHUS, in *Botany*, ſo called by the late profeſſor Willdenow, who firſt ſeparated the genus we are about to deſcribe from MIMOSA; ſee that article, and ACACIA of the preſent volume. This name ſeems to be compoſed of δεσμα, *a bandage*, and ανθος, *a flower;* alluding perhaps to the ſtrap-like filaments of the neutral flowers, common to every ſpecies.—Willd. Sp. Pl. v. 4. 1044. Ait. Hort. Kew. v. 5. 457.—Claſs and order, *Polygamia Monoecia;* or rather perhaps *Decandria Monogynia.* Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, with five teeth. *Cor.* of one petal, funnel-ſhaped, regular, more or leſs deeply five-cleft, ſometimes of five petals. *Stam.* Filaments ten, rarely but five, capillary, equal, very long; anthers incumbent, oblong. *Piſt.* Germen ſuperior, ovate-oblong; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma dilated, abrupt. *Peric.* Legume oblong, compreſſed, of two flat valves, and one cell, ſeparated into ſeveral by tranſverſe oppoſite ſtrictures in the valves. *Seeds* numerous, oblong, ſtalked. Several flowers, below the perfect ones, are neuter, having dilated lanceolate *ſtamens*, without *anthers*, no efficient *piſtil*, and ſometimes no *corolla.*

Eſſ. Ch. Calyx five-toothed. Corolla deeply five-cleft. Stamens definite. Piſtil one. Legume of two valves. Some flowers neuter, with dilated, flat, abortive ſtamens.

Obſ. Although the definition of this genus is not ſo ſtriking as could be wiſhed, it ſeems to us tolerably natural, being diſtinguiſhed from *Acacia* by the definite number of its *ſtamens*, always twice as many as the diviſions of the *corolla*, and by the preſence of ſeveral neuter flowers, in the lower part of each tuft, or ſpike, known by their dilated, ſtrap-ſhaped *filaments*, deſtitute of *anthers*, and more or leſs different in colour from the perfect flowers. We are neverthele ſs aware, that generic characters founded on ſuch anomalies or imperfections, are always the leaſt ſolid; theſe neutral flowers, apparently created for no end, being doubtleſs liable to become, according to circumſtances, perfect in one organ of impregnation or the other. The habit of the genus before us is pretty uniform, having doubly pinnate *leaves*, with numerous, oblong, obtuſe, crowded *leaflets;* axillary, ſolitary, ſtalked, oblong *ſpikes*, of crowded taſſel-like *flowers;* and flat, generally broad, elliptic-oblong, ſmooth *legumes*, whoſe tranſverſe ſtrictures make them reſemble the jointed fruit of what now remains as *Mimoſa*, but their valves do not ſplit at thoſe ſtrictures. As only ten ſpecies of *Deſmanthus* are deſcribed, we ſhall give the whole. They are all of tropical origin; partly herbaceous, and ſometimes annual, with ſenſitive leaves; partly ſhrubby.

Sect. 1. *Without thorns.*

1. D. *lacuſtris.* Lake Deſmanthus. Willd. n. 1. ("Mimoſa lacuſtris; Humb. and Bonpl. Pl. æquinoct. t. 16.") —"Thorns none. Firſt diviſion of the leaves of three pair; ſecond of many pair. Spikes ovate. Stalks bracteated. Stem round, creeping."—Native of marſhes in South America. *Root* perennial. *Stem* herbaceous. Firſt diviſions of the *leaves* an inch and a half long. *Leaflets* numerous, linear, obtuſe at each end. *Spikes* barren in their lower part, each ſupported by a ſtalk longer than the foliage, furniſhed with two or three ovato-lanceolate deciduous *bracteas. Legume* oblong, pointed, with from four to ſix *ſeeds.* Very nearly related to the following. *Willdenow.*

2. D. *natans.* Floating Deſmanthus; or Aquatic Senſitive. Willd. n. 2. Ait. n. 1. Andr. Repoſ. t. 629. (Mimoſa natans; Vahl Symb. v. 3. 102. Roxb. Coromand. v. 2. 11. t. 119. M. orientalis non ſpinoſa, rarioribus ramis, floribus ſpicatis; Pluk. Almag. 252. Phyt. t. 307. f. 4. Neptunia oleracea; Loureir. Cochinch. 654. "Niti-todda-vaddi; Rheede Hort. Malab. v. 9. 35. t. 20.") —Thorns none. Firſt diviſion of the leaves of three pair; ſecond of many ſmooth-edged leaflets. Spikes oblong, interrupted. Stalks moſtly without bracteas. Stem round, floating, with tufted roots from the lower joints.—Native of freſh-water lakes, pools, and ſlow ſtreams, in the Eaſt Indies, Cochinchina, &c. Loureiro ſays it is cultivated in the laſt-mentioned country, as an ingredient in ſalads, being tender and agreeably ſweetiſh, though not very ſalutary to the ſtomach. The plants are tied to ſtakes, to prevent their being carried away with the ſtream. The *root* is annual, entirely floating, as well as the round, ſmooth, branched, leafy *ſtems*, whoſe lower joints ſend forth tufts of compound radicles, their interſtices being often ſwollen, or ſpongy, at one ſide, as if to render the herb more buoyant. *Leaves* alternate, ſtalked, doubly pinnate, ſmooth, bright green; ſecondary diviſions from one to two inches long, each of twelve or thirteen pair of elliptical, entire *leaflets*, which fold together ſlowly when touched; their edges ſmooth. *Stipulas* membranous, half-ovate, or heart-ſhaped, obtuſe. Common *flower-ſtalks* generally naked; ſometimes furniſhed with a *bractea* or two. *Spike* oblong, more or leſs crowded. *Corolla* greeniſh. Abortive *filaments* of the lower *flowers* large, lanceolate, yellow, very conſpicuous. *Legumes* five or ſix from each ſpike, an inch in length, purpliſh-brown, ſmooth, elliptic-oblong, pointed. *Seeds* oval, from four to eight, forming a central row, inſerted by a ſlender thread alternately to each margin of the legume. Kœnig ſent ſpecimens of the following to Linnæus, but not, as far as we can diſcover, of the preſent ſpecies; while the information he communicated regarded both ſpecies, which poſſibly he might originally confound, thinking the *triquetrus* a variety cauſed by growing out of the water. However this might be, his *natans* is certainly the preſent plant, to which alone that name can apply.

3. D. *triquetrus.* Triangular-ſtalked Deſmanthus. Willd. n. 3. (Mimoſa triquetra; Vahl Symb. v. 3. 102. M. natans; Linn. Suppl. 439.)—Thorns none. Firſt diviſion of the leaves of two or three pair; ſecond of many rough-edged leaflets. Stipulas pointed. Spikes globoſe. Stalks bracteated. Stems proſtrate; triangular in their upper part.—Native of the dry borders of fields at Tranquebar. *Kœnig* in the Linnæan herbarium. *Root* woody, perennial. *Stems* ſeveral, from a ſpan to a foot or more in length, herbaceous, proſtrate, rather zigzag, leafy, ſmooth, ſomewhat glaucous, ſcarcely branched; nearly round at the bottom, but triangular above. *Leaves* about half the ſize of the former, on much ſhorter ſtalks, and eſſentially diſtinguiſhed, if we miſtake not, by the roughneſs of their edges, cauſed by ſmall cloſe-preſſed briſtles. The *ſtipulas* are obliquely ovate, ribbed, with a tapering briſtly point, which we do not find in *D. natans. Flower-ſtalks* not much longer than the leaves, each bearing one or more broad claſping *bracteas. Spikes* ſhort and roundiſh. *Legumes* elliptic-oblong, obtuſe, with four, five, or ſix *ſeeds.*

4. D. *plenus.* Semi-double Yellow Deſmanthus. Willd. n. 4. Ait. n. 2. (Mimoſa plena; Linn. Sp. Pl. 1502. M. foliis duplicato-pinnatis, ſpicarum floribus inferioribus plenis, caule inermi procumbente; Linn. Hort. Upſ. 145. n. 3. M. non ſpinoſa, paluſtris et herbacea, procumbens, flore luteo pleno; Rel. Houſt. 10. t. 23. M. n. 2; Mill. Ic. v. 2. 122. t. 182. f. 2.)—Thorns none. Firſt diviſion of the leaves of three or four pair; ſecond of numerous oblong ſmooth-edged leaflets. Spikes ovate. Stalks bracteated.

Stem proſtrate, compreſſed. Stamens five.—Gathered in ſtagnant waters at Vera Cruz by Dr. Houſtoun, who ſent ſeeds to Miller. The latter records that the *ſtems*, though naturally floating, grew more erect when the plant was cultivated on dry ground. The *root* is annual, according to Willdenow, Aiton, and Linnæus, who had this ſpecies in the ſtove at Upſal. *Stems* herbaceous, ſmooth, a little zigzag, a foot or two in length, floating or decumbent, ſlightly branched. *Leaves* ſenſitive, larger than thoſe of *D. natans*. *Stipulas* acute, obliquely and broadly ovate. *Spikes* as large as Common Clover, yellow, recurved, on *ſtalks* nearly as long as the leaves, bearing two diſtant, ovate, ſheathing *bracteas*. *Stamens* but five, thoſe of many of the lower *flowers* changed to long lanceolate petal-like leaves, which give the flowers a double appearance, and render them truly ſo, according to the analogy of flowers in general. Hence the ſpecific name given by Linnæus; but this circumſtance is common to the whole genus of *Deſmanthus*, as above deſcribed. In this and ſimilar caſes it ſeems beſt to retain the original name, as indicating the firſt known ſpecies, and therefore the hiſtory of the genus. The *legume* is drawn by Houſtoun elliptic-oblong, ſlightly curved, with a furrow, or double edge, along the back. *Seeds* numerous, ovate. The *leaves* are ſenſitive in this and the three preceding.

5. D. *depreſſus*. Depreſſed Deſmanthus. Willd. n. 5.—“Thorns none. Firſt diviſion of the leaves of two pair; ſecond of eight or ten pair of linear obtuſe leaflets. Spikes capitate, of a few decandrous flowers. Legumes linear. Stem proſtrate.”—Found by Humboldt and Bonpland, in South America. *Root* woody, perennial. *Stems* ſeveral, from a ſpan to a foot long, diffuſe, ſmooth; branched and round at the bottom; obſcurely quadrangular above. *Spikes* ſtalked, without *bracteas*. *Legume* an inch and a half long, pointed, with many *ſeeds*. Akin to the two following, as to the ſhape of the *ſpike* and of the *legume*, though eaſily diſtinguiſhable by the ſpecific characters. *Willdenow*.

6. D. *diffuſus*. Proſtrate Deſmanthus. Willd. n. 6. Ait. n. 3. (Mimoſa pernambucana; Linn. Sp. Pl. 1502. M. inermis decumbens, foliis duplicato-pinnatis, ſpicis cernuis, floribus pentandris, inferioribus caſtratis; Linn. Hort. Upſ. 145. n. 4. M. americana pigra, ſiliquis longis anguſtis, allium olentibus; Pluk. Amag. 252. t. 307. f. 3.)—“Thorns none. Firſt diviſion of the leaves of four or five pair; ſecond of twelve pair. Spikes capitate, of a few pentandrous flowers. Legume linear. Stem proſtrate.”—Native of South America. *Stem* ſhrubby. Willdenow, who had examined dried ſpecimens, ſays this ſpecies is extremely ſimiliar to the following, but differs in having moſt commonly five primary diviſions in the *leaves*, a proſtrate *ſtem*, and only five *ſtamens*. We have never ſeen the preſent ſpecies, which probably has not appeared in the gardens ſince Miller's time, but we venture to transfer the ſynonym of Zanoni to the next, on account of the upright ſtem of his plant. Hence the Linnæan ſpecific name *pernambucana*, taken from Zanoni, becomes peculiarly unſuitable, and is fortunately changed by Willdenow.

7. D. *virgatus*. Upright Angular Deſmanthus. Willd. n. 7. Ait. n. 4. (Mimoſa virgata; Linn. Sp. Pl. 1502. Jacq. Hort. Vind. v. 1. 34. t. 80. M. ſpuria di Pernambuco, detta Mimoſa italica; Zanon. Iſt. 151. t. 60. M. inermis, foliis duplicato-pinnatis, ſiliquis linearibus glabris; Linn. Hort. Cliff. 209.)—Thorns none. Firſt diviſion of the leaves of four pair; ſecond of twelve pair. Spikes capitate, of a few decandrous flowers. Legume linear. Stem erect, angular.—Native of South America, where Jacquin obſerved it in various places; and not of the Eaſt Indies, Burmann's *M. virgata* being probably our *D. natans*, at leaſt according to the ſynonyms of Plukenet and Rheede, cited by that author. The late profeſſor Jacquin ſent ſeeds of this preſent ſpecies to Kew, in 1774, where it flowers in the ſtove in July and Auguſt. His plant is preciſely that of Linnæus, mentioned in the *Hortus Cliffortianus* as of American origin, but confounded with ſeveral other things in his *Fl. Zeylanica*, 216, n. 505. *D. virgatus* has an erect ſhrubby *ſtem*, with wand-like *branches*, angular when young, but leſs ſo as they become older. *Stipulas* briſtle-ſhaped, with a round auricle. Common *footſtalks* with a round depreſſed gland between the firſt pair of ſubdiviſions. *Leaflets* linear, obtuſe, fringed, glaucous beneath. *Flower-ſtalks* the length of the leaves, erect, with ſmall deciduous *bracteas* near the top. *Heads* ſlightly drooping while young, pale or whitiſh. Several of the lowermoſt *flowers* furniſhed with ten linear, very narrow, almoſt thread-ſhaped, abortive filaments, in the place of ſtamens. *Anthers* of the upper *flowers* roundiſh, yellow. *Legumes* about five from each head, almoſt erect, full two inches long, linear, not one-eighth of an inch broad, acute, thick-edged, ſmooth. *Seeds* very numerous, elliptic-oblong, obliquely diſpoſed in a central row. Miller's remark, cited by Willdenow, after Linn. Mant. 2. 503, does not belong to this ſpecies, and is excluded by Linnæus himſelf in his MSS. Probably it may relate to *D. plenus*.

8. D. *punctatus*. Spotted-ſtalked Deſmanthus. Willd. n. 8. Ait. n. 5. (Mimoſa punctata; Linn. Sp. Pl. 1502. M. fruteſcens media inermis, ſiliquis compreſſis falcatis et umbellatis, pedunculo longiſſimo; Browne Jam. 253. Aeſchynomene mitis prima; Comm. Hort. v. 1. 61. t. 31.)—Thorns none. Firſt diviſion of the leaves of four or five pair; ſecond of many. Spikes ovate. Flower-ſtalks bracteated at the baſe. Legume oblong, obtuſe, wavy.—Native of Jamaica, from whence it was introduced very early into the European ſtoves. Our ſpecimen was ſent by Dr. Browne to Linnæus. The *ſtem* is beſprinkled with ſmall callous points. *Branches* angular. *Leaves* a ſpan long, with a gland on the common *footſtalk* between the firſt pair of wings. *Leaflets* about twenty pair, ſenſitive, linear-oblong, ſmooth, obtuſe with a ſmall point. *Flower-ſtalks* ſcarcely ſo long as the leaves, each bearing, near the baſe, two large ovate, or heart-ſhaped, *bracteas*. *Spike* drooping, ovate, of numerous, crowded, pale *flowers*, the lower ones with thin lanceolate *petals*, in the place of the ten *ſtamens* of the more abundant upper ones. *Legumes* about three from each ſpike, ſtalked, horizontal, compreſſed, oblong, obtuſe at each end, with a ſmall terminal point; their length an inch and a half; breadth one-third of an inch. They betray an inclination to ſplit acroſs, like the true *Mimoſæ*. *Seeds* about twelve, ovate. This ſpecies does indeed, as Willdenow obſerves, much reſemble *D. plenus*; but is nevertheleſs much too different to be confounded therewith.

Sect. 2. *Thorny*.

9. D. *cinereus*. Aſh-coloured Deſmanthus. Willd. n. 9. Ait. n. 6. (Mimoſa cinerea; Linn. Sp. Pl. 1505. Roxb. Coromand. v. 2. 39. t. 174. M. n. 215; Linn. Fl. Zeyl. 96. Acacia ſpinoſa, ex alis ſpicata, foliis pennas avium referentibus; Burm. Zeyl. 3. t. 2. A. maderaſpatana, minutiſſimis foliis, aculeis ferocibus, alternis, frondoſa; cortice itidem cinereo; Pluk. Almag. 3. Phyt. t. 121. f. 5.)—Branches becoming ſolitary ſpines. Firſt diviſion of the leaves about nine pair; ſecond of many. Spikes ſolitary, cylindrical, drooping; tapering at the baſe. Legumes linear, curved.—Native of the Eaſt Indies; in foreſts and low barren lands, according to Dr. Roxburgh, who obſerves that the wood is remarkably hard, but,

owing to the ſmallneſs of the tree, of little uſe. Miller cultivated this plant at Chelſea in 1739, and it is marked by Mr. Aiton, as flowering in the ſtove about June and July. A low, irregular, rigid *ſhrub*, with a grey bark, and zigzag *branches*, whoſe ſhort, alternate, lateral ſhoots ſpread horizontally, and each finally becomes tipped with a hard ſharp thorn. Theſe branches bear very fine and delicate foliage, whoſe very minute oblong *leaflets* are ſmooth above, hairy at the back, and appear to be ſenſitive; their *common ſtalk* alſo is hairy. *Spikes* axillary, ſtalked, an inch or two long, ſwelling upward, obtuſe, denſe, and many-flowered. Perfect *flowers* numerous, yellow, with ten *ſtamens*, whoſe *anthers* are ovate, of two cells, and tipped with a ſmall round gland. The lower *flowers*, leſs numerous, are pale roſe-coloured, abortive, having ten linear, obtuſe, ſtrap-like leaves inſtead of ſtamens. *Legume* falcate, linear, compreſſed, but not flat, about three inches long, and one-fourth of an inch broad, ſmooth, obtuſe. *Seeds* ten to fifteen, oblong, yellow.

10. D. *divergens*. Spreading-branched Deſmanthus. Willd. n. 10. ("Ergett Dimmo; Bruce's Travels, v. 5. 34, with a plate.")—"Branches becoming ſolitary ſpines. Firſt diviſion of the leaves of eight pair; ſecond of many. Spikes in pairs, cylindrical, pendulous. Legume twiſted."—Native of Abyſſinia? A *ſhrub*, ſix feet high, with divaricated furrowed branches, beſprinkled with white warts. Firſt diviſions of the *leaves* from ſix to nine pair. *Leaflets* numerous, linear, angular at the baſe, and fringed at the edges. *Thorns* rigid, ſtraight, awl-ſhaped, ſometimes in pairs. *Legume* linear, contorted. Willdenow, who made this deſcription from a living ſpecimen, ſays the gardeners call this ſpecies *Mimoſa divaricata*. But what is ſo denominated in Donn's *Hort. Cant.* ed. 5. 240, comes from Carolina, and, as far as we can diſcover, does not occur in *Hort. Kew.* Bruce's figure above quoted was thought by Willdenow to anſwer exactly to his own garden ſhrub, except the want of thorns; but as theſe occur on the older branches only, they might be overlooked. We have not ſeen ſpecimens of either Bruce's or Willdenow's plant.

DETROIT. Add—The civil diſtrict of Detroit, which is one of the diviſions of the territory of Michigan, contains, by the cenſus of 1810, 2227 inhabitants, of whom 17 were ſlaves.

DEVAUXIA, in *Botany*, ſo named by Mr. Brown, in honour of M. Deſvaux, author of a diſſertation on the natural family of *Junci*, in the *Journal de Botanique*. M. Labillardiere had previouſly publiſhed this ſame genus under the appellation of *Centrolepis*, from κεντρον, *the centre*, and λεπις, *a ſcale;* which, giving an erroneous idea of the ſtructure of the flower, it was found neceſſary to change.—Brown Prodr. Nov. Holl. v. 1. 252. (Centrolepis; Labill. Nov. Holl. v. 1. 7.)—Claſs and order, *Monandria Polygynia*. Nat. Ord. *Reſtiaceæ*, Brown.

Gen. Ch. *Cal.* Sheath of two concave, keeled, permanent, alternate valves, claſping each other at the baſe, containing an indefinite number of flowers. *Cor.* of two oblong, membranous valves, ſometimes accompanied by ſmall acceſſory ſcales. *Stam.* Filament one, capillary, drooping, rather longer than the largeſt valve of the corolla; anther ſimple, oval. *Piſt.* Germens ſeveral, from three to twelve, ovate-oblong, ſuperior, inſerted into one ſide of a central oblong receptacle, and all turned one way; ſtyles as many, thread-ſhaped, either diſtinct at the bottom or combined, ſpreading or deflexed at the ſummit; ſtigmas linear, downy. *Peric.* Capſules as many as the germens, membranous, oval, of one valve and one cell, burſting along one ſide. *Seed* ſolitary, obovate, pendulous.

Eſſ. Ch. Sheath of two valves, with ſeveral flowers. Corolla of two membranous valves. Anther ſimple. Germens unilateral. Capſules burſting longitudinally, at one ſide. Seed ſolitary.

This genus, of which we have already ſpoken as akin to ALEPYRUM, (ſee that article,) conſiſts of ſmall herbaceous plants, growing in tufts, and reſembling the leſſer ſpecies of *Scirpus*. The *roots* are fibrous and tufted. *Stem* none. *Leaves* radical, briſtle-ſhaped, half ſheathing at the baſe. *Flower-ſtalks* radical, thread-ſhaped, undivided, naked. *Sheath* ſolitary, terminal, its valves either awned or not. Nine ſpecies are deſcribed by Mr. Brown, as follows.

Sect. 1. *Receptacle ſcaly.*

1. D. *pulvinata*. Cuſhion Devauxia.—Receptacle ſcaly. Styles ſix or ſeven, diſtinct. Sheath pointleſs; lower valve rather hiſpid; upper ſmooth. Leaves nearly as tall as the flower-ſtalks.—Gathered by Mr. Brown, in Van Diemen's iſland.

2. D. *Paterſoni*. Paterſon's Devauxia. (Centrolepis æmula; Rudge Tr. of Linn. Soc. v. 10. 284. t. 12. f. 2.)—Receptacle ſcaly. Styles eight or nine, diſtinct. Sheath pointed, many-flowered; upper valve nearly ſmooth; lower hiſpid. Adult flower-ſtalks hairy, as well as the leaves, which are only one-third as tall.—Gathered by Col. Paterſon and Mr. Brown, near Port Jackſon, New South Wales. *Leaves* very narrow, an inch long. *Flower-ſtalks* above two inches high. *Sheath* tumid, ſcarcely riſing above the *flowers*.

3. D. *ſtrigoſa*. Briſtly Devauxia.—Receptacle ſcaly. Styles from five to ſeven, diſtinct. Sheath pointed; both valves hiſpid. Adult flower-ſtalks ſmooth, thrice as long as the finely hiſpid leaves.—Found by Mr. Brown, on the ſouthern coaſt of New Holland.

Sect. 2. *Receptacle without ſcales. Sheaths hiſpid.*

4. D. *tenuior*. Slender Devauxia.—Receptacle naked. Styles four or five, combined at the baſe. Sheath almoſt pointleſs, briſtly as well as the leaves. Flower-ſtalk ſlightly hairy.—Found in the iſland of Van Diemen, by Mr. Brown.

5. D. *Billardieri*. Labillardiere's Devauxia. (Centrolepis faſcicularis; Labill. Nov. Holl. v. 1. 7. t. 1. C. cuſpidigera; Rudge Tr. of Linn. Soc. v. 10. 283. t. 12. f. 1.)—Receptacle naked. Styles two or three, combined at the baſe. Sheath briſtly; with awns nearly as long as the valves. Leaves rather hairy. Stalks ſmooth.—Native of Port Jackſon, as well as of Van Diemen's iſland. *Brown*, *Labillardiere*. The numerous briſtle-ſhaped *leaves* are about an inch and a half long, erect; thoſe which claſp the baſe of each *flower-ſtalk*, which is half as tall again, are toothed at their inner margin towards the baſe. *Valves* of the *ſheath* twice as tall as the *flowers*. *Corolla* toothed, obtuſe.

6. D. *exſerta*. Prominent-flowered Devauxia.—Receptacle naked. Styles from ſeven to ten, diſtinct. Sheath pointleſs, briſtly, not quite ſo long as the flowers. Stalks and leaves downy.—Gathered by Mr. Brown, in the tropical part of New Holland.

Sect. 3. *Receptacle without ſcales. Sheaths ſmooth.*

7. D. *Bankſii*. Bankſian Devauxia.—Receptacle naked. Styles from eight to ten. Sheath pointleſs, very ſmooth, many-flowered, membranous at the edges. Stalks three or four times the length of the leaves.—Gathered by ſir Joſeph Banks, in the tropical part of New Holland.

8. D. *puſilla*. Little Devauxia.—Receptacle naked. Styles ſix or ſeven. Sheath pointleſs, very ſmooth, membranous at the edges, with but few flowers. Stalks and

leaves both ſmooth, and nearly equal in length.—Obſerved by Mr. Brown, in the tropical part of New Holland.

9. D. *ariſtata.* Awned Devauxia.—Receptacle naked. Styles ſix or ſeven, combined at the baſe. Sheath ſmooth, with longiſh awns. Stalks two-edged.—Found by Mr. Brown on the ſouthern coaſt of New Holland.

Mr. Rudge, very commendably anxious to retain, if poſſible, Labillardiere's original generic name, has, by taking κεντρον for a *prickle*, as it undoubtedly means a *point*, or *ſharp ſpike*, made *Centrolepis* to expreſs *a prickly ſcale*, alluding to the hiſpid *ſheaths* of ſome ſpecies. But this is not appoſite, the ſcales, or glumes of the *flower*, to which the original name applied, being, in no ſenſe, pointed, or prickly; nor do we ſee that this name can be forced into any appropriate meaning, the *ſcales* being acknowledged on all hands not to be central.

DEVIZES, col. 2, l. *penult. r.* 696, and 3750.

DEVONSHIRE, col. 6, l. 11 and 12, *r.* 62,318, and 383,308.

DEW. To this article we ſhall ſubjoin ſome appropriate remarks, ſelected from an "Eſſay on Dew, &c." by the ingenious Dr. Wells, lately (*viz.* 1819) republiſhed in an edition of his works, to which is prefixed a Memoir of his life written by himſelf. To this author it occurred in 1784, that the formation of dew is attended with the production of cold. The ſame opinion was announced in 1788 by Mr. Wilſon of Glaſgow (vol. i. Edinb. Tranſ.), and alſo by Mr. Six of Canterbury (Phil. Tranſ. for 1788, and in a poſthumous work printed at Canterbury in 1794.) All theſe writers at firſt concurred in regarding the cold which accompanies dew as an effect of the formation of that fluid. Dr. Wells, however, upon mature conſideration of the ſubject, was led to ſuſpect that this opinion was erroneous; and his ſuſpicion was afterwards juſtified by a variety of obſervations and experiments. Although Dr. Wells agrees, in general, with Ariſtotle and other writers, and maintains that dew appears only on calm and ſerene nights, yet this opinion is not univerſally true; for he frequently found a ſmall quantity of dew on graſs, both on windy nights, if the ſky was clear or nearly ſo, and on cloudy nights, if there was no wind; but he never perceived dew on nights both cloudy and windy. Dew, he ſays, probably begins, in this country, to appear upon graſs, ſhaded from the ſun, during clear and calm weather, ſoon after the heat of the atmoſphere has declined; and it continues to form, in ſhaded places, after ſun-riſe; the interval between ſun-riſe and its ceaſing to form being conſiderably ſhorter than that between its firſt appearance in the afternoon and ſun-ſet. If the weather be favourable, however, more dew forms a little before, and in ſhaded places a little after ſun-riſe, than at any other time; whereas Muſchenbroeck aſſerts, that dew does not form after the ſun has riſen. Our author alſo maintains, in oppoſition to the opinion of M. Prieur, that dew, after it has once commenced, continues during the whole night, if the weather remain ſtill and ſerene. During nights that are equally clear and calm, whether they be longer or ſhorter, dew often appears in very unequal quantities; the quantity of moiſture in the atmoſphere ſerving to increaſe the production of dew; and, accordingly, in equally clear and calm nights, dew is more abundant ſoon after rain than during a long continuance of dry weather: it is alſo more abundant in Europe, and in ſome parts of Aſia and Africa, with ſoutherly and weſterly winds, than with thoſe which blow from the north and the eaſt. Another circumſtance upon which the quantity of dew depends, is the diminution of the weight of the atmoſphere; for though the falling of the mercury in the barometer is commonly attended with wind or clouds, both unfavourable to the production of dew, yet the greateſt dew obſerved by our author occurred while the barometer was ſinking. M. De Luc alſo has obſerved, that rain may be foretold when dew is uncommonly abundant in relation to the climate and ſeaſon. We have already obſerved, that dew is commonly more plentiful in ſpring and autumn than in ſummer, a fact which our author alſo has noticed; it is always very copious on clear and calm nights which are followed by miſty or foggy mornings; and on a clear morning which ſucceeds a cloudy night. Heat of the atmoſphere, if other circumſtances are favourable, occaſions a great formation of dew; and upon the ſuppoſition of the ſame clearneſs and ſtillneſs of the atmoſphere, more dew is formed between midnight and ſun-riſe than between ſun-ſet and midnight; the cold of the atmoſphere being greater in the latter than in the former part of the night. Our author's experiments ſerve to ſhew, that various differences with regard to ſituation, mechanical ſtate, and real nature of bodies, have a very conſiderable influence upon the production of dew. As to ſituation he obſerves, that whatever diminiſhes the view of the ſky, as ſeen from the expoſed body, diminiſhes the quantity of dew that is produced; thence the quantity is greater when the expoſure to the ſky is more complete. There are other circumſtances, regarding ſituation, which ſerve to augment or diminiſh the quantity of dew that is produced, when the ſubſtances that are uſed for indicating it are the ſame.

It is obſerved farther, that when other circumſtances are ſimilar, a difference in the mechanical ſtate of bodies has an effect with regard to the quantity of dew which they attract; and hence it is, that fine raw ſilk, fine unwrought cotton, and flax, were found to attract more dew than the wool employed by our author in his experiments; the fibres of wool being thicker than thoſe of the other ſubſtances juſt mentioned. Bright metals alſo attract dew much leſs powerfully than other bodies: this fact was obſerved by Muſchenbroeck and Dufay; but they erroneouſly aſſerted, that dew never appears on the upper ſurface of bright metals. There are others, and our author in particular, who have known dew to be formed on gold, ſilver, copper, tin, platina, iron, ſteel, zinc, and lead. This inaptitude of metals to attract dew is communicated to bodies of a very different nature, which touch or are near to them. Wool, ſays our author, laid upon a metal, will acquire much leſs dew than an equal quantity laid upon graſs in the immediate vicinity. It is maintained, that the upper ſurfaces of metals are moſt readily and moſt copiouſly dewed on thoſe nights and in thoſe parts of the night, during which other ſubſtances are the moſt readily and the moſt copiouſly dewed. All metals, our author remarks, do not reſiſt the formation of dew with the ſame force. "I ſaw," he ſays, "for example, platina one night diſtinctly dewed, while gold, ſilver, copper, and tin, though ſimilarly ſituated, were entirely dry; and I have alſo ſeveral times ſeen theſe four metals free from dew, while iron, ſteel, zinc, and lead, were covered with it."

Our author proceeds to inveſtigate and aſcertain the degree of cold connected with the formation of dew. Mr. Wilſon, he thinks, is the firſt philoſopher who ever ſuſpected the exiſtence of ſuch a conjunction; though dew is often ſpoken of as cold by our popular writers. Herodotus mentions it as poſſeſſing this quality; Cicero and Virgil apply to it the epithet of "gelidus;" Milton that of "chill;" and Collins that of "cold." With thermometers adapted to the purpoſe, he has, in ſerene and ſtill nights, examined the temperature of dewed graſs, and conſtantly found it to be leſs than that of the air, any where between one inch and nine feet above the ground, the latter being the greateſt height at which he ever marked the heat of the atmoſphere in theſe experiments. At the height of four feet above the ground, and in calm and clear nights, he frequently found the graſs ſeven, eight, or nine degrees colder than the air at that height; ſeveral times it was 10° and 11°, and once 12°, colder than the air. In ſome few obſervations, the greater coldneſs of graſs than that of the air began to appear, in clear and calm weather, in places ſheltered from the afternoon ſun, and yet open to a conſiderable portion of the ſky, ſoon after the heat of the atmoſphere had declined. A ſimilar coldneſs continued upon graſs in ſtill and ſerene mornings, for ſome time after the riſing of the ſun, in places ſhaded from its direct light, but otherwiſe open to the ſky. In cloudy nights, particularly with wind, the graſs was never much colder than the air. Sometimes the temperatures were the ſame; at other times that of the graſs was higher, even when it had been wetted by preceding rain, and when it muſt have cooled by evaporation. When the night changed from clear to cloudy, though without change as to calmneſs, a conſiderable alteration in the temperature of the graſs always enſued, and this change occurred ſometimes very ſuddenly. On one night, the graſs, after having been 12° colder than the air, became 2° colder, the temperature of the air at both obſervations being the ſame. On a ſecond night, the graſs became 9° warmer in an hour and a half. On a third night, in leſs than forty-five minutes the temperature of the graſs roſe 15°, while that of the neighbouring air increaſed 3½°. On a fourth night, the temperature of the graſs at half-paſt 9 o'clock was 32°; in twenty minutes afterwards it was found to be 39°, the ſky in the mean time having become cloudy. At the end of twenty minutes more, the ſky being clear, the temperature of the graſs was again 32°. On the connection of fog or miſt with cold, Dr. Wells made ſeveral experiments, which we cannot recite. He obſerves, that he has always found on dewy nights the temperature of the earth half an inch or an inch beneath its ſurface much warmer than the graſs upon it; and the earth at this depth was alſo almoſt conſtantly warmer on dewy nights than the air. Metals, ſays our author, furniſh proofs of the connection of dew with cold in the ſubſtances on which it forms ſuperior to that of the neighbouring atmoſphere. Upon the whole, our author's experiments, which we cannot minutely detail, ſhew, that when bodies which had been equally expoſed to the night air were examined at the ſame time, thoſe which were moſt dewed were the coldeſt. In the proſecution of experiments with other ſubſtances beſides graſs, he found that thoſe of the filamentous downy kind were the moſt productive of cold. Thus, wool of moderate fineneſs, very fine raw ſilk, very fine unſpun cotton, fine flax, and ſwan-down, were not only more ſteadily cold, upon clear and calm nights, than graſs, but alſo gave riſe to a greater degree of cold than was almoſt at any time obſerved upon it even in its beſt ſtate. Wool produced the leaſt cold, and we have found before, that it attracted leſs dew than ſilk, cotton, and flax. Freſh, unbroken ſtraw, and ſhreds of white paper, were found to be a little more productive of cold than wool. The next claſs conſiſted of bodies in the ſtate of powder; theſe were, clean river ſand, glaſs, chalk, charcoal, lamp-black, and a brown calx of iron. Chalk produced the leaſt, and the three laſt ſubſtances produced the greateſt cold. Solid ſubſtances, expoſing to the ſky a ſurface of at leaſt twenty-five inches ſquare, formed a third claſs, on which our author made experiments. The ſubſtances of this deſcription ſubjected to trial were, glaſs, brick, cork, oak-wood, and wax; all of which were found inferior to the filamentous ſubſtances. His principal experiments, however, of this kind were made on ſnow.

The next ſubject to which Dr. Wells directs his attention is the theory of dew. According to Ariſtotle among the ancients, and many philoſophical writers among the moderns, dew is a ſpecies of rain, formed in the lower atmoſphere, in conſequence of its moiſture being condenſed by the cold of the night into minute drops. But opinions of this kind have been found erroneous, by the conſideration of a fact firſt noticed by Gerſten in 1733; *viz.* that bodies a little elevated in the air often become moiſt with dew, while ſimilar bodies, lying on the ground, remain dry, though neceſſarily, from their poſition, as liable to be wetted, by whatever falls from the heavens, as the former. It was ſoon afterwards obſerved by Muſchenbroeck, that metals will be free from dew, while other bodies attract it copiouſly: hence Dufay concluded, that dew is an electrical phenomenon, ſince it leaves untouched the bodies which conduct electricity, whilſt it appears upon thoſe which cannot tranſmit that influence. Againſt this hypotheſis ſeveral objections have been urged, however plauſibly it has been ſupported. It has been alleged that charcoal, which next to the metals is the beſt ſolid conductor of electricity, attracts dew very powerfully; and dew, as we have ſeen above, frequently forms upon metals themſelves. It has alſo been urged againſt this hypotheſis, that dew forms in different parts of the night, in quantities diſproportioned to the degrees of electricity found in the atmoſphere at the ſame time. Thus, it is commonly more copious in the morning than in the evening, though the air is obſerved to be, in the latter ſeaſon, more highly electrical than in the former. But another argument applies alike to all the theories which have hitherto been made public on the cauſe of dew; and this is, that none of them include the important fact, that its production is attended with cold. Mr. Wilſon and Mr. Six have indeed maintained, that the formation of this fluid is the cauſe of the cold that accompanies it. Dr. Wells once held the ſame opinion; but finding that bodies would ſometimes become colder than the air without being dewed, and that when dew was formed, its quantity, and the degree of cold which appeared with it, were very far from being always in the ſame proportion to each other, he firſt doubted its truth, and at length became convinced that it was erroneous; and by farther inquiry he was led to conclude, that dew is the production of a preceding cold in the ſubſtances upon which it appears; and that it has preciſely the ſame immediate cauſe as the preſence of moiſture upon the outſide of a glaſs or metallic veſſel, when a liquid conſiderably colder than the air has been poured into it ſhortly before. This fact is applied by our author, to the explanation of ſeveral atmoſpherical appearances.

"I. The variety in the quantities of dew, which were found by me upon bodies of the ſame kind, expoſed to the air during the ſame time of the night, but in different ſituations, is now ſeen to have been occaſioned by the diverſity of temperature, which exiſted among them.

"II. Agreeably to the opinion of Mr. Wilſon and Mr. Six, the cold connected with dew ought always to be proportional to the quantity of that fluid; but this is contradicted by experience. On the other hand, if it be granted, that dew is water precipitated from the atmoſphere, by the cold of the body on which it appears, the ſame degree of cold, in the precipitating body, may be attended with much, with little, or with no dew, according to the exiſting ſtate of the air in regard to moiſture; all of which circumſtances are found actually to take place.

"III. The formation of dew, indeed, not only does not produce cold, but like every other precipitation of water from the atmoſphere, produces heat.

"IV. In very calm nights, a portion of air, which comes in contact with cold graſs, will not, when the ſurface is level, immediately quit it, more eſpecially, as this air has become ſpecifically heavier than the higher, from a diminution of its heat, but will proceed horizontally, and be applied ſucceſſively to different parts of the ſame ſurface. The air, therefore, which makes this progreſs, muſt at length have no moiſture to be precipitated, unleſs the cold of the graſs which it touches ſhould increaſe. Hence in great meaſure is to be explained, why, on ſuch nights as have been juſt mentioned, more dew was acquired by ſubſtances placed on the raiſed board, than by others of the ſame kind on the graſs, though it began to form much ſooner in the latter than in the former ſituation, thoſe on the raiſed board having received air, which had previouſly depoſited leſs of its moiſture.

"A reaſon is now alſo afforded, why a ſlight agitation of the atmoſphere, when very pregnant with moiſture, ſhould increaſe the quantity of dew; ſince freſh parcels of air will hence be more frequently brought into contact with the cold ſurface of the earth, than if the atmoſphere were entirely calm.

"V. Dew, in agreement with the immediate cauſe which has been aſſigned by me for its production, can never be formed, in temperate climates, upon the naked parts of a living and healthy human body, during the night; ſince their heat is never leſs in this ſeaſon, in ſuch climates, than that of the atmoſphere. I have, in fact, never perceived dew on any naked part of my own body at night, though my attention was much occupied, for three years, with every thing relative to this fluid, and though I had been, during that period, much expoſed to the night air. On the other hand, in very hot countries, the uncovered parts of a human body may ſometimes, from being conſiderably colder than the air, condenſe the watery vapour of the atmoſphere, and hence be covered with a real dew, even in the day-time.

"VI. Hygrometers formed of animal or vegetable ſubſtances, when expoſed to a clear ſky at night, will become colder than the atmoſphere; and hence, by attracting dew, or, according to an obſervation of Sauſſure, by merely cooling the air contiguous to them, mark a degree of moiſture, beyond what the atmoſphere actually contains. This ſerves to explain an obſervation made by M. De Luc, that in ſerene and calm weather, the humidity of the air, as determined by an hygrometer, increaſes about, and after ſun-ſet, with a greater rapidity, than can be attributed to a diminution of the general heat of the atmoſphere."

Having eſtabliſhed the fact, that bodies become colder than the neighbouring air, before they are dewed, and applied this fact to the explication of many atmoſpherical appearances, we ſhall now proceed with the author to complete the inveſtigation of his theory with reſpect to the cauſe of dew; and hence he avails himſelf of the diſcoveries on heat and its radiation, that have been made by profeſſor Leſlie, Dr. Herſchel, and count Rumford. (See HEAT.) "The experience of moſt perſons," ſays Dr. Wells, "reſpecting the communication of heat among bodies in the open air, is confined to what happens during the day; at which time, thoſe that are ſituated near to one another are always found to poſſeſs the ſame temperature, unleſs ſome very evident reaſon for the contrary ſhould exiſt. To many, therefore, it may appear incredible, that a perfectly dry body, placed in contact, on all ſides, with other bodies of the ſame temperature with itſelf, ſhall afterwards, without undergoing any chemical change, become much colder than they are, and ſhall remain ſo for many hours; yet theſe circumſtances are found to occur in ſubſtances attractive of dew, when laid on the ſurface of the earth, in a ſtill and ſerene night, and are in perfect agreement with the doctrine of heat, now univerſally admitted to be juſt.

"To render this more eaſy of apprehenſion, let a ſmall body which radiates heat freely, and poſſeſſes a temperature, in common with the atmoſphere, higher than 32°, be placed, while the air is clear and ſtill, on a ſlow conductor of heat lying on the ſurface of a large open plain, and let a firmament of ice be ſuppoſed to exiſt at any height in the atmoſphere; the conſequence muſt be, that the ſmall body will, from its ſituation, quickly become colder than the neighbouring air. For, while it radiates its own heat upwards, it cannot receive a ſufficient quantity from the ice to compenſate this loſs; little alſo can be conveyed to it from the earth, as a bad conductor is interpoſed between them; and there is no ſolid, or fluid except the air, to communicate it laterally either by radiation or conduction. This ſmall body, therefore, unleſs it ſhall receive from the air, nearly as much heat as it has emitted, which, conſidering the little that can be communicated from one part of the atmoſphere to another, in its preſent calm ſtate, muſt be regarded as impoſſible, will become colder than the air, and condenſe the watery vapour of the contiguous parts of it, if they ſhould contain a ſufficient quantity to admit of this effect. But events ſimilar to theſe occur, when dew appears in an open and level graſs field, during a ſtill and ſerene night. The upper parts of the graſs radiate their heat into regions of empty ſpace, which conſequently ſend back no heat in return; its lower parts, from the ſmallneſs of their conducting power, tranſmit little of the earth's heat to the upper parts, which at the ſame time receiving only a ſmall quantity from the atmoſphere, and none from any other lateral body, muſt remain colder than the air, and condenſe into dew its watery vapour, if this be ſufficiently abundant, in reſpect to the decreaſed temperature of the graſs.

"This ſubject may be further illuſtrated by a reference to what happens in the experiment, which has been uſed to prove the reflection of cold.

"In the ſimpleſt form of this experiment, a ſmall body, the bulb of a thermometer, poſſeſſing the temperature of the atmoſphere, is placed before a larger cold body, rendered equal in effect to one ſtill larger, by means of a concave metallic mirror. In this ſituation, the ſmall body radiates heat to the larger, without receiving an equivalent from it, and, in conſequence, becomes colder than the air through which its heat is ſent, notwithſtanding that it is continually gaining ſome heat, both from the air which ſurrounds it, and from the walls and contents of the apartment, in which the experiment is made. Dew, therefore, would as readily form upon the thermometer in this experiment, as it would upon one ſuſpended in the open air at night, under a clear ſky, provided that the two inſtruments were equally colder than the atmoſphere, and that this was in both caſes equally near to being replete with moiſture.

"Regarding now as eſtabliſhed, that bodies ſituated on or near to the ſurface of the earth become, under certain circumſtances, colder than the neighbouring air, by radiating more heat to the heavens, than they receive in every way, I ſhall in the firſt place offer a few remarks on the extent and uſe of this occurrence, and ſhall afterwards apply the knowledge of it to the explanation of ſeveral more of the appearances deſcribed in the former part of this Eſſay, and of ſome others, which have not hitherto been mentioned by me.

" Radiation of heat by the earth to the heavens muſt exiſt at all times ; but, if the ſun be at ſome height above the horizon, the degree of which is hitherto undetermined, and probably varies according to ſeaſon, and ſeveral other circumſtances, the heat emitted by it to the earth will overbalance, even in places ſhaded from its direct beams, that which the earth radiates upwards.

" In a calm and ſerene night, however, when conſequently little impediment exiſts to the eſcape, by radiation, of the earth's heat to the heavens, and when no heat can be radiated by the ſun to the place of obſervation, an immenſe degree of cold would occur on the ground, if the following circumſtances did not combine to leſſen it. 1. The incapacity of all bodies to prevent, entirely, the paſſing of heat, by conduction, from the earth to ſubſtances placed upon them. 2. The heat radiated to theſe ſubſtances by lateral objects. 3. The heat communicated to the ſame ſubſtances by the air. 4. The heat which is evolved, during the condenſation of the watery vapour of the atmoſphere into dew.

" The extent of the effect of all theſe checks upon the production of cold, by the nightly radiation of heat from bodies on the ſurface of the earth, cannot, in the preſent ſtate of our knowledge, be properly eſtimated ; but facts ſhew that, notwithſtanding their operation, the cold originating in this ſource muſt be often very conſiderable.

" I ſhall add, with the greateſt diffidence, a few words upon a final cauſe of the radiation of heat from the earth at night, and upon ſome of the circumſtances which modify its action, though fully conſcious of the danger of error, which is always incurred in the attempt to appreciate the works of our Creator.

" The heat which is radiated by the ſun to the earth, if ſuffered to accumulate, would quickly deſtroy the preſent conſtitution of our globe. This evil is prevented by the radiation of heat by the earth to the heavens, during the night, when it receives from them little or no heat in return. But, through the wiſe economy of means, which is witneſſed in all the operations of Nature, the prevention of this evil is made the ſource of great poſitive good. For the ſurface of the earth, having thus become colder than the neighbouring air, condenſes a part of the watery vapour of the atmoſphere into dew, the utility of which is too manifeſt to require my ſpeaking of it. I may remark, however, that this fluid appears chiefly where it is moſt wanted, on herbage, and low plants, avoiding, in great meaſure, rocks, bare earth, and conſiderable maſſes of water. Its production too, by another wiſe arrangement, tends to prevent the injury, that might ariſe from its own cauſe ; ſince the precipitation of water, upon the tender parts of plants, muſt leſſen the cold in them, which occaſions it. I ſhall obſerve in the laſt place, that the appearance of dew is not confined to any one part of the night, but occurs during its whole courſe, from means the moſt ſimple and efficacious. For after one part of the air has depoſited its moiſture, on the colder ſurface of the earth, it is removed, in conſequence of that agitation in the atmoſphere which exiſts during its ſtilleſt ſtates, and gives place to another having its quantity of water undiminiſhed ; and, again, as the night proceeds, a portion of air, which had before depoſited all the moiſture, which circumſtances at that time permitted, is rendered fit, by the general increaſe of the cold of the atmoſphere, to give out a freſh parcel, when it comes anew into contact with the ground.

" The firſt fact, which I ſhall here attempt to explain, is the prevention, either wholly or in part, of cold, from radiation, in ſubſtances on the ground, by the interpoſition of any ſolid body between them and the ſky. This evidently appears to ariſe in the following manner. The lower body radiates its heat upwards, as if no other intervened between it and the ſky ; but the loſs, which it hence ſuffers, is more or leſs compenſated by what is radiated to it, from the body above, the under ſurface of which poſſeſſes always the ſame, or very nearly the ſame temperature as the air.

" No direct experiments can be made to aſcertain the manner, in which clouds prevent, or occaſion to be ſmall, the appearance of a cold at night, upon the ſurface of the earth, greater than that of the atmoſphere ; but it may, I think, be firmly concluded, from what has been ſaid in the preceding article, that they produce this effect, almoſt entirely, by radiating heat to the earth, in return for that which they intercept in its progreſs from the earth towards the heavens. For although, upon the ſky becoming ſuddenly cloudy during a calm night, a naked thermometer, ſuſpended in the air, commonly riſes two or three degrees, little of this riſe is to be attributed to the heat evolved by the condenſation of watery vapour in the atmoſphere, as was ſuppoſed by Mr. Wilſon ; ſince, in conſequence of the ceaſing of that part of the cold indicated by the thermometer, which was owing to its own radiation to a clear ſky, the temperature of the atmoſphere may ſeem to increaſe 2°, or more, notwithſtanding that it has received no real addition. Beſides, the heat which is extricated by the condenſation of vapour, during the formation of a cloud, muſt ſoon be diſſipated ; whereas the effect of greatly leſſening, or preventing altogether, the appearance of a ſuperior cold on the earth to that of the air, will be produced by a cloudy ſky, during the whole of a long night.

" Denſe clouds, near the earth, muſt poſſeſs the ſame heat as the lower atmoſphere, and will therefore ſend to the earth as much, or nearly as much, heat as they receive from it by radiation. But ſimilarly denſe clouds, if very high, though they equally intercept the communication of the earth with the ſky, yet being, from their elevated ſituation, colder than the earth, will radiate to it leſs heat than they receive from it, and may, conſequently, admit of bodies on its ſurface becoming ſeveral degrees colder than the air. In the firſt part of this Eſſay, an example was given of a body on the ground becoming at night 5° colder than the air, though the whole ſky was thickly covered with high clouds.

" Iſlands, and parts of continents cloſe to the ſea, being, by their ſituation, ſubject to a cloudy ſky, will, from the ſmaller quantity of heat loſt by them through radiation to the heavens at night, in addition to the reaſons commonly aſſigned, be leſs cold in winter, than countries conſiderably diſtant from any ocean.

" Fogs, like clouds, will arreſt heat, which is radiated upwards by the earth, and, if they be very denſe, and of conſiderable perpendicular extent, may remit to it as much as they receive. Accordingly, Mr. Wilſon found no difference at night, in very foggy weather, between the temperature of the ſurface of ſnow, and that of the air.

" In miſts and low fogs it was found by profeſſor Leſlie, that the diminution of the ſun's heat is ſmall, when compared with what occurs, when the ſky is obſcured by a denſe body of clouds ; and it will, I preſume, be readily granted, that the ſame ſtate of the atmoſphere, which allows the heat of the ſun to paſs copiouſly, will alſo give a ready tranſit to heat radiated by the earth."

From previous reaſoning, the author concludes, therefore, that " fogs do not in any inſtance furniſh a real exception to the general rule, that whatever exiſts in the atmoſphere, capable of ſtopping or impeding the paſſage of radiant heat, will prevent or leſſen the appearance at night of a cold on the ſurface of the earth, greater than that of the neighbouring air.

"It follows alſo, from what has been ſaid in this article, that the water depoſited upon the earth, during a fog at night, may ſometimes be derived from two different ſources, one of which is a precipitation of moiſture from a conſiderable part of the atmoſphere, in conſequence of its general cold; the other, a real formation of dew, from the condenſation, by means of the ſuperficial cold of the ground, of the moiſture of that portion of the air, which comes in contact with it. In ſuch a ſtate of things, all bodies will become moiſt, but thoſe eſpecially which moſt readily attract dew in clear weather. I have had no opportunity, however, of trying this concluſion by the teſt of obſervation, ſince it occurred to me.

"When bodies become cold from radiation, the degree of effect obſerved muſt depend, not only on their radiating power, but in part alſo on the greater or leſs eaſe, with which they can derive heat, by conduction, from warmer ſubſtances in contact with them. Thus graſs, on a clear and ſtill night, was conſtantly colder, ſometimes very much colder, than the gravel-walk, though a ſmall quantity of ſand, placed upon graſs, was always nearly as cold as this ſubſtance. In this caſe, the difference in temperature between the gravel-walk and ſand, evidently depended on the different quantities of heat which they received from the parts beneath. A like reaſon is to be given for dew appearing in greater quantity on ſhavings of wood, than on the ſame ſubſtance in a more denſe and compact form; and for filamentous and downy ſubſtances becoming colder than all others, even than lamp-black, which is placed by Mr. Leſlie, at the head of the beſt ſolid radiators of heat. For the lamp-black expoſed by me, being about two lines in depth, poſſeſſed, in conſequence, a fund of internal heat, which would more readily paſs to its cold ſurface, than the heat of the lower parts of the downy ſubſtances would to their upper ſurface.

"Bodies, expoſed in a clear night to the ſky, muſt radiate as much heat to it during the prevalence of wind, as they would do if the air were altogether ſtill. But in the former caſe, little or no cold will be obſerved upon them above that of the atmoſphere, as the frequent application of warm air muſt quickly return a heat equal, or nearly ſo, to that which they had loſt by radiation A ſlight agitation of the air is ſufficient to produce ſome effect of this kind; though, as has already been ſaid, ſuch an agitation, when the air is very pregnant with moiſture, will render greater the quantity of dew, one requiſite for a conſiderable production of this fluid being more increaſed by it, than another is diminiſhed."

Theophraſtus remarks, and the remark has been confirmed by other writers, that "the hurtful effects of cold occur chiefly in hollow places. If this be reſtricted to what happens on ſerene and calm nights, and it does not, I believe, hold true in any other circumſtances, two reaſons from different ſources are to be aſſigned for it. The firſt is, that the air being ſtiller in ſuch a ſituation, than in any other, the cold, from radiation, in the bodies which it contains, will be leſs diminiſhed by renewed applications of warmer air; the ſecond, that from the longer continuance of the ſame air in contact with the ground, in depreſſed places than in others, leſs dew will be depoſited, and therefore leſs heat extricated during its formation. It will be ſeen in the laſt part of this Eſſay, that, in the Eaſt Indies, depreſſions in the earth are artificially made, for the purpoſe of increaſing the cold, which appears in ſerene nights. On this ſubject, however, it is to be obſerved, that if the depreſſed or hollow places be deep, in proportion to their horizontal extent, a contrary effect muſt follow; as a caſe will occur more or leſs ſimilar to that which exiſted in ſome experiments formerly related by me, in which a ſmall portion of graſs was ſurrounded by a hollow cylinder.

"An obſervation cloſely connected with the preceding, namely, that in clear and ſtill nights, froſts are leſs ſevere upon hills, than in neighbouring plains, has excited more attention, chiefly from its contradicting what is commonly regarded an eſtabliſhed fact, that the cold of the atmoſphere always increaſes with the diſtance from the earth. This inferior cold of hills is evidently a circumſtance of the ſame kind, with that aſcertained by Mr. Pictet and Mr. Six, reſpecting the increaſing warmth, in clear and calm nights at all ſeaſons of the year, of the different ſtrata of the atmoſphere, in proportion as theſe are more elevated above the earth. As the greater cold of the lower air is the leſs complicated fact, I ſhall attempt to explain it in the firſt place. Mr. Pictet, indeed, furniſhes an explanation himſelf, by aſcribing it to the evaporation of moiſture from the ground. But to ſhew that this is not juſt, it need only be mentioned, that the appearance never occurs in any conſiderable degree, except upon ſuch nights as are attended with ſome dew, and that its great degrees are commonly attended with a copious formation of that fluid; ſince it cannot be thought, that the ſame ſtratum of air will depoſit moiſture on the ground, from an inſufficiency of heat, at the very time it is receiving moiſture from the ground, in the ſtate of pellucid vapour, as this preſuppoſes, that it is not yet replete with water."

Ariſtotle and Plutarch, and of late Mr. Jefferſon, (Notes on Virginia,) have obſerved that dew is much leſs copious on hills than it is upon plains. In order to account for this fact, we may allow, at firſt, that the ſurface of the ground is in both ſituations equally colder than the air contiguous to it; yet, "as the production of dew muſt be in proportion to the whole depreſſion of the temperature of the air which furniſhes it, below what its heat had been in the preceding day, and as one part of this depreſſion, the general cooling of the atmoſphere, is much more conſiderable on the plain than on the hill, moiſture muſt neceſſarily be depoſited more copiouſly in the former than in the latter place. If the greater agitation of the atmoſphere, and the leſs quantity of moiſture, during clear weather, in its higher region than in the lower, be added, it may readily be inferred, that dew ſhall ſometimes be altogether wanting on a hill, though abundant on a plain at its foot, agreeably to what has been actually obſerved by Mr. Jefferſon.

"The leaves of trees often remain dry throughout the night, while thoſe of graſs are covered with dew. As this is a ſimilar fact to the ſmallneſs of dew on hills, I ſhall in accounting for it do little more, than enumerate the circumſtances on which it depends.

"1. The atmoſphere is ſeveral degrees warmer near the upper parts of trees on dewy nights, than cloſe to the ground. 2. The air in the higher ſituation is more agitated, than that in the lower. 3. The air at a little diſtance from the ground, from being nearer to one of its ſources of moiſture, will on a calm evening contain more of it, than that which ſurrounds the leaves of elevated trees. 4. Only the leaves of the very tops of trees are fully expoſed to the ſky. 5. The declenſion of the leaves from an horizontal poſition will occaſion the air, which has been cooled by them, to ſlide quickly away, and be ſucceeded by warmer parcels.

6. The length of the branches of the trees, the tenderneſs of their twigs, and the pliancy of the footſtalks of their leaves, will cauſe in the leaves an almoſt perpetual motion, even in ſtates of air that may be denominated calm. I have hence frequently heard, during the ſtillneſs of night, a ruſtling noiſe in the trees, which formed one of the boundaries of the ordinary place of my obſervations, while the air below ſeemed without motion.

"Nearly in the ſame manner is to be explained, why ſhrubs and buſhes alſo receive dew more readily than lofty trees.

"Bright metals, expoſed to a clear ſky in a calm night, will be leſs dewed on their upper ſurface than other ſolid bodies; ſince of all bodies they will, in ſuch a ſituation, loſe the ſmalleſt quantity of heat by radiation to the heavens, at the ſame time that they are capable of receiving, by conduction, at leaſt as much heat as any others from the atmoſphere, and more than any others from the warmer ſolid ſubſtances, which they happen to touch.

"If the expoſed pieces of metal be not very ſmall, another reaſon will contribute ſomewhat to their being later and leſs dewed than other ſolid ſubſtances. For, in conſequence of their great conducting power, dew cannot form upon them, unleſs their whole maſs be ſufficiently cold to condenſe the watery vapour of the atmoſphere; while the ſame fluid will appear on a bad conductor of heat, though the parts a very little beneath the ſurface are warmer than the air."

It appears from the diſcoveries of profeſſor Leſlie, that the metals differ in their capacities of radiating heat; and hence will ariſe a difference among themſelves with regard to their attraction of dew. Gold, ſilver, copper, and tin, as we have already ſaid, reſiſt the formation of dew more ſtrongly, than other ſubſtances of the ſame claſs; but theſe metals, according to Mr. Leſlie, radiate heat the moſt ſparingly. On the other hand, lead, iron, and ſteel, which, according to the ſame author, radiate heat more copiouſly than the former metals, were found by Dr. Wells to acquire dew more readily. The ſame obſervations may probably be applicable to platina and zinc. In the article Dew, we have already taken ſome notice of the opinion of thoſe who maintain, that it riſes from the earth at night. The firſt trace of this opinion, according to Dr. Wells, occurs in the Hiſt. Acad. Sci. for 1687. Gerſten advanced it anew in 1733. It was embraced by Muſchenbroeck and Dufay; though the former ſoon admitted that dew ſometimes falls. Mr. Webſter of New England has adopted the ſame opinion. We refer thoſe who wiſh to ſee the arguments for and againſt this opinion fully ſtated to Wells's Eſſay.

Agreeably to another opinion on the origin of dew, that which is found upon growing vegetables, is ſaid to be the condenſed vapour of the plants on which it appears. "But this ſeems," ſays our author, "to be erroneous for ſeveral reaſons. 1. Dew forms as copiouſly upon dead as upon living vegetable ſubſtances. 2. The tranſpired humour of plants will be carried away by the air which paſſes over them, when they are not ſufficiently cold to condenſe the watery vapour contained in it; unleſs, which is almoſt never the caſe if miſt does not already exiſt, the general maſs of the atmoſphere be incapable of receiving moiſture in a pellucid form. Accordingly, on cloudy nights, when the air, conſequently, can never be cooled more than a little below the point of repletion with moiſture, by bodies in contact with it, dew is never obſerved upon any plants, that are elevated a few feet above the ground. 3. If a plant has become, by radiating its heat to the heavens, ſo cold, as to be enabled to bring the air in contact with it below the point of repletion with moiſture, that which forms upon it, from its own tranſpiration, will not then, indeed, evaporate. But other moiſture will, at the ſame time, be communicated to it by the atmoſphere; and when the difference in the copiouſneſs of theſe two ſources is conſidered, it may, I think, be ſafely concluded, that almoſt the whole of the dew, which will afterwards form on the plant, muſt be derived from the air; more eſpecially when the coldneſs of a clear night, and the general inactivity of plants in the abſence of light, both leſſening their tranſpiration, are taken into account.

"An experiment, however, has been appealed to in proof, that the dew of plants actually does originate from fluid tranſpired by them; that, namely, in which a plant, ſhut up in an air-tight caſe, becomes covered with moiſture. But this experiment, if attentively examined, will be found to have little weight. Firſt, the incloſed plant being exempt from the cold, which its own radiation would have produced in its natural ſituation, on a dewy night, will tranſpire a greater quantity of fluid, than a ſimilar plant expoſed at the ſame time to the open air. Again, the ſmall quantity of air, contained in the caſe, muſt ſoon be replete with moiſture, after which, the whole of what is further emitted by the plant will neceſſarily aſſume the form of a fluid, whatever may be the condition of the external atmoſphere; whereas, during even the cleareſt night, only a part of the ſmaller quantity of moiſture, emitted by the expoſed plant, will be condenſed on its ſurface. In the laſt place, notwithſtanding the circumſtances which favour the appearance of moiſture upon incloſed plants from their own tranſpiration, ſtill the quantity obſerved on them is ſaid to be, for I have made no experiment myſelf reſpecting this matter, much leſs conſiderable, than what is ſeen upon plants of the ſame kind, expoſed to the air for the ſame time, during a calm and ſerene night." For ſeveral appearances connected with dew, we are under a neceſſity of referring to the third part of Dr. Wells's Eſſay.

DEWAN, or Duan, a term which has various ſignifications in India. It denotes a place of aſſembly, a native miniſter of the revenue department, and chief juſtice of civil cauſes within his juriſdiction, and receiver general of a province. The term is alſo uſed to deſignate the principal revenue ſervant under an European collector, and even of a Zemindar. By this title, the Eaſt India company are receivers of the revenues of Bengal, under a grant from the Great Mogul. Accordingly Dewannu denotes the office or juriſdiction of a Dewan.

DEWEYSBURG, in *Geography*, a town of Caledonia county, in Vermont, having 200 inhabitants.

DEZPHOUL, a town of Perſia, in Kuziſtan, or Chuſiſtan, 28 miles W. of Shuſter, containing nearly as many inhabitants as that city, and ſituated on the eaſtern bank of the Abzal, on a beautiful and ſpacious plain. Its only ornament is an elegant bridge of twenty-two arches, erected by command of Sapor, notorious for deſtroying as well as famous for building cities. The bridge is 450 paces in length, 20 in breadth, and about 40 in height. The piers are made of large ſtones, and the arches and upper parts of burnt brick.

DIAL-*Work of a Clock*, col. 2, l. 24, for *Plate* XXIII. *r. Plate* XVIII.

DIALLAGE. See Mineralogy, *Addenda*.

DIAMOND, col. 4, l. 43, add—With a ſmall portion of oxygen, as ſir Humphrey Davy has lately diſcovered.

Diamond. See Diamond, and Mineralogy, *Addenda*.

DIANA, col. 3, l. 20 from the bottom, for 27 *r*. 30.

DIANELLA, in *Botany*, a poetical name, in honour of the ſylvan goddeſs Diana, to whom Commerſon its author thought ſo beautiful an inhabitant of the woods peculiarly appropriate.—Lamarck Dict. v. 2. 276. Illuſtr. t. 250. Juſſ. 41. Brown Prodr. Nov. Holl. v. 1. 279. Ait. Hort. Kew. v. 2. 276.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Aſparagi*, Juſſ. *Aſphodeleæ*, Br.

Eſſ. Ch. Calyx none. Petals ſix, ſpreading. Filaments tumid at the top. Berry of three cells, with many ſeeds.

Perennial *herbs*, with fibrous *roots*, graſſy ſheathing *leaves*, and panicled, drooping, blue *flowers*, whoſe *anthers*, as well as the ſpongy top of each filament, are yellow. The *berries* are blue, with ſhining *ſeeds*.

Seven ſpecies are found in New Holland; three are enumerated in Hort. Kew. A few examples will ſuffice.

D. *enſifolia*. Sword-leaved Dianella. Redout. Lil. t. 1. Ait. n. 1. (D. nemoroſa; Lamarck n. 1. Jacq. Hort. Schoenbr. v. 1. 49. t. 94. Dracæna enſifolia; Linn. Mant. 63. Willd. Sp. Pl. v. 2. 158.)—Leaves ſword-ſhaped, ſmooth. Flowers looſely panicled.—Native of the Eaſt Indies. A frequent ſtove plant, about two or three feet high. *Leaves* an inch broad. *Flowers* green and white.

D. *cærulea*. Blue Dianella. Br. n. 1. Ait. n. 2. Curt. Mag. t. 505. Red. Lil. t. 79.—Leaves with rough edges and keel. Panicle ſcarcely ſubdivided. Flower-ſtalks aggregate.—Native of Port Jackſon, from whence it was brought very early. *Leaves* about half an inch broad. *Flowers* deep blue.

D. *divaricata*. Spreading Dianella. Br. n. 6. Ait. n. 3.—Leaves radical, nearly linear, ſmooth. Panicle repeatedly compound, ſpreading; ultimate branches zigzag, racemoſe. Bracteas very minute.—Native of the ſouth coaſt of New Holland. *Br.*

DIARBEKIR, inſert—the ancient *Amida*; l. *ult.* after Rome, inſert—It is ſaid by M'Kinneir to contain 38,000 ſouls, moſt of whom are Turks. The elevation of the ſurrounding mountains, the windings of the Tigris, and height of the walls and towers, with the cupolas of the moſques, give it an air of grandeur ſuperior to that of any other city, which this traveller has viſited in this quarter of the world; l. *ult.* N. lat. 37° 55′ 30″. E. long. 39° 52′.

Diarbekir, l. 2, after Turkey, inſert—and next to that of Erzeroom, the moſt conſiderable pachalic of Armenia; l. 21, after Curdiſtan, add—It is ſituated between the Tigris and Euphrates, and ſeparated from the dependencies of Merdin by a ſmall river and a branch of mount Maſius. The whole of it is very mountainous and difficult of acceſs; however it is interſperſed with narrow and fertile valleys, and abounds with the moſt beautiful and romantic ſcenery:—l. *ult.* *r.* The principal town of this pachalic is *Diarbek*; which ſee.

DIASPASIS, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 586, a genus intermediate between Scævola and Dampiera, (ſee thoſe articles,) but perhaps moſt akin to the latter.

1. D. *filifolia*, from the ſouth coaſt of New Holland, is the only ſpecies.

DIASPORE. See Mineralogy, *Addenda*.

DICKINSON, in *Geography*, l. 3, *r.* 1794.

DICKSON. Add—Alſo, a county of Weſt Tenneſſee, containing 4516 inhabitants, of whom 990 are ſlaves.

DIDACTYLUS, a ſpecies of Bradypus; which ſee. See alſo Sloth.

DIGHTON, l. *ult.* *r.* 1659, &c.

DIGITUS. Add—See Extremities.

DIKE, Offa's. See Dyke.

DIMERIA, in *Botany*, from its double ſpike.—Brown Prodr. Nov. Holl. v. 1. 204.—A graſs chiefly diſtinguiſhed from Saccharum, (ſee that article,) by the *flowers* being all ſeſſile, on a permanent, not jointed, *ſtalk*.

D. *acinaciformis* was found by ſir J. Banks, in the tropical part of New Holland, and Mr. Brown has an Eaſt Indian ſpecies.

DINAS-MAWDDWY. In 1811, the hundred of Tallybont and Mawddwy contained 843 houſes, and 4287 perſons; 1964 being males, and 2323 females: 531 families employed in agriculture, and 200 in trade, &c.

DINGAS. Add—See Scind.

DINGWALL. In 1811, the burgh and pariſh contained 278 houſes, and 1500 perſons; 647 being males, and 853 females: 158 families employed in agriculture, and 153 in trade and manufactures.

DINWIDDIE, l. 4 and 5, *r.* 12,524 inhabitants, of whom 7442 are ſlaves.

DIOPSIDE. See Mineralogy, *Addenda*.

DIOTIS, in *Botany*, from the *two ears* of its calyx, when in fruit.—Schreb. Gen. 633. Willd. Sp. Pl. v. 4. 368. Ait. Hort. Kew. v. 5. 266. (Ceratoides; Tourn. Cor. 52.)—Claſs and order, *Monoecia Tetrandria*. Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juſſ.

Eſſ. Ch. Male, Calyx four-leaved. Cor. none.

Female, Calyx of one leaf, with two horns. Style deeply cloven. Seed ſolitary, hairy at the baſe, concealed in the cloſed calyx.

1. D. *Ceratoides*. Shrubby Diotis. Willd. n. 1. Ait. n. 1. (Axyris Ceratoides; Linn. Sp. Pl. 1389. Jacq. Ic. Rar. t. 189.)—Native of Siberia. A weak ſhrub, with linear-lanceolate *leaves*, and crowded inconſpicuous *flowers*, of no beauty.

DIPLACRUM, from διπλοος, *double*, and ακρος, *a point*.—Brown Prodr. Nov. Holl. v. 1. 240.—Claſs and order, *Monoecia Triandria*. Nat. Ord. *Calamaria*, Linn. *Cyperoideæ*, Juſſ.

Eſſ. Ch. Male, Calyx a chaffy ſcale, lateral. Cor. none. Female, Calyx of two equal, ribbed, permanent, pointed valves. Stigmas three. Nut ſpherical, without ſcales at the baſe, concealed in the cloſed calyx.

1. D. *caricinum*. Br. n. 1.—Native of the tropical part of New Holland. *Banks*. A little graſſy bog plant, with a leafy *ſtem*, and axillary as well as terminal tufts of *flowers*. Akin to Scleria and Carex; ſee thoſe articles.

DIPLANTHERA, from its apparently double anthers.—Banks and Solander in Br. Prodr. Nov. Holl. v. 1. 448.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. akin to *Solaneæ* and *Scrophularinæ*? Br.

Eſſ. Ch. Calyx three-lobed; lateral lobes cloven. Corolla two-lipped; upper lip inverſely heart-ſhaped, flat. Anthers of two divided, divaricated, linear lobes. Stigma two-lobed.

1. D. *tetraphylla*. Br. n. 1. Banks Ic. ined. in Bibl. Linn.—Native of the tropical part of New Holland. A *tree*, with an irregular ſpreading head, of round downy *branches*. *Leaves* four in a whorl, ſtalked, large, obovate, entire; cloven, and marked with two glands, at the baſe. *Flowers* numerous, large, and handſome, yellow, with long prominent *ſtamens* and *ſtyle*, in denſe terminal panicles. Ripe *fruit* not known.

DIPLARRHENA, from having only two of the three ſtamens perfect.—Labill. Nov. Holl. v. 2. 117. Voy. Engl. ed. v. 1. 169. Brown Prodr. Nov. Holl. v. 1. 304.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Irides*, Juſſ.

Eſſ. Ch. Sheath of two leaves. Three inner ſegments of the corolla ſmalleſt; upper one vaulted. Stamens diſtinct; two of them converging under the vaulted ſegment of the corolla; the third imperfect. Stigma two-lipped, in three deep ſegments. Seeds depreſſed.

1. D. *Moræa.* Labill. as above, t. 15. Br. n. 1. (Moræa diandra; Vahl Enum. v. 2. 154.)—Native of the ſouth coaſt of New Holland, flowering in May. The flowers are very ſhort-lived, white; their inner ſegments variegated. This plant differs from PATERSONIA, (ſee that article,) chiefly in the irregularity of its *flower.*

DIPLOPOGON, from διπλοος, *two-fold*, and πωγων, *a beard.*—Brown Prodr. Nov. Holl. v. 1. 176.—Claſs and order, *Triandria Digynia.* Nat. Ord. *Gramina.*

Eſſ. Ch. Calyx of two lax, membranous, awned valves, ſingle-flowered. Corolla of two valves; outer with three awns, of which the middle one is twiſted, unlike the reſt; inner with two awns.

1. D. *ſetaceus.* Setaceous Diplopogon.—Gathered by Mr. Brown, on the ſouthern coaſt of New Holland. A graſs perfectly reſembling AMPHIPOGON *laguroides*, (ſee that ſupplementary article,) in *habit* and *infloreſcence*, the *ſpike* being capitate, and the outermoſt *flowers* likewiſe abortive, compoſing a kind of *involucrum. Brown.*

DIP-MICROMETER, and DIP-SECTOR, inſtruments invented by Dr. Wollaſton, to correct the variation of the real dip from that given in the tables; ariſing principally from the difference between the temperature of the ſea and that of the atmoſphere.

DIPODIUM, in *Botany*, from δις and πους, alluding to the two ſeparate ſtalks, or *feet*, by which the maſſes of pollen attach themſelves to the ſtigma.—Brown Prodr. Nov. Holl. v. 1. 330.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Calyx-leaves and petals uniform, ſpreading. Lip three-lobed; diſk bearded; baſe with a ſhort ſpur. Column ſemi-cylindrical. Anther a terminal deciduous lid. Maſſes of pollen ſolitary in each cell, with an inner lobe, each attached by a ſeparate thread to the gland of the ſtigma.

Leafleſs ſmooth *herbs*, growing on the ground, with a thick, branching *root.* Baſe of the *ſtem* ſheathed with imbricated ſcales, more diſtant on its upper part, where they become *bracteas. Flowers* numerous, in a ſimple cluſter, purple, very handſome. Two ſpecies are mentioned.

1. D. *punctatum.* Dotted Dipodium. Br. n. 1. Dendrobium punctatum; Sm. Exot. Bot. v. 1. 21. t. 12.)—Lower ſcales broadly ovate, acute, without a keel; upper ſplit longitudinally. See DENDROBIUM, n. 10.

2. D. *ſquamatum.* Scaly Dipodium. (Cymbidium ſquamatum; Swartz Orch. in Schrad. N. Journ. v. 1. 76. Ophrys? ſquamata; Forſt. Prodr. 59.)—Lower ſcales oblong, keeled; upper undivided at the baſe. *Br.*—Native of New Caledonia. Very nearly related to the firſt.

DIPSACEÆ, l. 3, after *cotyledons*, inſert—two.

DIPTEROCARPUS, διπτερος, *two-winged*, and καρπος, *fruit.*—"Gærtn. v. 3. 51. t. 188." Roxb. Corom. v. 3. 10.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Guttiferis*, Juſſ. affine.

Eſſ. Ch. Calyx inferior, five-cleft; two ſegments ſubſequently much enlarged. Petals five. Capſule ovate, of one cell. Seed ſolitary.

1. D. *turbinatus.* Wood-oil Dipterocarpus. Roxb. as above, t. 213.—Native of various countries eaſtward of Bengal, flowering early in the hot ſeaſon, and famous for its liquid balſam, much uſed for painting houſes and ſhips. This is copiouſly procured by wounding the trunk, and lighting a fire near the part. The *tree* is very large. *Leaves* alternate, ſtalked, ovate, acute, wavy or ſerrated, ſmooth, from four to twelve inches long. *Flowers* in ſimple, axillary *cluſters*, large, white, with yellow *anthers.* Wings of the *calyx* in fruit erect, oblong, three inches in length.

DISCHARGED WORK. See PASTE-*Work* and DISCHARGING *of Colour.*

DISS, l. 6, *r.* 348, and 2590.

VOL. XII.

DISTHENE. See MINERALOGY, *Addenda.*

DISTILLATION, col. 7, l. 22, &c. for Wetter *r.* Welter.

DISTILLED WATERS, col. 2, l. 23 from bottom, for macerated water *r.* macerated in water.

DISTILLER, col. 2, l. 12 from bottom, *r.* 24 Geo. II. c. 40. Col. 3, l. 19, *r.* 14 Geo. III. c. 73. Col. 5, l. 24, *r.* 43 Geo. III. c. 81.

DIXFIELD, l. 2, for Cumberland *r.* Oxford. Add—it contains 403 inhabitants.

DIXMONT. Add—Alſo, a town of Maine, in the county of Hancock, having 337 inhabitants.

DIXVILLE, a townſhip of Coos county, in New Hampſhire, having 12 inhabitants.

DOAB, or DOOAB, denotes in India any tract of country included between two rivers.

DOCKING, in the *Manege.* See CURTAILING.

DODBROOKE, l. *ult. r.* 112, and 942.

DODECAGON. The demonſtration annexed is miſplaced, and belongs to DECAGON.

DOEMIA, in *Botany*, Brown Tr. of the Wern. Soc. v. 1. 50. (Daemia; Ait. Hort. Kew. v. 2. 76.) a genus of the *Aſclepiadeæ*, differing from SARCOSTEMMA, (ſee that article,) in having the outer crown of the ſtamens in ten deep ſegments. It conſiſts of *Cynanchum extenſum*, Jacq. Ic. Rar. t. 54, (to which *C. bicolor*, Andr. Rep. t. 562. is very nearly related,) and *Aſclepias cordata*, Forſk. Egypt.-Arab. 49.

DOLGELLY, col. 2, l. 21 and 22 from bottom, *r.* 537 and 3064.

DOLOMITE. See MINERALOGY, *Addenda.*

DONCASTER, col. 2, l. 26 from bottom, *r.* 1438 and 6935.

DONEGAL, in America, l. 1, *r.* four; l. 3, *r.* 3156 and 2147; l. 4, 1327. Add—And one in Butler county, having 671 inhabitants.

DONIA, in *Botany*, ſo named by Mr. Brown, in memory of the late Mr. George Don, of Forfar, a moſt acute and indefatigable Scottiſh botaniſt.—Br. in Ait. Hort. Kew. v. 5. 82. Purſh 559.—Claſs and order, *Syngeneſia Polygamia-ſuperflua.* Nat. Ord. *Compoſitæ*, Linn. *Corymbiferæ*, Juſſ.

Eſſ. Ch. Receptacle naked. Seed-down briſtly, deciduous. Calyx imbricated, hemiſpherical.

1. D. *glutinoſa.* Glutinous Donia. Ait. n. 1. (After glutinoſus; Cavan. Ic. v. 2. 53. t. 168. Doronicum glutinoſum; Willd. Sp. Pl. v. 5. 2115.)—Leaves ovate-oblong, ſharply ſerrated, glutinous, as well as the upright-ſcaled calyx.—Native of Mexico. A green-houſe *ſhrub*, raiſed from Spaniſh ſeeds by Mr. Lambert, flowering in Auguſt and September. The *leaves* are ſeſſile. *Flowers* terminal, ſolitary, near two inches broad, yellow, with many rays.

2. D. *ſquarroſa.* Snake-headed Donia. Purſh n. 1. Curt. Mag. t. 1706.—Leaves linear-oblong, ſerrated. Calyx glutinous, its ſcales with recurved cylindrical points.—Diſcovered by governor Lewis, in meadows on the banks of the Miſſouri, flowering in Auguſt and September. *Stem*

herbaceous. *Leaves* much narrower than the foregoing. *Flowers* yellow, with a balſamic ſcent.

DONNINGTON, l. 19, *r.* 1811 ; l. 20, *r.* 316 ; l. 21, *r.* 1528.

DOODIA, in *Botany*, named after Mr. Samuel Doody, F.R.S. one of the earlieſt and beſt Britiſh Cryptogamiſts. He was an apothecary in London, and died in 1706.—Brown Prodr. Nov. Holl. v. 1. 151. Ait. Hort. Kew. v. 5. 523.—We fear this genus cannot be ſeparated from Woodwardia ; ſee that article.

DOOSHAK, in *Geography*, the preſent capital, and the reſidence of the prince of Seiſtan, in N. lat. 31° 8′. E. long. 63° 10′, eight or nine miles from the river Heermund. See Zarang.

DORAK. See Felahi.

DORCHESTER, col. 4, l. 29, *r.* 1811 ; l. 20, *r.* 3020 and 15,980.

Dorchester, in America, l. 10, *r.* 18,108 and 5032.

Dorchester townſhip, l. 2, *r.* 537 ; l. *ult.* *r.* 2930.

Dorchester, a town, or rather a village, formerly a city, of Oxfordſhire, between Benſon and Oxford. By the returns of 1811, the pariſh contained 148 houſes, and 754 perſons ; 358 being males, and 396 females : 93 families employed in agriculture, and 47 in trade, manufactures, and handicraft.

DORKING, l. 29, *r.* 1811—589—3259.

DORSET, l. 4, *r.* 1294.

DORSETSHIRE, l. 15 and 16, *r.* 23,210 and 124,693.

DOVER, col. 9, l. 21, *r.* 9674 and 1780.

Dover, in America, l. 3, *r.* 548 ; l. 11, *r.* 2228 ; l. 26, *r.* 1882 ; l. *ult.* *r.* 1882 inhabitants. Add—Alſo, a townſhip in the diſtrict of Ohio, in the county of Tuſcarawa, containing 461 inhabitants.

DOUGLAS, in America, l. 5, *r.* 1142 ; l. 11, *r.* 687. Add—Alſo, a townſhip of Bucks county, in Pennſylvania, having 660 inhabitants.

DOWNE. Add—containing 1501 inhabitants.

DOWNHAM, l. 25 and 26, *r.* 1811—361—1771.

DOWNTON, l. 24, *r.* 543—2624.

DRACOPHYLLUM, in *Botany*, ſo called from the reſemblance of its leaves to *Dracæna Draco*.—Labill. Voy. Engl. ed. v. 2. 219. t. 40. Br. Prodr. Nov. Holl. v. 1. 555.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Br.

Eſſ. Ch. Calyx five-cleft. Corolla tubular ; limb in five deep ſpreading ſegments, beardleſs. Nectary five ſcales beneath the germen. Receptacles of the ſeeds hanging looſe from the top of the central column. *Br.*

Some flowers are ſix-cleft, as Labillardiere obſerved in his *D. verticillatum*, found in New Caledonia. Mr. Brown, who met with four ſpecies in New Holland, remarks, that Forſter's *Epacris longifolia* and *roſmarinifolia*, Prodr. 13, natives of New Zealand, belong to this genus.

DRACUT, l. 2, after county, *r.* and ſtate of Maſſachuſetts ; l. *ult.* *r.* 1301.

DRAG. See Drowning.

DRAMATIC *Muſic of the Greeks*, col. 2, l. 5 from the cloſe, *r.* *maſks*.

DRAYTON. Add—The part of this pariſh that lies in Salop county contained, by the return in 1811, 599 houſes, and 3370 perſons ; the other part, formerly denominated Tyrley, now Drayton-in-Hales, ſituated in the hundred of North Pirehill, in the county of Stafford, conſiſts of three townſhips, having 104 houſes, and 607 inhabitants.

DRESDEN, in America. Add—It contains 1096 inhabitants.

DRESSING, in *Rural Economy*, and the *Manege*, denotes the periodical application of friction, by means of bruſhes, cloths, &c. to the hides of animals, with a view both to cleanlineſs and health. (See Currying.) Friction on the ſurface of the body, by means of the curry-comb and bruſh, contributes to promote the circulation of the fluids, and that inſenſible perſpiration through the pores of the ſkin, which greatly conduce to the health and activity of the animal. Columella obſerves, that the bodies of cattle ought to be rubbed down daily, as well as the bodies of men ; and frequently it does them more good to have their backs well rubbed down, than to have their bellies filled with large quantities of provender. Of the practice which is ſo common on the poſt-roads of throwing pailfuls of cold water on horſes when they are over-heated at the cloſe of a ſtage, Mr. Clark ſpeaks doubtfully ; although it is ſaid that no bad conſequences enſue, probably becauſe they have little interruption of exerciſe ; but he is of opinion, that if they are well rubbed down after exerciſe, there will be no occaſion for waſhing, or rather drenching them with cold water. See Horse.

DRIFFIELD, l. 4, *r.* 399, and 1857.

DRIMIA, in *Botany*, from δριμυς, *acrid*, alluding to the qualities of the root.—Jacq. Coll. v. 5. 38. Willd. Sp. Pl. v. 2. 165. Ait. Hort. Kew. v. 2. 281.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Coronariæ*, Linn. *Aſphodeli*, Juſſ.

Eſſ. Ch. Calyx none. Corolla inferior, bell-ſhaped, in ſix deep revolute ſegments. Stamens inſerted into the corolla. Stigma three-lobed. Capſule abrupt, ſomewhat triangular. Seeds few, oblong.

Five ſpecies, from Southern Africa, are deſcribed by Jacquin and Willdenow, and figured in Jacq. Ic. t. 373—377. They have ſcaly *bulbs*, linear-lanceolate *leaves*, coming after the tall, ſtalked *cluſter*, of numerous greeniſh *flowers*. *D. elata*, Curt. Mag. t. 822, and *D. puſilla*, Jacq. t. 374, are the only ones in Hort. Kew.

DROITWICH, l. *penult.* *r.* 423, and 2079.

DROMORE, l. 3, *r.* 1295.

DRONFIELD, l. 4, *r.* 267 and 1343.

DRYANDRA, in *Botany*, received its name from Mr. Brown, in honour of his friend Jonas Dryander, M.A. a diſtinguiſhed pupil of the great Linnæus, who ſucceeded the celebrated Solander in the place of librarian to ſir Joſeph Banks ; and after rendering eminent ſervices to ſcience, died under the roof of his illuſtrious friend and patron, in October 1810, aged 62. Mr. Dryander has erected to himſelf a laſting monument in his *Catalogus Bibliothecæ Hiſtorico-naturalis Joſephi Banks*, the moſt elaborate and complete work of the kind, and the moſt perfect ſpecimen of correct execution, that perhaps any department of ſcience can boaſt. His papers on *Begonia*, *Lindſæa*, and other ſubjects, in the Tranſactions of the Linnæan Society, richly entitle him to botanical commemoration ; to ſay nothing of his abilities as editor of the firſt edition, and part of the ſecond, of Mr. Aiton's *Hortus Kewenſis*, as well as of Dr. Roxburgh's Plants of Coromandel ; or his various ſervices to natural ſcience in other reſpects. Thunberg had long ago publiſhed a Dryandra (ſee our former article) ; but that proving not diſtinct from Forſter's *Aleurites*, previouſly eſtabliſhed, Mr. Brown has happily choſen a moſt diſtinct genus, next akin to Banksia, and ſcarcely leſs rich in number and beauty of ſpecies.—Brown Tr. of Linn. Soc. v. 10. 211. t. 3. Prodr. Nov. Holl. v. 1. 396. Ait. Hort. Kew. v. 1. 219.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Proteaceæ*, Juſſ. Brown.

Gen. Ch. *Common Calyx* hemiſpherical, of numerous, permanent, imbricated ſcales, many-flowered. *Cor.* of one petal, in four deep linear ſegments, at length ſeparating more or leſs completely, ſlightly dilated and concave at their ſummits. Nectary four ſcales at the baſe of the germen. *Stam.* Filaments four, very ſhort, inſerted into the baſe of the cavity of each petal; anthers linear-oblong. *Piſt.* Germen ſuperior, very ſmall, of two ſingle-ſeeded cells; ſtyle cylindrical, rigid, erect, about the length of the corolla; ſtigma undivided. *Peric.* Follicle woody, obliquely turbinate, of two ſhallow cells; the partition unconnected, deeply cloven tranſverſely, elaſtic. *Seeds* ſolitary, compreſſed, oblong, with a lateral creſcent-ſhaped membranous wing. *Common Receptacle* flat, beſet with oblong ſcales or briſtles, rarely wanting.

Eſſ. Ch. Corolla of one petal, four-cleft, bearing the ſtamens in the hollows of its ſegments. Nectary four ſcales at the baſe of the germen. Follicle woody, of two ſingle-ſeeded cells, with a cloven moveable partition. Common calyx imbricated, many-flowered. Receptacle flat.

This genus conſiſts of New Holland ſhrubs, moſtly of humble growth; their *branches*, if any, either ſcattered or umbellate. *Leaves* ſcattered, pinnatifid or cut, alike in young or old plants. *Flowers* ſolitary, ſeſſile, terminal, rarely lateral, encompaſſed with crowded *leaves*, of which the innermoſt are ſometimes diminiſhed, or as it were imperfect, and accompanied at the baſe with cloſe-preſſed *bracteas*, ſome of them occaſionally furniſhed with a terminal appendage. *Style* for the moſt part hardly longer than the corolla, and not forced into a curve as in *Bankſia*.

We follow Mr. Brown's names and numbers throughout.

1. D. *floribunda*. Many-flowered Dryandra. Ait. n. 1. —Leaves wedge-ſhaped, deeply and ſharply ſerrated. Calyx-ſcales ſtriated; the outermoſt nearly ſmooth. Tips of the corolla ſmooth. Stigma obtuſe, ſlightly club-ſhaped.—Native of Lewin's land, growing on ſtony hills. Mr. Menzies favoured us with a ſpecimen from King George's ſound. This ſhrub flowers at Kew moſt part of the year. The *branches* ſometimes bear a few long, looſe, ſpreading hairs. *Leaves* ſeſſile, rigid, an inch and a half or two inches long, finely reticulated on both ſides, the minute interſtices of the veins curiouſly depreſſed beneath. *Flowers* terminal, in a cloſe cylindrical head, reſembling ſome Thiſtle or *Serratula*, ſhorter than the crowded ſurrounding leaves. *Calyx* brown, of many ſharp imbricated ſcales, the inner ones gradually longeſt, and hairy. *Corolla* thrice as long, yellow, externally hairy, except at the tips lodging the *ſtamens*, which are ſmooth, keeled, obtuſe, minutely hooded. Mr. Brown obſerves that the ſcales of the *receptacle*, ſeparating the flowers, are ſometimes wanting.

2. D. *cuneata*. Wedge-leaved Dryandra. Ait. n. 2.—Leaves wedge-ſhaped, deeply ſerrated, ſpinous, ſtalked. All the calyx-ſcales even and ſilky. Tips of the corolla bearded. Stigma ſlender-awlſhaped, acute.—Found by Mr. Brown, on ſtony hills in Lewin's land. He notices two varieties; one with *leaves* ſcarcely an inch and a half long, whoſe three terminal teeth are all nearly equal; another, which may poſſibly be a diſtinct ſpecies, with *leaves* two inches long, whoſe dilated extremity has the middle tooth ſhorteſt, the adjoining ſinuſes broader.

3. D. *armata*. Acute-leaved Dryandra. Ait. n. 3.—Leaves pinnatifid; lobes triangular, flat, divaricated, ſtraight, ſpinous-pointed; reticulated with naked veins beneath: the terminal one longer than the next. Branches, and tips of the corolla, ſmooth. Style downy at the baſe. Stigma awl-ſhaped, furrowed.—Found by Mr. Brown, on rocky hills in Lewin's land. Mr. Good ſent this ſpecies to Kew in 1803, but it has not yet flowered there, nor have we ſeen a ſpecimen.

4. D. *falcata*. Curve-leaved Dryandra. Br. n. 4.—Leaves pinnatifid; lobes triangular-awlſhaped, divaricated, falcate and recurved, ſpinous-pointed; reticulated with naked veins beneath: the terminal one ſhorter than the next. Branches downy. Tips of the corolla, as well as the ſtyle, longitudinally ſmooth. Stigma club-ſhaped, without furrows. —Found by Mr. Brown, in the ſame country as the laſt.

5. D. *formoſa*. Splendid Dryandra. Br. Tr. of Linn. Soc. v. 10. 213. t. 3. Ait. n. 4.—Leaves linear, elongated, deeply pinnatifid; lobes unequally triangular, pointleſs, flat; downy beneath. Calyx-ſcales hairy; the innermoſt linear-oblong, reflexed. Receptacle chaffy.—Diſcovered by Mr. Menzies, near King George's ſound. Mr. Brown met with it likewiſe, in barren ground near the coaſt of Lewin's land. This truly beautiful ſpecies was ſent to Kew, by Mr. Good, in 1803, and it is marked by Mr. Aiton as flowering there moſt part of the year. The *leaves* are ſtalked, from four to ſix inches long, and barely one-third of an inch broad, cut to the mid-rib, into numerous, cloſe, regular ſegments, whoſe upper margin is direct, lower curved; the under ſide finely downy, ſnow-white, turning ruſty with age, or long keeping. *Stem* branched, downy. *Flowers* terminal, two or three inches in diameter, emboſomed in leaves. *Calyx-ſcales* purpliſh-brown, ſtriated and naked on the inſide. *Flowers* of a tawny yellow, clothed with long ſhining hairs to the very point. *Style* yellow, ſtout and ſmooth. *Stigma* cylindrical, furrowed. *Follicles* ſmall; tapering and hairy at the baſe; rounded at the margin; gaping widely, overtopped by the linear ſcales of the *receptacle*.

6. D. *mucronulata*. Pointed-lobed Dryandra. Br. n. 6. —Leaves linear, elongated, deeply pinnatifid; lobes equally triangular, pointed, flat; downy beneath. Calyx-ſcales downy; inner ones linear, pointed. Receptacle chaffy. Stem ſcarcely branched.—Gathered by Mr. Brown at Lewin's land, in low ſtony ground.

7. D. *plumoſa*. Feather-flowered Dryandra. Ait. n. 5. —Leaves linear, elongated, deeply pinnatifid; lobes equally triangular, pointed, flat; downy beneath; ſlightly revolute at the margin. Inner calyx-ſcales with feathery tips. Receptacle without ſcales.—Diſcovered by Mr. Brown, on the rocky ſides of hills, in Lewin's land. Sent to Kew by Mr. Good, in 1803, but has never bloſſomed there.

8. D. *obtuſa*. Obtuſe-leaved Dryandra. Ait. n. 6.—Leaves linear, pinnatifid, longer than the downy recumbent ſtem; lobes triangular, obtuſe; downy beneath; thickened and recurved at the edges. Outer calyx-ſcales ovate; inner linear-oblong.—Gathered by Mr. Brown in Lewin's land, in dry open ſituations near the ſhore. This alſo was ſent to Kew, at the ſame time as the laſt, but has never yet produced flowers.

9. D. *nivea*. White-leaved Dryandra. Ait. n. 7.—(" Bankſia nivea; Labill. Voy. v. 1. 412." t. 24. Nov. Holl. v. 2. 118.)—Leaves linear, pinnatifid, about as long as the ſmooth ſtem; lobes unequally triangular, acute, pointed; white and mealy beneath; recurved at the margin. Calyx-ſcales linear-lanceolate, ſmooth, fringed. Corolla hairy from top to bottom, much ſhorter than the ſtyle.—Gathered by Mr. Menzies at King George's ſound; by Labillardiere and Brown in rocky places near the coaſt of Lewin's land, flowering in December. The *ſtem* is uſually from one to three inches high, greatly overtopped by the very long, narrow, erect *leaves*, which are not quite ſo deeply pinnatifid as moſt of the foregoing: each lobe has two or three prominent ribs beneath, and is clothed on that ſide with a ſnow-white mealy pubeſcence, unaltered by time in our original ſpecimen. *Flowers* ſolitary, ſeſſile among the

leaves, ſmaller than thoſe of *D. formoſa*, with a purpliſh-brown *calyx*, and yellow, or tawny *corolla*. *Style* purpliſh, angular, ſmooth. *Stigma* ſmall, pyramidal, obtuſe, not well repreſented in the plate; at leaſt not in our Engliſh edition. This *flowers* at Kew from July to September. Mr. Brown notices a variety in which the lobes of the *leaves* are ſomewhat divaricated, ſingle-ribbed, and the *ſtigma* hardly thicker than the *ſtyle*.

10. D. *longifolia*. Long-leaved Dryandra. Ait. n. 8. —Leaves linear, pinnatifid, very long, acute; downy beneath; tapering and entire at the baſe; lobes triangular, aſcending, decurrent, recurved at the margin. Calyx-ſcales linear, awl-pointed, ſmooth, fringed. Corolla woolly at the baſe; downy upwards; rather hairy at the tips. Stem downy.—Diſcovered by Mr. Brown, on rocky hills in Lewin's land. The pubeſcence of the backs of the *leaves* is greyiſh, not white. This plant was raiſed at Kew in 1805, but has not yet borne any *flowers*.

11. D. *tenuifolia*. Slender-leaved Dryandra. Ait. n. 9. —Leaves linear, elongated, pinnatifid, rather abrupt; ſnow-white beneath; entire at the baſe, and tapering into a footſtalk; lobes triangular, decurrent, divaricated, recurved at the margin. Calyx as long as the flowers, downy; outer ſcales ovato-lanceolate. Corolla almoſt as long as the ſtyle; woolly at the baſe; ſmooth upwards; ſlightly ſilky at the tips. Stem ſmooth.—Gathered by Mr. Brown, in heathy ground at Lewin's land. It flowers at Kew from March to May.

12. D. *pteridifolia*. Brake-leaved Dryandra. Br. n. 12. —Leaves deeply pinnatifid, longer than the downy ſtem; lobes linear, acute, pointed, revolute, dilated at their baſe. Calyx-ſcales downy, ovate.—Gathered by Mr. Brown, in Lewin's land, on the ſtony ſides of hills.

13. D. *blechnifolia*. Blechnum-leaved Dryandra. Br. n. 13. —Leaves deeply pinnatifid, longer than the downy ſtem; lobes linear, obtuſe, ſlightly pointed, three-ribbed, ſomewhat revolute, ſcarcely dilated at the baſe.—Gathered near King George's ſound by Mr. Menzies, to whom we are obliged for a ſpecimen, without flowers, with which Mr. Brown likewiſe was unacquainted; but the reſemblance of the plant to the laſt-deſcribed, induced him to conſider it as belonging to the preſent genus. The ſhort *ſtem* is clothed with denſe, ſoft, ruſty pubeſcence. *Leaves* reſembling a *Cycas* in texture, as well as form, though only a foot high; the early ones ſmaller, with very broad rounded lobes, clothed beneath with white woolly down; the pubeſcence of the more full-grown *leaf* only, in our ſpecimen, is become ruſty.

DRYMOPHILA, from δρυμον, *a grove*, and φιλεω, *to love*, alluding to its place of growth.—Br. Prodr. Nov. Holl. v. 1. 292.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Smilaceæ*, Br.

Eſſ. Ch. Calyx none. Petals ſix, equal, ſpreading, deciduous. Stamens inſerted into the receptacle. Style deeply three-cleft, revolute. Berry of three cells, with many ſeeds.

1. D. *cyanocarpa*. Blue-berried Drymophila.—Found by Mr. Brown, in Van Diemen's iſland. *Root* perennial, creeping. *Stem* erect, moſtly ſimple. *Leaves* twiſted. *Flowers* white, ſtalked, ſolitary, axillary or terminal. *Br.*

DUBASH, a name applied at Madras to the ſame perſon who is denominated Banian in Bengal: it ſignifies a perſon who can ſpeak two languages.

DUBLIN, in America, l. 4, *r.* 1184; l. 8, *r.* 2194; l. 10, *r.* 970. Add—Alſo, a townſhip of Bedford county, in Pennſylvania, having 820 inhabitants.

DUBOISIA, in *Botany*, in memory of Mr. Dubois, a botaniſt of the time of Dillenius, who appears, by Ray's *Synopſis*, ed. 3. 17, to have had a garden at Mitcham in Surrey, and whoſe ſon, or brother, Charles, was an aſſiduous cryptogamiſt. His copy of Buxbaum is in our hands. —Br. Prodr. Nov. Holl. v. 1. 448.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Luridæ*, Linn. *Solaneæ*, Brown.

Eſſ. Ch. Calyx two-lipped, ſhort. Corolla bell-ſhaped; limb in five deep, nearly equal, ſegments. Stamens in the tube, with the rudiment of a fifth. Stigma capitate, notched. Berry of two cells, with many kidney-ſhaped ſeeds.

1. D. *myoporoides*. Br.—Native of Port Jackſon. A ſmooth *ſhrub*, with alternate undivided *leaves*, and white, panicled, axillary *flowers*, producing little black *berries*.

DUBUDU. See DUBDU.

DUCHESNEA, in *Botany*, a genus announced at the end of our article FRAGARIA, and ſince publiſhed in Tr. of Linn. Soc. v. 10. 371. It was ſuppoſed to differ eſſentially from *Fragaria* and *Potentilla*, (with both which the *calyx* agrees, and with the latter more particularly the *habit*,) in having the compound *berry* of a *Rubus*. Some garden ſpecimens have led us to ſuſpect an error in botaniſts who have deſcribed the ripe *fruit*, which in thoſe ſpecimens was certainly that of *Fragaria*, a ſucculent *receptacle* ſtudded with dry *ſeeds*. Whether the latter becomes pulpy at any more advanced period, remains to be proved. Meanwhile this plant ſtands as *F. indica*, in Ait. Hort. Kew. v. 3. 273.

DUCK CREEK, in *Geography*, a hundred of Kent county, in Delaware, containing 3690 inhabitants, of whom 167 are ſlaves.

DUDLEY, l. 3, *r.* 2621 houſes, and 13,925 inhabitants. Add—Dudley is partly in Offlow hundred, Staffordſhire, in which Dudley is locally ſituated.

DUDLEY, in America, l. 2, *r.* 1220.

DUEL. At the cloſe, add—Duelling, ſays a late excellent writer, in the modern ſenſe of the word, excluſive of caſual frays and ſingle combats during war, was unknown before the 16th century. But we find one anecdote, which ſeems to illuſtrate its derivation from the judicial combat. The dukes of Lancaſter and Brunſwick, having ſome differences, agreed to decide them by duel before John, king of France. The liſts were prepared with the ſolemnity of a real trial by battle; but the king interfered to prevent the engagement. The barbarous practice of wearing ſwords as a part of domeſtic dreſs, which tended very much to the frequency of duelling, was not introduced till the latter part of the 15th century. Our author ſays, that he can find only one print in Montfaucon's Monuments of the French Monarchy where a ſword is worn without armour before the reign of Charles VIII.; though a few as early as the reign of Charles VI. have ſhort daggers in their girdles. Hallam's State of Europe during the Middle Ages, vol. ii. ch. 9. part i. p. 441. London, 1818.

DUEREN. See DEUREN.

DUFOUREA, in *Botany*, ſo named in honour of a French botaniſt.—Achar. Syn. 246. "Lichenogr. 103. t. 11. f. 2." A genus of the order of *Lichenes*, compoſed of *L. flammeus*, Linn. Suppl. 451. Hoffm. Pl. Lich. t. 3. f. 1; *L. madreporiformis*, Wulf. in Jacq. Coll. v. 3. t. 3. f. 2; and three other ſpecies. The *frond* is tubular, branched, membranous; *ſhields* terminal, with a border from the frond. We muſt ſhelter ourſelves under the doubt, expreſſed by the author himſelf, reſpecting this genus.

DUKE'S COUNTY, l. 5, *r.* 3290.

DULVERTON, l. 11, *r.* 204 and 1035.

DULWICH. Add—See CAMBERWELL and PECKHAM.

DUMBARTON. By the return of 1811, the burgh and pariſh of Dumbarton contained 363 houſes, and 3121 perſons; 1373 being males, and 1748 females: 93 families employed in agriculture, and 524 in trade and manufactures. The ſhire of Dumbarton contained 3218 houſes, and 24,189 perſons; 11,369 being males, and 12,820 females: 1123 families employed in agriculture, and 2689 in trade, manufactures, and handicraft.

DUMBLANE. In 1811, the pariſh contained 473 houſes, and 2733 perſons; 1272 being males, and 1461 females: 163 families employed in agriculture, and 293 in trade, &c.

DUMFRIES. In 1811, the burgh and pariſh contained 1445 houſes, and 9262 perſons; 4103 being males, and 5159 females.

DUMFRIESHIRE. By the return of 1811, this county contained 11,660 houſes, and 62,960 perſons; 29,347 being males, and 33,613 females: 3862 families employed in agriculture, and 4435 in trade, manufactures, and handicraft.

DUMMER, l. 2, for Grafton *r.* Coos; add—containing 7 inhabitants.

DUMMERSTOWN, l. 3, *r.* 1704.

DUNBAR, in Scotland. The burgh and pariſh, in 1811, contained 664 houſes, and 3965 perſons; 1661 being males, and 2304 females: 263 families employed in agriculture, and 305 in trade and manufactures.

Dunbar, a townſhip of Fayette county, in Pennſylvania, containing 2066 perſons, of whom, in 1810, 7 were ſlaves.

DUNBARTON, l. 3, *r.* 1256.

DUNDEE, col. 2, l. 7 from the bottom, *r.* 1811—29,614, and add—the number of houſes 2482.

DUNFERMLINE, col. 2, l. 41, *r.* 1811—11,649; add—and the number of houſes in the burgh and pariſh 1810.

DUNKARD, a townſhip of Greene county, in Pennſylvania, having 1055 inhabitants.

DUNKELD. The town and pariſh, in 1811, contained 126 houſes, and 1360 perſons; 651 being males, and 709 females. The pariſh of Little Dunkeld contained 637 houſes, and 2982 perſons; 1448 being males, and 1534 females.

DUNMOW, Great, col. 2, l. 14 and 15, *r.* 1811—397—2015.——*Little*, l. 4, add—The number of houſes, in 1811, was 45, and of perſons 264.

DUNNET. In 1811, the pariſh contained 311 houſes, and 1398 perſons; 638 being males, and 760 females.

DUNSE. In 1811, the pariſh contained 462 houſes, and 2424 perſons; 1174 being males, and 1250 females.

DUNSTABLE, l. 6, *r.* 1049; l. 9, *r.* 475.

DUNSTAPLE. In 1811, the pariſh contained 296 houſes, and 1616 perſons; 690 being males, and 926 females.

DUODENUM. See Intestines.

DUPLIN, l. 4, *r.* 7863—2416.

DURAND, a townſhip of Coos county, in New Hampſhire, having 62 inhabitants.

DURBAR, denotes in India the court, hall of audience, or levee.

DURHAM, col. 2, l. 9, *r.* 29,033—177,625; l. 10, *r.* 83,671 and 93,954.

Durham *City*, l. *ult.* *r.* 932, and 6763.

Durham, in America, l. 4, *r.* 1772; l. 9, *r.* 1449; l. 11, for New Haven *r.* Middleſex; l. 15, *r.* 1101; l. 17, *r.* 404.

DURSLEY, l. 15, for town *r.* pariſh, 489: l. 16, *r.* 2580—365 families.

DUTCHESS County, l. 7, *r.* in 1810, was 51,363—1262.

DUXBOROUGH, or Duxbury, l. 5, *r.* 2201.

DUXBURY, l. 3, *r.* 326.

DYBERRY, a townſhip of Wayne county, in Pennſylvania, having 318 inhabitants.

DYSART, l. 15, inſert—The borough and pariſh, by the return of 1811, contained 777 houſes, and 5506 perſons. The town of Dyſart contained 136 houſes, and 1578 perſons: the lower, &c.

DYSPHANIA, in *Botany*, δυσφανης, *inconſpicuous.*—Br. Prodr. Nov. Holl. v. 1. 411.—Claſs and order, *Polygamia Monoecia*, or rather *Diandria Monogynia*. Nat. Ord. *Holeraceæ*, Linn. *Chenopodiis affine*, Br.

Eſſ. Ch. Calyx deeply three-cleft, coloured. Cor. none. Stigma ſimple. Capſule turbinate, attached to the ſeed, and encompaſſed with the enlarged calyx. Moſt flowers female.

1. D. *littoralis*. A tropical New Holland herb, ſmooth, very diminutive, with alternate entire *leaves*, and axillary tufts of white *flowers*, twenty of which would hardly make the bulk of a pin's head. One only in each tuft is furniſhed with *ſtamens*.

E.

EAGLE, in *Geography*, a townſhip of Adams' county, in Ohio, containing 801 inhabitants.—Alſo, a townſhip of St. Clair, in the Illinois territory, having 384 inhabitants.

Eagle, *Bald*, a townſhip of Centre county, in Pennſylvania, having 1146 inhabitants.—Alſo, a townſhip of Lycoming county, in the ſame ſtate, having 246 inhabitants.

Eagle *Iſland*. Add—Alſo, an iſland in the diſtrict of Maine, and county of Hancock, having 9 inhabitants.

EAR, *Diſeaſes of*. See Deafness, Tympanum, Tube, *Euſtachian*, and Otalgia, the latter of which articles will be found in the *Addenda*.

EARL, in *Geography*, a townſhip of Lancaſter county, in Pennſylvania, containing 4218 inhabitants.—Alſo, a townſhip of Berks county, in the ſame ſtate, having 794 inhabitants.

EARTH, col. 19, l. 12 from bottom, for 7935 *r.* 3967½, and for 7882 *r.* 3941.

EARTHEN Ware. See Delf and Pottery.

EASTBOURNE, l. 13, after pariſh, inſert—which contains 120 houſes, and 720 inhabitants.

EAST District, a townſhip of Berks county, in Pennſylvania, having 805 inhabitants.

EASTHAM, l. 9, *r.* 752.

EASTON, col. 2, l. 1, *r.* 1657.

Easton, l. 5, *r.* 1557.

EAST Port. Add—It contained, in 1810, 1511 inhabitants.

East Town, l. 2, *r.* 587.

East Whiteland, l. 2, *r.* 779.

EATON, l. *penult. r.* 535.

EATONTOWN, a town of Putnam county, in Georgia, having 73 inhabitants.

ECHENEIS, l. 4, add—Or, according to Dr. Shaw, head furniſhed above with a flat, ovate, tranſverſely falcated ſhield, gill-membrane ſix-rayed, and body without ſcales.

ECLIPTIC, *Obliquity of*, col. 2, l. 6 from bottom, add—And he found the obliquity of the ecliptic at the ſummer ſolſtice to be 23° 27′ 51″,5, and at the winter ſolſtice 23° 27′ 47″,37. The difference he conceives to depend upon refraction. At the obſervation of the ſummer ſolſtice in 1812 with the new mural circle, he found the obliquity of the ecliptic to be 23° 27′ 52″,25; from that of the winter ſolſtice he deduced it 23° 27′ 47″,35.

ECTROSIA, in *Botany*, from εκτρωσις, *an abortion*, alluding to the number of abortive florets.—Brown Prodr. Nov. Holl. v. 1. 185.—A genus of graſſes, allied to Eleusine, (ſee that article,) and to *Chloris* of Swartz, all whoſe characters require inveſtigation.

EDDINGTON, in *Geography*, a town of America, in Maine and county of Hancock, having 205 inhabitants.

EDDYSTONE, col. 2, l. 1, for 8vo. *r.* folio.

EDEN, in America, l. 4, add—containing 657 inhabitants; l. 5, add—containing 224 inhabitants.

EDESSA. Add—Edeſſa, at preſent denominated Orfa, after having been the reſidence of the Courtneys, counts of Edeſſa, and having been taken by Zenghi or Zingi, was ſacked by the Moguls in the 13th century, and by Timur in the 804th year of the Hegira. It is now ſubject to the grand ſeignior, and the reſidence of a pacha of two tails. It is ſituated in a barren country, 67 miles from Bir, and 232 from Diarbekr. It is ſurrounded by a ſtone wall, and defended by a citadel. The houſes are well built, and the inhabitants, compoſed of Turks, Arabs, Armenians, Jews, and Neſtorians, are ſaid to amount to about 20,000 ſouls. The chief ornaments of this city are, a moſque, conſecrated to Abraham, and the cathedral of the Armenians, now decayed.

EDGARTON, l. 7, *r.* 1365.

EDGCOMB, l. 3, *r.* 1288; l. 9, *r.* 12,423 and 5107.

EDGEFIELD. Add—It contains 23,160 inhabitants, of whom 8576 are ſlaves.

EDGEMONT, l. 2, *r.* 611.

EDINBURGH, col. 7, l. 7, add—By the parliamentary return of 1811, the city and burgh of Edinburgh contained 7110 houſes, and 102,987 inhabitants; 43,982 being males, and 59,005 females. The ſhire of Edinburgh contained 8679 houſes, and 45,620 inhabitants; 21,022 being males, and 24,598 females.

EDINGTON. In 1811 the pariſh contained 85 houſes, and 417 perſons; 195 being males, and 222 females.

EDISTO, *r.* Ponpon.

EDWARDSIA, in *Botany*, (ſee that article,) is thus defined by Mr. Brown, in Ait. Hort. Kew. v. 3. 1.—Calyx five-toothed. Corolla papilionaceous. Legume with four wings and many ſeeds.

EFFINGHAM, l. 4, *r.* 876. Do. l. 5, *r.* 1004; *dele* including 762 ſlaves.

EGERIA, or Egera, the moſt ſtrongly fortified city of Mingrelia, on the left bank of the Enguri; populous and well built, and giving name to the whole country about it.

EGGS *of Flies*, l. 6 from the end, for formed *r.* found.

Egg, in *Architecture*, l. 4, for plated *r.* placed.

Egg *Harbour*. Add—It contains 1830 inhabitants, 22 being ſlaves.—Alſo, a town of Burlington county, in New Jerſey, containing 931 inhabitants.

EGHAM, l. 4, inſert—In 1811, the pariſh contained 519 houſes, and 2823 inhabitants.

EGREMONT, l. 3, *r.* 790.

Egremont, l. 6, *r.* 1811; l. 7, *r.* 329, 1556.

EGYPT, col. 6, l. *ult.* for or *r.* an. Col. 7, l. *penult.* for this *r.* the.

ELAÏN, in *Chemiſtry*, a name given by Chevreul to a principle exiſting in animal tallows or fats. To obtain it, he diſſolved the tallow in alcohol, and ſuffered the *ſteärin* (ſee Steärin) to cryſtallize; the alcohol was then diſtilled off, and thus the elaïn ſeparated. Braconnot procured it in a different manner. He ſubmitted the tallow to preſſure between folds of blotting-paper, which abſorbed the elaïn. The paper was then ſoaked in water, and again ſubjected to preſſure, by which the elaïn was forced out, and could thus be obtained ſeparately.

Elaïn thus obtained has much the appearance of a vegetable oil, and is quite liquid at a temperature of 59°. Sometimes it is deſtitute of ſmell and colour, but moſt commonly it poſſeſſes both, owing probably to the preſence of foreign bodies, from which it is impoſſible to free it. Chevreul examined the elaïn from the tallow of the human ſubject, the ſheep, the ox, the hog, the jaguar, and the gooſe, all of which differed ſlightly from one another. Their ſpecific gravity varied from .913 to .929; thoſe of the human ſubject and ox being lighteſt, and that of the gooſe the heavieſt. Thoſe of the ſheep, ox, and hog, were nearly colourleſs, and deſtitute of ſmell; all the others were more or leſs of a yellow colour, and poſſeſſed more or leſs odour. The elaïn of the ſheep was moſt ſoluble in alcohol, 100 parts of which fluid, ſpecific gravity .7952, diſſolved 81.17 of elaïn at a temperature of 167°. The elaïn of the jaguar was leaſt ſoluble, only 80.89 parts of the elaïn being ſoluble in the ſame quantity of alcohol at the ſame temperature. See further on this ſubject under Steärin.

ELAOLITE. See Mineralogy, *Addenda.*

ELBERT, l. 6, *r.* 4291 and 45.

ELBERTON, l. 3, add—it contains 58 inhabitants.

ELBURZ, a range of mountains in Khoraſſan in Perſia, which detaches ſeveral branches that expand over the country between Aſterabad and Meſhed, alſo over a great way to the eaſt and north of that city, form a junction with the ridge of Banian, and finally ſink into the deſert plains of Khorazan.

ELECTRICAL Well, *dele.*

ELECTRICITY, *Medical.* (See Medical *Electricity.*) This ſubject was terminated rather abruptly in the article above referred to, we ſhall therefore endeavour to ſupply what was there omitted, or has ſince been obſerved upon the ſubject.

The powers of electricity in removing diſeaſes were much over-rated by the earlier electricians, as for the moſt part happens with all new remedies. The diſappointment to which this neceſſarily led ſoon brought it into diſrepute, and latterly it has been treated with unmerited neglect. There can be no doubt, however, that when judiciouſly applied, it is a remedy poſſeſſing very conſiderable powers.

It is not our intention to detail here all the diſeaſes to which electricity and galvaniſm are applicable, as the remedy, when proper, will be found, for the moſt part, to be recommended in the different articles treating profeſſedly of ſuch diſeaſes. Our object is merely to deſcribe the beſt and moſt approved methods of applying electricity, and to ſtate a few remarkable facts which have been lately obſerved reſpecting its uſe.

Electricity may be applied in the form of *ſhocks*, *ſparks*, or of a *continued ſtream* or *current*. The firſt of theſe forms was generally had recourſe to by the older electricians, but it has been long ſince laid aſide, except in particular caſes of great general, or local debility. In ſuch caſes, the *ſhock* muſt be proportioned to the degree of the diſeaſe, but the ſize of the jar employed ſeldom or never ought to exceed a quart. The ſecond form, or that of *ſparks* from the chief conductor, is an excellent mode of applying electricity in many inſtances. It is, however, much leſs uſed than formerly. Sparks may be applied by the medium of balls of braſs or other metal, and their ſtrength is determined by the magnitude of the prime conductor, of the balls, and of the machine in general, and by the diſtance at which the balls are removed from the patient's body. The nearer the balls, the leſs powerful and more frequent are the ſparks, and *vice verſâ*. The third method of applying electricity is in the form of a *continued ſtream* or *current*, and this perhaps is the moſt generally uſeful and important form of the whole. This method requires a very powerful apparatus. The current is directed through the different parts of the body by means of a ſimple apparatus placed in contact, or nearly ſo, with the body, and connected with the prime conductor. Beſides theſe three forms of adminiſtering electricity, there is a fourth, which may be conſidered as intermediate in its nature between the two laſt; this is the application of what is termed the *electrical aura*. It is effected nearly like the laſt, only the electric fluid is permitted to paſs off from *points* of metal or wood placed at ſome diſtance from the body, or ſometimes inſtead of *points*, the *edges* of hollow metallic or wooden cylinders, more or leſs ſharp, are employed in a ſimilar manner.

Of theſe different methods of applying electricity, the two laſt are undoubtedly in all ordinary caſes preferable to the others. They are equally, if not more, beneficial in moſt inſtances, if properly applied; and beſides have the great advantage of exciting no dread or alarm in the patient, a circumſtance which often operates powerfully in deterring timid individuals from having recourſe to this remedy, beſides being productive of actual injury. Theſe methods, however, as we before obſerved, require a powerful apparatus, ſo that the electrician may be enabled to ſend a very copious ſtream of the fluid through the whole or any part of the body, if required, as it is chiefly upon this circumſtance that the good effects of theſe modes of applying electricity depend. We would not, however, be underſtood to recommend theſe modes of applying electricity excluſively of all others. The application of ſhocks, and particularly ſparks, is often of great uſe when judiciouſly employed. Even the alarm they excite may not be without its uſe in particular caſes; but ſuch caſes are rare, and the application of the remedy with advantage in theſe forms requires great judgment and practical knowledge on the part of the medical electrician.

For the phenomena of that modification of electricity termed *galvaniſm*, and its general effects upon the animal economy, we refer our readers to VOLTAISM, where they will find theſe ſubjects diſcuſſed; we ſhall therefore chiefly confine our attention here to the exhibition of galvaniſm as a remedy. The general principles of the application of galvaniſm differ in no reſpect from thoſe of the application of electricity, nor do the effects of this form of electricity upon the animal economy differ perhaps in any reſpect whatever from thoſe produced by common electricity; from the mode, however, in which this variety of the electric energy is excited and brought into action, a little difference in the mode of applying it is neceſſary. The application of galvaniſm in the form of ſhocks and ſparks is out of the queſtion. It is always applied in the form of a *continued* or *interrupted ſtream*, or ſometimes in the form of *aura;* hence the conductors generally require to be in contact with the ſkin of the patient, which ſhould be kept moiſt. The greater the ſurface of the conductor in contact with the ſkin within certain limits, *cæteris paribus*, the greater the effect produced, and *vice verſâ*. The *interrupted ſtream*, or that produced by the frequent removal and re-application of the conductor in contact with the ſkin, or by otherwiſe breaking the chain of communication, approaches in its nature more to that of the *electric ſhock* than the continued ſtream, a circumſtance which ſhould be kept in mind by the operator. Indeed with an apparatus compoſed of ſmall plates, the ſtream requires to be occaſionally interrupted, otherwiſe the effects will be very much diminiſhed. See VOLTAISM, laſt ſection.

With reſpect to the magnitude of the battery proper for medical purpoſes, no very general rule can be given. The greater the number of plates, eſpecially when of ſmall ſize, the more do the effects produced upon the animal economy reſemble thoſe produced by common electricity. Large plates are beſt adapted for keeping up the *continued ſtream*, which is doubtleſs one of the beſt modes of exhibiting galvaniſm, and of enſuring its ſpecific operation, if it exerts any. A medical galvaniſt can ſeldom require a battery compoſed of more than fifty or ſixty pairs of plates, from four to ſix inches ſquare, and a greater or leſs proportion of theſe muſt be employed according to the energy of action in the battery, and the circumſtances of his patient. Dr. Wilſon Philip ſtates, that few patients can bear, for any length of time, more than from eight to ſixteen pairs of plates fourteen inches ſquare, when adminiſtered as deſcribed below. The ſame author, however, remarks, that patients can often bear double this number, for a ſhort time, before any diſagreeable ſenſation is produced.

Dr. Wilſon Philip has lately attempted to ſhew that the galvanic battery may be ſubſtituted for the nervous energy in animals. His experiments on this ſubject are extremely intereſting, and their reſults led him to employ galvaniſm as a remedy in ſeveral diſeaſes to which it was never previouſly applied. Theſe therefore remain to be briefly noticed.

Aſthma and Dyſpnœa.—Dr. Philip ſtates, that he has employed galvaniſm in many caſes of habitual aſthma, and almoſt uniformly with relief. The good effects began to appear uſually from five to fifteen minutes after the application of the remedy. His battery conſiſted of thirty plates fourteen inches ſquare, more or leſs of which were employed according to the degree of ſenſation produced; and his rule was to begin with a low power, and gradually increaſe it by moving one of the wires from one diviſion of the trough to another. His method of exhibiting it in this diſeaſe was to apply two thin plates of metal, about two or three inches in diameter, moiſtened with water, one to the nape of the neck, and the other to the pit of the ſtomach,

mach, or a little lower, which plates were connected with the wires leading to the oppoſite ends of the battery. He directs that the wires ſhould be conſtantly moved upon the metallic plates, particularly the negative wire, otherwiſe the cuticle is apt to be injured where they reſt. The relief ſeemed much the ſame whether the poſitive wire was applied to the nape of the neck, or the pit of the ſtomach. The different effects, therefore, aſcribed by ſome to poſitive and negative electricity ſeem doubtful. When relief was obtained, nothing appeared to be gained by continuing the operation longer. The galvaniſm was ſeldom uſed more than once a day, except in ſome ſevere caſes. About a ſixth part of thoſe on whom it was tried received a permanent cure. It gave decided relief in all caſes, and only failed to give *conſiderable* relief in about one-tenth of the whole number of caſes.

Similar good effects are ſtated by Dr. Philip to have been experienced in dyſpnœa, provided no inflammatory ſymptoms were preſent. Dr. Philip, however, ſeems to doubt if it will be found uſeful in ſpaſmodic aſthma.

In *Dyſpepſia*, likewiſe, Dr. Philip thinks it will prove an excellent remedy; alſo in torpor of the liver and biliary ducts; and a recent writer ſtates, that he has found it very advantageous in chronic *hepatitis*, *conſtipation*, &c. See an Experimental Enquiry into the Laws of the Vital Functions, by Dr. A. P. Wilſon Philip.

ELECTROPHORUS, col. 2, l. 19 from bottom, for hair-ſkin *r.* hare-ſkin.

ELEGANGE, col. 2, l. 4 from bottom, for are *r.* have.

ELEGY, l. 2 from bottom, *r.* Gray's.

ELEMENTS, in *Phyſics*, col. 2, l. 27, for *mercury* r. *earth.*

ELEOCHARIS, in *Botany*, ἕλος, *a marſh*, and χαρις, *an ornament* or *favour*, from its general place of growth.—Brown Prodr. Nov. Holl. v. 1. 224.—A genus ſeparated from Scirpus by Mr. Brown; near akin to Dichromena, in character, but very different in habit; ſee thoſe articles. Though the definition is not without exceptions, the genus is thought a natural one by its learned author, embracing *Scirpus paluſtris*, *geniculatus*, *mutatus*, and *acicularis* of Linnæus with ſeveral others. There are eight New Holland ſpecies.

ELEPHAS, col. 10, l. 21 from bottom, for thirteen *r.* three.

ELETTARIA, in *Botany*, ſo called by Dr. Maton, V.P.L.S., from the Malabar name *Elettari*, or *Ela-tari*, which has always been appropriated to this very plant. If any names of barbarous origin may be retained, and many are now eſtabliſhed, even by Linnæus himſelf, who in the vigour of his judgment and authority proteſted againſt them, the above may well be admitted, for the following reaſons. It excluſively belongs to a very important plant, conſtituting, as far as we know, a genus by itſelf, and it is perfectly unexceptionable in ſound and conſtruction, as well as free from all ambiguity. Were this name nevertheleſs to be finally rejected, we ſhould gladly ſubſtitute in its ſtead that of *Matonia*, in honour of our learned and valued friend, who has firſt clearly eſtabliſhed the genus.—Maton Tr. of Linn. Soc. v. 10. 254. Rheede Hort. Mal. v. 11. 9.—Claſs and Order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Cannæ* Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, cylindrical, elongated, minutely and irregularly toothed at the margin, permanent. *Cor.* of one petal; tube longer than the calyx, cylindrical, ſlender, curved; outer limb in three equal, oblong, recurved ſegments, not half the length of the tube; inner a ſomewhat obovate, large, notched, crenate, undivided lip, with a ſhort claw. *Stam.* Filament one, rather longer than the claw, ſtout, erect, with a lanceolate, acute, horizontal lobe, about its own length, on each ſide at the baſe, the ſummit ſimply notched, without any creſt or extenſion beyond the anther, which conſiſts of two oblong, diſtant, marginal lobes, about half the length of the filament, attached by their backs, their extremities on a level with the top of the filament. *Piſt.* Germen inferior, nearly globular; ſtyle thread-ſhaped, lying cloſe to the filament, between the lobes of the anther; ſtigma funnel-ſhaped, ſmall, erect, nearly on a level with the top of the filament. *Peric.* Capſule fleſhy, elliptic-oblong, or ſomewhat ovate, triangular, ſtriated, of three cells, and three coriaceous valves. *Seeds* numerous, roundiſh, ſomewhat angular, rough, each with a fine, membranous, evaneſcent tunic. *Recept.* central, ſhorter than the capſule when dry, winged with three longitudinal membranes, originally connected with the central ridge of each valve.

Eſſ. Ch. Anther of two diſtinct lobes. Filament with two tranſverſe lobes at the baſe; emarginate and ſimple at the ſummit. Outer limb of the corolla in three oblong lobes; inner a ſingle lip. Capſule of three cells and three valves, with a central receptacle. Seeds rough, tunicated.

1. E. *Cardamomum.* Leſſer, or Malabar, Cardamom. Maton as above. (Amomum repens; Sonnerat Ind. Or. v. 2. 240. t. 136. Roſc. Tr. of Linn. Soc. v. 8. 353. Willd. Sp. Pl. v. 1. 9. A. Cardamomum; White Tr. of L. Soc. v. 10. 230. t. 4, 5. Alpinia repens; Sm. Tr. of L. Soc. v. 8. 353, note. Specim. Pharm. Lond. unpubl. 8. A. Cardamomum; Roxb. Monandr. 38. Corom. v. 3. 19. t. 226. Cardamomum minus; Matth. Valgr. v. 1. 25. Camer. Epit. 11. f. 3. Bont. Hiſt. Nat. 126, the three rounder fruits only. Cluſ. Exot. 187. Ger. Em. 1542. Dale Pharmac. 276. C. ſimpliciter in officinis dictum; Bauh. Pin. 414. C. cum ſiliquis ſive thecis brevibus; Bauh. Hiſt. v. 2. 205. Elettari; Rheede Hort. Mal. v. 11. 9. t. 4, 5.)—Capſule ovate-oblong, obtuſely triangular. Calyx notched.—Native of the mountainous parts of Malabar, on lofty cloudy hills, flowering when the rainy ſeaſon begins, in April and May, ripening ſeed in October and November. *White*, *Roxburgh*. *Root* perennial, tuberous, with many fibres. *Leafy ſtems* from ſix to twelve feet high, erect, ſtraight, pale green, not red or browniſh, at the baſe. *Leaves* elliptic-lanceolate, pointed, from nine inches to two and a half feet long, and from one to five inches broad, ſpreading, dark green, ſmooth, entire; paler and more gloſſy beneath. *Stipula* emarginate, rounded, ſmooth. *Panicles* lateral, ſeveral from the tuberous baſe of each ſtem near the root, a ſpan long, much branched, many-flowered, ſpreading horizontally on the ground, jointed, ſmooth. *Bracteas* alternate, ovate-oblong, acute, at the baſe of each partial ſtalk, withering; *partial* ones ſolitary, tubular, cloſely embracing the germen and calyx, almoſt as long as the latter, and reſembling it in ſhape, but deciduous. Outer limb of the *corolla* green; *lip* white, veined with crimſon. *Capſule* when freſh fleſhy, ſmooth, nearly globular, but becoming bluntly triangular, coriaceous, and pale brown, when dry. *Seeds* blackiſh, gratefully aromatic and pungent, with a flavour of Camphor, eſteemed more agreeable and uſeful in food and medicine, than any others of this tribe. (See Cardamom, excluding what regards *Cardamomum majus*, &c.) This ſubject will be found explained under our ſupplementary article Amomum. Mr. White, who has given a moſt accurate and perfect hiſtory of this plant and its cultivation, under the name of *Amomum Cardamomum*, in Tr. of Linn. Soc. v. 10, above quoted, ſpeaks of its ſeeds as "one of the moſt valuable articles of modern luxury, regarded as a neceſſary of life, by moſt of the inhabitants of

Aſia—a grateful and ſalubrious acceſſary of diet—whoſe general adoption by the civilized nations of the other quarters of the world is prevented only by its limited importation." This is certainly quite a new idea to us Europeans, who value this drug merely as a grateful and wholeſome ſtomachic, on which account it becomes an article of commerce, having ſupplanted all its relatives in the apothecary's ſhop. Its general uſe in Aſia, indeed, renders the plant a very important and profitable object of culture, though the harveſt, occurring at the moſt unhealthy ſeaſon, is not unattended by ſerious dangers. Fevers, fluxes, the bite of innumerable minute leeches, and the inſtantly fatal ſting of the whip-ſnake, are mentioned as not uncommon miſchiefs, to which is added the cauſtic quality of a ſhrubby plant, whoſe botanical characters have not been aſcertained, but whoſe leaves produce dangerous, and ſometimes fatal, ulcerations of the ſkin. The profit of the Cardamom farms, however, is ſo conſiderable, as to overcome all difficulties in their cultivation, and Mr. White thinks they might eaſily be greatly extended.

2. E. *major*. Greater Oblong Cardamom. (Cardamomum majus; Dale Pharmac. 276. Bont. Hiſt. Nat. 127, the fruit only? C. majus officinarum; Bauh. Pin. 413. C. majus vulgare; Ger. Em. 1542. Cluſ. Exot. 187. Lob. Ic. v. 2. 204. C. medium; Matth. Valgr. v. 1. 25. Camer. Epit. 11. f. 2. Barrel. Ic. obſ. 1395. t. 971, the longeſt fruit. C. cum ſiliquis ſive thecis longis; Bauh. Hiſt. v. 2. 205. Enſal; Herm. Muſ. Zeyl. 66. Zingiber Enſal; Gærtn. t. 12. f. 5.)—Capſule lanceolate-oblong, acutely triangular, with flat ſides. Calyx three-lobed.—Native of Java, according to Dale, who remarks that this kind of Cardamom was, even in his time, rarely uſed, ſome ſubſtituting for it Grains of Paradiſe, others the *Amomum verum*. (See Amomum.) Specimens of this ſpecies are indeed, at preſent, only to be found in the cabinets of collectors. We are perſuaded they muſt belong to the ſame genus as the Malabar Cardamom. They appear to have a ſimilar panicled infloreſcence, and the ſtructure of the *fruit*, with its central *receptacle*, coriaceous ſtriated valves, and angular rough or rugged *ſeeds*, are the ſame in this as in the laſt. Theſe *ſeeds*, however, are of a brighter, or reddiſh hue, and very inferior in flavour, far leſs powerful and leſs agreeable. The ſhape of the *capſule* is eſſentially different, being uſually thrice as long, and much more acutely and ſtrikingly triangular, flattened at the ſides, and more evidently curved. It is ſimilarly crowned with a long, cylindrical, permanent *calyx*, decidedly three-lobed, whereas that of the former is only crenate, or jagged. This part is unfortunately often rubbed off by thoſe who collect the fruits for ſale. If Bontius be right, there is ſo wide a difference between theſe two plants in the ſituation of their *flowers*, as would almoſt overturn their generic identity. He gives, under the title of *Cardamomum majus*, a figure with large, terminal, ſimply racemoſe *infloreſcence*, which he compares to that of a Hyacinth, deſcribing the plant as taller than a man, with very large *leaves*, *flowers* white with a purple limb, and the whole very beautiful. Two *capſules*, not unlike our plant, though by no means very like it, being repreſented cylindrical, not triangular, and deſcribed as long as the finger, accompany the above figure. We cannot, on mature conſideration, think the ſynonym of Bontius rightly applied. Nevertheleſs, he ſpeaks of the qualities as agreeing with his *C. minus*, ſuppoſed to be our *Amomum Cardamomum*, or *Amomum verum* of old writers, not the preceding *Elettaria Cardamomum*. Cluſius, Gerarde, &c. rather copy the fruit from Bontius than from nature, and ſeem to take the *calyx* for the *ſtalk*.

ELEVATION, *Angle of*, for A R B *r.* R A B (*Plate* I. *Mechanics*, *fig.* 3.)

ELGIN, l. *ult.* By the return of 1811, the number of houſes in the burgh and pariſh was 962, and of inhabitants 4602.

ELHAM, l. 3 from bottom, inſert after London—and the pariſh contains 174 houſes, and 992 inhabitants.

ELIZABETH, a townſhip of Miami county, in Ohio, having 730 inhabitants.

Elizabeth, *Cape*, l. 7, *r.* 1415; l. 14, *r.* 1874; and l. 15, *r.* 1734.

Elizabeth-*Town*, col. 2, l. 1, after New York, inſert —and contained, in 1810, 2977 inhabitants, of whom 222 were ſlaves; l. 6, *r.* 2368. Add—Alſo, a town of Kentucky, in Harden county, containing 181 inhabitants, of whom 47 are ſlaves.

ELK Lick, a townſhip of Somerſet county, in Pennſylvania, having 1118 inhabitants.

ELKLAND, a townſhip of Lycoming county, in Pennſylvania, having 91 inhabitants.

ELK RUN, a townſhip of Columbiana county, in Ohio, containing 787 inhabitants.

ELLESMERE, col. 2, l. 7 and 8, *r.* 1064 and 5630.

ELLINGTON, l. 2, *r.* 1344 inhabitants.

ELLIOT, a town of York county, in the diſtrict of Maine, containing 1650 inhabitants.

ELLSWORTH. Add—and containing 614 inhabitants.—Alſo, a town of Grafton county, in New Hampſhire, having 142 inhabitants.—Alſo, a townſhip of Trumbull county, in Ohio, having 202 inhabitants.

ELMHAM, North. Add—By the return of 1811, the pariſh contains 127 houſes, and 896 perſons.

ELMINA, l. 8 from bottom, for kaffo *r.* braffo.

ELMORE, l. 2, *r.* 157.

Vol. XIII.

ELOCUTION. Add to the references—Action, Articulation, Passion, Pronunciation.

ELSENBOROUGH, a town in Salem county, in New Jerſey, having 517 inhabitants.

ELTHAM, l. 3, *r.* 285 houſes, and 1813 inhabitants.

ELWUND, *Mount*, a range of mountains in Irak, in Perſia, moſt probably the mount Orontes of Diodorus, about twelve miles in length. Near its ſummit, which is tipped with continual ſnow, and ſeldom obſcured by clouds, is a beautiful valley, perfumed by a thouſand ſweet-ſcented flowers. This mountain is famous in the Eaſt for its mines, waters, and vegetable productions. The natives of Hamadan, which is ſituated at the foot of this mountain, believe that ſome of its graſſes have the power of tranſmuting the baſeſt metals into gold, as well as of curing any diſtemper to which the human frame is expoſed; and the Indians ſuppoſe that it contains the philoſopher's ſtone.

ELY, col. 2, l. 4, after includes, inſert—5977 houſes, occupied by 32,443 inhabitants, &c. Col. 4, l. 43, *r.* 4249; l. 44, *r.* 928.

Ely, or *Elie*. In 1811 this pariſh contained 157 houſes, and 886 perſons; *viz.* 365 males, and 521 females.

EMBANKMENT, col. 25, l. 4 from bottom, inſert—In 1809 about 6000 acres of land were obtained by an embankment of the ſea upon Cartmel ſands, in Lancaſhire. The embankment at Tre-Madoc, in Carnarvonſhire, was completed in 1811.

EMDEN, in *Geography*, a townſhip in the diſtrict of Maine, and county of Somerſet, having 351 inhabitants.

EMERY, l. 11, after Tennant, inſert—(Phil. Tranſ. for 1802, p. 401.)

EMETIN, in *Chemiſtry*, a name given by MM. Majendie and Pelletier to a ſubſtance extracted by them from ipecacuanha, and ſo called becauſe it conſtitutes the principle to which that root owes its emetic qualities. Emetin may be obtained by digeſting ipecacuanha in ſulphuric ether, and afterwards in alcohol. The alcoholic ſolution is then to be evaporated to dryneſs, rediſſolved in water, and acetate of lead dropped into the ſolution. The copious precipitate thus obtained being well waſhed and diffuſed through water is then to be expoſed to the action of ſulphuretted hydrogen. The lead is thus precipitated while the emetin remains diſſolved in water; and the liquid being filtered and evaporated to dryneſs, the emetin will be obtained in a ſtate of purity.

Emetin thus obtained exiſts in the form of browniſh tranſparent ſcales. Its taſte is bitter and a little acrid, but not diſagreeable. It has no ſmell. At the temperature of boiling water it is not changed. When expoſed to a higher heat it does not melt, but ſwells, becomes black, and is converted into water, carbonic acid gas, a little oil, and acetic acid, but yields no trace of ammonia, which indicates that it does not contain azote. A very ſpongy and light coal remains. When expoſed to the air, emetin undergoes no change, except the air be very damp, when it deliqueſces. It diſſolves readily in water and alcohol, but not in ſulphuric ether. It does not cryſtallize.

Sulphuric and nitric acids, when concentrated, decompoſe it. Muriatic and phoſphoric acids diſſolve it without alteration, and it may be ſeparated from them by ſaturation with an alkali. Acetic acid is one of the beſt ſolvents of it. Gallic acid and infuſion of galls precipitate it immediately, as do ſolutions of moſt of the metallic ſalts.

Half a grain of this ſubſtance occaſions violent vomiting, followed by ſleep, and the animal awakes in a ſtate of health. A larger quantity, as twelve grains, or even ſix grains, produces violent vomiting and ſleep, followed by death, which appears to take place in conſequence of the ſevere inflammation of the lungs and inteſtinal canal, produced by large doſes of this ſolution.

ENAMEL *of the Teeth, Chemical Properties of.* See Teeth.

ENCHYLÆNA, in *Botany*, from κυλος and λαινος, alluding, we preſume, to its ſucculent habit, and ſtony place of growth.—Brown Prodr. Nov. Holl. v. 1. 407.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Holeraceæ*, Linn. *Chenopodeæ*, Br.

Eſſ. Ch. Calyx five-cleft; pulpy and cloſed in the fruit. Stamens inſerted into its baſe. Stigmas two or three, thread-ſhaped. Capſule membranous, covered. Seed depreſſed.

Procumbent *ſhrubs*, very much branched, with alternate fleſhy *leaves*, and axillary, ſolitary, ſeſſile *flowers*, without *bracteas.* There are two New Holland ſpecies.

ENDIAN. Add—It lies in N. lat. 30° 18′, 20 miles from Zeitoon, occupies both banks of the Tab, and is nearly two miles in circuit. It trades with Baſſora and Behaban, and its population is between 4000 and 5000 ſouls.

ENDIANDRA, in *Botany*, Br. Prodr. Nov. Holl. v. 1. 402, a triandrous genus, perhaps hardly diſtinct from *Cinnamomum*, which Mr. Brown ſeparates from *Laurus* of Linnæus; and alſo very near his Cryptocarya, ſee that article.

ENFIELD, l. 4, after parliament, inſert—in 1811, 1115 houſes, and 6636 inhabitants. The town has only 524 houſes, and 3055 inhabitants, and is one of the four quarters into which the pariſh is divided.

Enfield, in America, l. 7, *r.* 1846; l. 10, *r.* 1291.

ENFILADE, col. 5, l. 34, *fig.* 4. Col. 6, l. 20, inſert—(*fig.* 5.)

ENGINE, col. 9, l. 6, for levelled *r.* bevelled.

ENGLAND, New. Add—See America and United States.

ENGURI, a river of Mingrelia, which riſes in the mountains of the Abgazians, and flows cloſe to the fortreſs of Rugh, between Illani and Anaklie, into the Euxine. Near its ſource it divides into two branches; and as they never again unite, the right branch retains the name of Enguri; but the left is called Schariſtkali, under which denomination it croſſes the whole of Mingrelia from N. to S. and falls into the Phaſis, ſeven verſts above the city of Potti.

ENOSBURGH, a town of Franklin county, in Vermont, containing 704 inhabitants.

ENUNCIATIVE Organs, *dele* the reference.

EPHRATA, or Dunkard-*Town*, inſert—(which ſee).

EPIBLEMA, in *Botany*, Brown Prodr. Nov. Holl. v. 1. 315.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Calyx and petals equal, ſpreading. Lip ſtalked, undivided, with two faſciculated thread-ſhaped proceſſes at the baſe; and an appendage attached to the bottom of the column, below the claw of the lip. Anther parallel to the ſtigma, with a petal-like lobe at each ſide.

1. E. *grandiflorum.*—Gathered by Mr. Brown, on the ſouth coaſt of New Holland. *Flowers* handſome, blue, reſembling thoſe of a Thelymitræ; ſee that article.

EPIDERMIS. Add—See Integuments.

EPIDOTE. See Mineralogy, *Addenda.*

EPIGLOTTIS. See Deglutition and Larynx.

EPITHYME, for Epitheos *r.* Cuscuta.

EPPING, l. *penult.* *r.* 334 and 1874.

Epping, in America, l. 3, *r.* 1182.

EPSOM, l. 4, *r.* 1811—397 houſes, 2515 inhabitants.

Epsom, in America, l. 4, *r.* 1810, and 1156.

EPWORTH, l. 1, for Lindſey *r.* Manley, weſtern; l. 4, *r.* 274; l. 5, *r.* 1502.

EQUAL Altitude, *Inſt. by the Earl of Ilay*, col. 1, l. 10 from bottom, for five pairs *r.* two pairs.

EQUATION-Mechanism, col. 2, l. 33, for received *r.* viewed.

Equation, *Contrivances by the Rev. William Pearſon*, col. 1, l. 15 from bottom, for was repreſented *r.* is repreſented. Col. 10, l. 24, for with *r.* within. Col. 11, l. 22, for arcs *r.* areas.

EQUATORIAL, *Explication and Uſe of the Tables*, col. 1, l. 19 from bottom, for (like Table I.) *r.* (like Table V.)

Equatorial-*Micrometer*, col. 2, l. 12, for *fig.* 3. *r.* *fig.* 4.

EQUES, in *Ichthyology*, *Knight-fiſh.* See Chætodon *lanceolatus.* This is a native of the American ſeas; in length about twelve inches.

ERATOSTHENES, col. 2, l. 9 from bottom, *r.* Bib.

ERBILLE, in *Geography*, a town of Perſia, which is probably that Arbela ſo famous for the final victory obtained by Alexander over Darius, and the capital of the province of Adiabene, is now reduced to a wretched mud town, with a population not exceeding 3000 ſouls. N. lat. 36° 11′.

EREMOPHILA, in *Botany*, from ερημος, *a deſert*, alluding to its place of growth.—Br. Prodr. Nov. Holl. v. 1. 518.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Myoporinæ*, Br.

Eſſ. Ch. Caylx in five deep ſegments; changed and membranous in the fruit. Cor...... Stigma undivided. Drupa dry, with four cells, and four ſeeds.

Two ruſh-like ſhrubs, *E. oppoſitifolia* and *alternifolia*, found on the inhoſpitable ſouth coaſt of New Holland. Their *leaves* are ſemicylindrical. *Flowers* ſolitary, ſtalked.

ERIACHNE, from εριον, *wool*, and αχνη, *a huſk*.—Br. Prodr. N. Holl. v. 1. 183.—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Eſſ. Ch. Calyx of two equal valves, two-flowered. Florets ſeſſile, of two bearded valves. Nectary of two ſcales. Stigmas feathery.

A genus of tropical graſſes, akin to *Aria*, generally downy; their *leaves* narrow, *flowers* panicled. Mr. Brown deſcribes ten New Holland ſpecies, none of them in any other author. In ſix of them, the outer valve of the *corolla* has a terminal *awn*.

ERIE, l. 2, *r*. 3758; after Erie, add—borough, containing 394 inhabitants, of whom, in 1810, 14 were ſlaves.

ERIOCHILUS, in *Botany*, from εριον, *wool*, and χειλος, *a lip*, becauſe the diſk of the nectary is downy.—Br. Prodr. Nov. Holl. v. 1. 323.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ringent; lower leaves ſtalked, under the lip. Petals ſmaller, erect. Lip ſtalked; diſk downy, without glands. Column ſemicylindrical; ſimple at the top. Anther terminal, permanent, pointleſs; cells cloſe together. Maſſes of pollen four in each.

1. E. *autumnalis*. Br. n. 1. (Epipactis cucullata; Labill. Nov. Holl. v. 2. 61. t. 211. f. 2.)—Native of the eaſt and ſouth parts of New Holland. *Bulb* globular. *Leaf* radical, encloſed in a ſheath, with the baſe of the *ſtalk*, which is four or five inches high, naked, bearing from one to three white or purpliſh *flowers*. Akin to CALADENIA.

ERIVAN. Add—By various ſieges, the laſt of which was in the year 1808 by the Ruſſians, this town is reduced to a ruinous condition. It has been repeatedly taken both by the Turks and Perſians, and has remained in the poſſeſſion of the latter from the peace of Nadir Shah in 1748. This city, which gives name to a province bounded on the N. and W. by the Moſſian hills, on the S. by the Araxes, and on the E. by the diſtrict of Karabaug and Karadaug, is ſituated on the banks of the river Zengui, and defended by a fortreſs, of an elliptical form, upwards of 6000 yards in circumference. The N.W. ſide of the town is built on a precipice, impending over the river 100 toiſes in height; but is ſurrounded by the fort which is encompaſſed by two ſtrong walls, flanked with towers.

ERKOOM, in *Ornithology*, a bird of Abyſſinia, which belongs to a large tribe, differing principally in the beak and horn. The horn is ſometimes ſeen upon the back, and ſometimes upon the forehead, above the root of the beak. In the eaſt part of Abyſſinia, it is called *Abba Gumba*, in the language of Tigré; but on the weſtern ſide of the Tacazzé, it is called Erkoom. Its groaning noiſe gives occaſion to the firſt of its names. By naturaliſts, this bird is called the Indian crow or raven. The colour of the eye is a dark brown, or rather of a reddiſh caſt; the eye-laſhes are large: its length from the tip of the beak to the extremity of the tail is three feet ten inches; the length of the beak is ten inches, and the length of the horn three and a half inches. The colour of this bird is ſooty-black; the large feathers of the wing are ten in number, milk-white both without and within; the tip of his wings reaches nearly to his tail; and at his neck he has thoſe protuberances like the turkey-cock, which are light blue, but turn red upon his being chafed, or when the hen is laying. He ſeems to prefer running on the ground to flying; but when he is raiſed, he flies to a conſiderable diſtance. Its ſmell is rank, and he is ſaid to live in Abyſſinia upon dead carcaſes; but this Mr. Bruce conceives to be a miſtake, as he never follows the army like birds of prey. His food ſeemed to be the green beetles that are found upon the tops of the teff, and in order to obtain them, he frequents fields of this grain. He builds in large thick trees, and if he can, always near churches, and his neſt is covered like that of a magpie. Mr. Bruce, in the Appendix to his Travels, has deſcribed this bird, and accompanied his deſcription with a drawing.

ERROL, l. 2, for Grafton *r*. Coos. Add—and in 1810, contained 38 inhabitants.

ERUCARIA, in *Botany*, Gærtn. v. 2. 298. t. 143. Brown in Ait. Hort. Kew. v. 4. 122. See CORDYLOCARPUS.

ERVING's GORE, in *Geography*, a town of Hampſhire county, in Maſſachuſetts, having 160 inhabitants.

ERYTHRÆA, in *Botany*, ερυθραια, *red*. Renealm. Spec. 77. t. 76. Brown Prodr. Nov. Holl. v. 1. 451. See CHIRONIA *Centaurium*, *maritima*, *ſpicata*, &c.

ERZERUM, l. 11, after church, add—Mr. M‘Kinneir eſtimates the whole number of inhabitants at 100,000; 15,000 of whom are Armenians, and the reſt Turks, with the exception of 200 or 300 Greeks. Here are nearly 40 moſques, four of which are handſome, a Greek church, a large Armenian chapel, and at a diſtance from the city three celebrated monaſteries. The bazaars are extenſive. In winter the cold is intenſe; but the air being pure, and the water good, the natives are ſtout and healthy. N. lat. 39° 57′. E. long. 40° 57′. The pachalic of Erzerum is the moſt conſiderable in Armenia; it is divided into twelve diſtricts, and governed by a pacha of three tails, who reſides at Erzerum.

ESCAPEMENT, *Iſochronal for a Pendulum*, col. 2, l. 7 from the bottom, for C N *r*. Q N. Col. 3, l. 13, for N D *r*. N Q.—*Eſcapement by Alex. Cumming*, col. 1, l. 10 from the bottom, for D *r*. H.

ESKIMAUX BAY, *r*. Labrador.

ESOX, col. 5, l. 25, after repreſented, inſert—curving.

ESSEX, l. 5 from bottom, *r*. 42,829 and 252,473.

ESSEX, in America, l. 7, *r*. 8; l. 8, *r*. by the cenſus of 1810, 71,888 inhabitants.

ESSEX, in Virginia, l. *ult*. *r*. 9376 inhabitants, of whom, in 1810, 5659 were ſlaves.

ESSEX, in New Jerſey, l. 4, for 3 *r*. 9; l. 5, *r*. 25,984 and 1129.

ESSEX, in New York, add—containing 9477 inhabitants.

ESSEX, in Vermont, add—containing 14 townſhips, and 3087 inhabitants.

ESSEX, a townſhip, &c. l. 2, *r*. 957.

ESTLE, a county of Kentucky, containing 2082 inhabitants, of whom, in 1810, 133 were ſlaves.

ETHER, in *Chemiſtry*. The ſpecific gravity of ſulphuric ether, as recently determined by M. Theodore de Sauſſure, is .7155 at 68°; and it boils in vacuo at — 20°, and not at 20°, as ſtated in the Cyclopædia. The ſpecific gravity of the vapour of ſulphuric ether, according to Mr. Dalton, is 2.25; according to M. Gay Luſſac, whoſe experiments were made with great care, it is 2.586, that of air being 1. M. Theodore de Sauſſure has lately publiſhed an analyſis of ſulphuric ether: according to this ingenious chemiſt, it is compoſed of

Hydrogen - - -	14.40
Carbon - - - -	67.98
Oxygen - - - -	17.62
	100.00

Which proprotions are nearly equivalent to

Olefiant gas - - -	80.05
Water - - - -	19.95
	100.00

Dr. Thomſon, however, ſeems to doubt the perfect accuracy of this analyſis, and ſuppoſes rather that it is a compound of four atoms of olefiant gas and one atom of water, which ſuppoſition nearly agrees with the ſpecific gravity of the vapour of ether above-mentioned, as determined by M. Gay Luſſac. Thus the ſp. gr. of olefiant gas being .974.

Two volumes of it will weigh	1.948
The ſp. gr. of the vapour of water is - - -	.625
	2.573

which certainly differs but little from 2.586, the true ſp. gr. according to M. Gay Luſſac.

Nitric Ether.—The properties of this ſingular ſubſtance have been lately inveſtigated by Thenard. This eminent chemiſt found the following to be the beſt mode of preparing it. Equal parts of alcohol and nitric acid, of the ſp. gr. 1.283, were put into a retort, to the beak of which was luted a glaſs tube, which was plunged to the bottom of a long narrow glaſs jar, half filled with a ſaturated aqueous ſolution of common ſalt. From the top of this jar paſſed another tube, which went to the bottom of another ſimilar jar, filled with the ſame ſolution. In this manner, five other ſimilar jars were connected with each other, and from the laſt a tube paſſed to a water-trough, to receive the gaſeous products in proper veſſels. Each of theſe jars was ſurrounded with a mixture of ſnow and ſalt, to keep it as cool as poſſible. A moderate heat was then applied to the retort, which produced ſo violent an efferveſcence, that it became neceſſary to moderate it by withdrawing the fire, and applying cold water to the outſide of the retort. At the end of the operation, the ether was found floating on the ſurface of the ſolution in the different jars, but more eſpecially in the firſt. It was ſeparated, and to remove the nitrous and acetic acids with which it was contaminated, it was agitated in a cloſe phial with a ſufficient quantity of chalk. Thus purified, it poſſeſſes the following properties.

It has a ſlightly yellow colour, and a very ſtrong etherial odour. Its taſte is likewiſe ſtrong and peculiar. It is rather heavier than alcohol. It is much more volatile than ſulphuric ether, the heat of the hand being ſufficient to make it boil; hence it produces a very conſiderable degree of cold by its evaporation. It is lighter than water, and requires about forty-eight parts of that fluid to diſſolve it. The ſolution has an agreeable odour, like that of apples. It is ſoluble in alcohol in every proportion. It is very inflammable. When kept for ſome time, both nitrous and acetic acids are formed in it. The ſame acids alſo are produced if it be heated, or even agitated with water. It has alſo the property of abſorbing theſe acids very readily, and acquiring the property of reddening vegetable blues. Its vapour is much more elaſtic than that of ſulphuric ether.

According to Thenard, it is compoſed of

Hydrogen - - -	8.54
Carbon - - - -	28.45
Oxygen - - - -	48.52
Azote - - - -	14.49
	100.00

But Dr. Thomſon does not ſeem to place much reliance in the accuracy of this analyſis.

Muriatic Ether.—Since the article ETHER was written for the Cyclopædia, this ſpecies of ether has been examined with great care by Gehlen, and ſtill more recently by Thenard, which latter chemiſt has given the following as the beſt mode of preparing it.

A retort is to be nearly filled with a mixture of equal bulks of muriatic acid and alcohol, both as ſtrong as poſſible. To prevent the effects of the violent ebullition which would otherwiſe take place on the application of heat, a few grains of ſand are to be introduced into the retort. From the beak of the retort a tube paſſes into a glaſs jar, twice the ſize of the retort, and furniſhed with three mouths. This jar ſhould be half filled with water of the temperature of about 70°. Into the ſecond mouth a ſhort tube of ſafety is to be luted; and into the third, a tube which paſſes into a water-trough to receive the gas. On the application of heat, the ether eſcapes in the form of gas. This gas is colourleſs, does not affect vegetable colours nor lime-water. Its ſp. gr. is 2.219, that of air being 1. At the temperature of 64°, water diſſolves its own bulk of it. At the temperature of 52°, it becomes liquid ether.

Muriatic ether in its liquid ſtate is colourleſs like water, very liquid, has no action on vegetable blues, and has the ſame ſmell and taſte as in the gaſeous ſtate. At the temperature of 41°, Thenard aſcertained its ſp. gr. to be .874. It is much more volatile than alcohol, or even ſulphuric ether. None of the uſual teſts indicate the preſence of muriatic acid in it. When burnt, however, a conſiderable proportion of this acid is diſengaged, a fact firſt obſerved by Gehlen, and ſince fully confirmed by Thenard. From Thenard's analyſis, it appears that this ſingular compound is compoſed of

Muriatic acid - - -	29.44
Carbon - - - -	36.61
Oxygen - - - -	23.31
Hydrogen - - -	10.64
	100.

Dr. Thomſon is diſpoſed to conſider it as a compound of one volume of olefiant gas, and one volume of muriatic acid gas, condenſed into one volume; or, what is the ſame thing, of four atoms olefiant gas, and one atom of muriatic acid. On this ſuppoſition, its conſtituents will be

Five atoms hydrogen	=	6.25
Four atoms carbon	=	30.00
One atom chlorine	=	45.00
And the weight of its atom will be - -	=	81.25

Hydriodic Ether.—This ether was diſcovered by M. Gay Luſſac. He formed it by mixing together two volumes of abſolute alcohol, and one volume of hydriodic acid of the ſp. gr. 1.7, and diſtilling in a water-bath. Hydriodic ether, after being well waſhed with water, is perfectly neutral. Its odour is ſtrong, and analogous to that of other ethers. In a few days it acquires a reddiſh colour, which is inſtantly removed by mercury or potaſh. Its ſp. gr. at 72° is 1.9206. It boils at the temperature of 148½°. It is not inflammable, but merely gives out purple vapours when put upon burning coals. When paſſed through a red-hot tube, it is decompoſed, an inflammable carburetted gas is obtained, hydriodic acid evolved, and ſome charcoal depoſited. This ether has not been analyſed; but Dr. Thomſon is diſpoſed to believe, from analogy, that it has a compoſition ſimilar to that of muriatic ether, or that it is compoſed of four atoms olefiant gas, and one atom of hydriodic acid.

Acetic Ether.—The original experiments of Lauraguais and Scheele have been lately repeated by other chemiſts, and particularly by Thenard. Thenard ſucceeded in forming this ether, by repeatedly diſtilling together very concentrated acetic acid and alcohol. No gaſeous product was evolved. The ſuperfluous acid was neutralized by potaſh, and the ether finally obtained by a cautious diſtillation of the reſulting liquid from acetate of potaſh. Acetic ether thus procured is limpid and colourleſs. Does not redden vegetable blues. Poſſeſſes a peculiar taſte, quite different from that of alcohol. Its ſp. gr. at 44½° is .866. It boils at the temperature of 160°. It burns with a yellowiſh-white flame, and acetic acid is evolved during its combuſtion. At the temperature of 62°, it requires more than ſeven times its weight of water to diſſolve it. It appears from theſe and other properties to be a compound of acetic acid and alcohol.

Formic Ether.—This was firſt formed by Gehlen. It may be prepared preciſely in the ſame way as acetic ether, merely ſubſtituting the formic for the acetic acid. Formic ether has an agreeable odour, ſimilar to that of peach bloſſoms. Its taſte is likewiſe ſimilar, leaving an impreſſion of ants. At a temperature of 63°, its ſp. gr. is .9157. It burns with a blue flame, having yellow edges, and at the above temperature is ſoluble in nine times its weight of water. This ether has not been analyſed.

ETON, col. 3, l. 25, *r.* to be ſeen; l. 57, *r.* 314 and 2279.

EVANDRA, in *Botany*, from ευ and ανηρ, alluding to its abundant ſtamens, in a tribe where three is the uſual number.—Br. Prodr. Nov. Holl. v. 1. 239.—Claſs and order, *Dodecandria Monogynia.* Nat. Ord. *Calamaria*, Linn. *Cyperoideæ*, Juſſ.

Eſſ. Ch. Spikelets generally ſingle-flowered; ſcales imbricated, moſtly empty. Stamens twelve or more. Nut cylindrical, cruſtaceous, without briſtles at the baſe; kernel ſmooth. Tall bog-plants, from the ſouth coaſt of New Holland. Scales blackiſh externally; upper ones ſilky internally. Somewhat allied to CHRYSITRIX. There are two ſpecies.

1. E. *ariſtata.* Stem leafy. Spikelets panicled, awned.

2. E. *pauciflora.* Stem naked. Spikelets ſolitary or in pairs, without awns.

EUCHILUS, Brown in Ait. Hort. Kew. v. 3. 17, ſeems to us a PULTENÆA; ſee that article.

EUCHLORINE, in *Chemiſtry.* See OXYMURIATIC *Acid.*

EUCLID, in *Geography*, a townſhip of Cayahuga, in Ohio, containing 283 inhabitants.

EUCLIDIUM, in *Botany*, from ευ, *well*, and κλειδοω, *to ſhut up*, becauſe of the firmly-cloſed ſeed-veſſel.—Br. in Ait. Hort. Kew. v. 4. 74.—Claſs and order, *Tetradynamia Siliculoſa.* Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch tumid, of two cells, with evident ſutures but not burſting. Seeds ſolitary. Cotyledons flat.

1. E. *ſyriacum.* Syrian Euclidium. Ait. n. 1. (Anaſtatica ſyriaca; Linn. Sp. Pl. 895. Jacq. Auſtr. t. 6.)—Pouch rough. Style awl-ſhaped, permanent. Leaves lanceolate, ſtalked.—Native of the warmer parts of Europe. What the other ſpecies may be we are not informed.

EUDESMIA, from ευ, *well*, and δεσμιος, *confined.*—Brown Bot. of Terr. Auſtr. 67.—Claſs and order, *Polyadelphia Polyandria.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Eſſ. Ch. Calyx four-toothed, ſuperior. Petals cloſely united into a deciduous lid, with four furrows. Stamens in four ſets, alternate with the calyx-teeth, combined at the baſe. Capſule of four cells, opening at the top. Seeds numerous.

1. E. *tetragona.* Br. as above, t. 3.—In expoſed barren places near the ſhore, about Lucky bay, on the ſouth coaſt of New Holland, flowering and bearing fruit in January. *Br.* A *ſhrub*, three to five feet high, with ſquare, bordered *branches.* *Leaves* ſtalked, ovate-oblong, moſtly oppoſite, coriaceous, four or five inches in length, entire, glaucous, dotted with reſinous points. *Umbels* axillary, ſtalked, of three or four *flowers*, whoſe numerous white *ſtamens* ſpread conſpicuouſly after the lid is fallen. We believe this fine plant is living in the green-houſe of the Comteſſe des Vandes, at Bayſwater.

EUDIOMETER. See LABORATORY.

EUDIOMETRY. Add—See LABORATORY.

EVELYN, l. 2, inſert after Surrey—October 31ſt; l. 4, for Chriſtchurch *r.* Baliol college; l. 5, inſert—ſpent much of his time. At the cloſe of his article, add—For a farther account of the life and writings of this excellent perſon, we refer to the "Memoirs," publiſhed from original MSS. in 2 vols. by William Bray, eſq. Lond. 1818.

EVESHAM, col. 2, l. 10 from the bottom, *r.* 674 houſes, and 3068 inhabitants.

EVESHAM, in America, add—In 1810, it contained 3445 inhabitants.

EUPOMATIA, in *Botany*, from ευ, *well*, and πωμαζω, *to ſhut up with a cover.*—Brown Bot. of Terr. Auſtr. 65.—Claſs and order, *Monadelphia Polyandria.* Nat. Ord. *Coadunatæ*, Linn. *Annonaceæ*, De Cand. Br.

Eſſ. Ch. Calyx a ſuperior, entire, deciduous lid. Corolla none. Inner ſtamens dilated, imbricated, without anthers. Styles none. Stigmas numerous, depreſſed. Berry globoſe, bordered, with many ſeeds.

1. E. *laurina.* Br. as above, t. 2.—In mountainous woods, and about great rivers, at Port Jackſon, flowering in December and January. A ſlender *ſhrub*, from five to ten feet high, very ſmooth. *Leaves* alternate, on ſhort ſtalks, obovate-oblong, acute, entire, coriaceous, four or five inches long. *Flower-ſtalks* axillary, ſhort, bearing two or three ſmall leaves, and one *flower*, whoſe numerous, pale yellow, perfect *ſtamens* ſpread, in a radiant manner, after the *lid* is gone, diſplaying the broad imperfect ones, united with them below, overlapping the *ſtigmas.* Theſe ſuperfluous intruders are obſerved, by Mr. Brown, to be uſually eaten away by inſects. *Berry* three-quarters of an inch broad. *Seeds* oval, wrinkled.

EURYALE, the name of one of the Gorgons, adopted here to expreſs the thorny menacing habit of the plant. It might likewiſe be underſtood as alluding to the *ample area* of the leaves.—Saliſb. in Ann. of Bot. v. 2. 73. Ait. Hort. Kew. v. 3. 295.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Rhoeadeæ*, Linn. *Hydrocharides*, Juſſ. *Nymphæaceæ*, Saliſb.

Eſſ. Ch. Calyx of four leaves, ſuperior. Petals numerous. Stigma ſeſſile, peltate. Berry crowned with the calyx. Seeds numerous, tunicated.

1. E. *ferox.* Prickly Euryale. Ait. n. 1. Roxb. Corom. v. 3. 39. t. 244. Anneſlea ſpinoſa; Andr. Repoſ. t. 618.—Native of lakes and ponds in India, to the eaſt of Calcutta. *Roxb.* This has the habit of a *Nymphæa.* The floating peltate *leaves*, cloven at the baſe, are from one to four feet wide; purple beneath; their ribs, veins, and *ſtalks*, like the *flower-ſtalks*, *calyx*, and *fruit*, armed copiouſly with ſharp prickles. *Flowers* comparatively ſmall, purple, with yellow ſtamens. *Fruit* about two inches in diameter. *Seeds*, or *nuts*, the ſize of a large pea, each in a looſe coloured *tunic.*

tunic. This noble plant has flowered in the duke of Marlborough's aquarium at White Knights. *Anneſlea* was the name originally intended by Dr. Roxburgh.

EUSTREPHUS, from ευ, *well*, and ϛρεφω, *to turn*, or *twine.*—Brown Prodr. Nov. Holl. v. 1. 281. Ait. Hort. Kew. v. 2. 272.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Aſphodeleæ*, Br.

Eſſ. Ch. Corolla in ſix deep ſegments; three innermoſt fringed. Anthers erect. Stigma triangular. Capſule pulpy, of three cells, and three valves, with partitions from their centre. Seeds ſeveral; ſcar creſted.

Twining leafy *ſhrubs*, from the warmer parts of New Holland, with alternate, ribbed, entire *leaves;* ſimple, aggregate, drooping *flower-ſtalks;* pale purple elegant *flowers;* yellow *fruit*, and rather large black *ſeeds.*

1. E. *latifolius.* Ovate Fringe-bloſſom. Ait. n. 1. Br. n. 1. Curt. Mag. t. 1245.—Leaves more or leſs ovate. Filaments combined at the baſe. Tips of the anthers twiſted in fading.—Native of New South Wales. *Dr. White.*

2. E. *anguſtifolius.* Linear Fringe-bloſſom. Br. n. 2.—Leaves linear-lanceolate. Filaments diſtinct. Tips of the anthers always ſtraight.—Found within the tropic, as is alſo the firſt ſpecies. *Mr. Brown.*

EUTAXIA, Br. in Ait. Hort. Kew. v. 3. 16, we ſcruple to ſeparate from Dillwynia: it is our fourth ſpecies there deſcribed.

EUTHALES, from ευ, *well*, and θαλεω, *to flouriſh* or *bloſſom.*—Br. Prodr. Nov. Holl. v. 1. 579. Ait. Hort. Kew. v. 1. 363.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Goodenoviæ*, Br.

Eſſ. Ch. Calyx inferior, tubular, in five unequal ſegments. Tube of the corolla adhering to the germen beneath, ſplit on one ſide above; limb two-lipped. Anthers diſtinct. Stigma with a two-lipped cover. Capſule of four valves; two-celled at the baſe. Seeds imbricated, compreſſed.

1. E. *trinervis.* Three-ribbed Euthales. Br. n. 1. Ait. n. 1. (Velleia trinervis; Labill. Nov. Holl. v. 1. 54. t. 77. Goodenia tenella; Andr. Repoſ. t. 466. Curt. Mag. t. 1187.)—From the ſouth coaſt of New Holland. An herbaceous perennial plant, with hairy radical *leaves*, forked radical *flower-ſtalks*, and handſome golden *flowers* with a dark-purpliſh, central, divided ſpot.

EWELL, l. 7, *r.* 1811, 225 houſes, and 2135 inhabitants.

EXARRHENA, in *Botany*, from its prominent ſtamens, in which it ſeems chiefly to differ from *Myoſotis.*—Br. Prodr. Nov. Holl. v. 1. 495.—The only ſpecies is *E. ſuaveolens*, found in Van Diemen's iſland, a hairy herb, with decurrent *leaves*, and fragrant white *flowers.*

EXECUTION, in *Painting*, col. 4, l. 2, *r.* Janus.

EXETER, col. 4, l. 23 from the bottom—The number of inhabitants in the city of Exeter and county of the ſame, by the return of 1811, was 2879 houſes, and 18,896 inhabitants.

Exeter, in America, l. 17, *r.* 8759.——In Waſhington county, l. 3, *r.* 2236, and add—Alſo, a county of New York, containing 9477 inhabitants.—Alſo, a townſhip of Berks county, in Pennſylvania, having 1194 inhabitants.

EXHALING Vessels. See *Exhalant Syſtem* under Heart.

EXMOUTH, l. 18, *r.* 459 houſes, 2301 inhabitants; l. 19, *r.* 371.

EXPANSION, col. 3, l. 31, for expands *r.* contracts.

Expansion *of the Gaſes.* See Gas.

EXPONENTIAL Equation, *dele* the reference.

EXPOSURE, col. 2, l. 2, for ſouthern *r.* northern.

EXPRESSION, Physiognomical. See Emotion, and Gesture.

Expression, in *Painting*, col. 9, l. 37, for woman *r.* women.

EXTRACT—Extractive *Principle*, in *Chemiſtry.* Great confuſion exiſts in different chemical authors reſpecting theſe terms. Formerly the term *extract* was applied to all thoſe ſubſtances which were extracted from plants by means of water or ſpirits; but of late it has been confined by many to a ſubſtance which is ſuppoſed to exiſt in many plants, and which may be obtained tolerably pure from the bark of the cinchona officinalis, according to the experiments of Schrader. Other chemiſts, however, ſtill uſe the term *extract* in its original ſenſe; hence Dr. Thomſon, to prevent ambiguity, has choſen to diſtinguiſh the principle of Schrader by the term *extractive.* The following are the properties of *extractive*, according to Dr. Thomſon.

1. Soluble in water, and the ſolution is always coloured. When the water is ſlowly evaporated, the extractive matter is obtained in a ſolid ſtate, and tranſparent; but when the evaporation is rapid, the matter is opaque.

2. The taſte of extractive is always ſtrong, but it is very different according to the plant from which it is obtained.

3. It is inſoluble in abſolute alcohol and in ether, but ſoluble in alcohol when it contains water.

4. By repeated ſolutions and evaporations, the extractive matter acquires a deeper colour, and becomes inſoluble in water. This change is conſidered as the conſequence of the abſorption of the oxygen of the atmoſphere, for which the extractive principle has a great affinity. But if the ſolution be left to itſelf, expoſed to the atmoſphere, the extract is totally deſtroyed in conſequence of a kind of putrefaction which ſpeedily commences.

5. When chlorine is poured into a ſolution containing extractive, a very copious dark yellow precipitate is thrown down, and the liquid retains but a light lemon colour. Theſe flakes are conſidered as oxygenized extractive; it is now inſoluble in water, but hot alcohol diſſolves it.

6. The extractive principle unites with alumina, and forms with it an inſoluble compound. Accordingly, if ſulphate or muriate of alumina be mixed with a ſolution of extractive, a flaky inſoluble precipitate appears, at leaſt when the liquid is boiled; but if an exceſs of acid be preſent, the precipitate does not always appear.

7. It is precipitated from water by concentrated ſulphuric acid, muriatic acid, and probably by ſeveral other acids. When the experiment is made with ſulphuric acid, the fumes of vinegar generally become ſenſible.

8. Alkalies readily unite with extractive, and form compounds inſoluble in water.

9. The greater number of metallic oxyds form inſoluble compounds with extractive. Hence many of them, when thrown into its ſolution, are capable of ſeparating it from water. Hence alſo the metallic ſalts moſtly precipitate extractive. Muriate of tin poſſeſſes this property in an eminent degree. It throws down a brown powder, perfectly inſoluble, compoſed of the oxyd of tin and vegetable matter.

10. If wool, cotton, or thread, be impregnated with alum, and then plunged into a ſolution of extractive, they are dyed of a fawn-brown colour, and the liquid loſes much of its extractive matter. This colour is permanent. The ſame effect is produced if muriate of tin be employed inſtead of alum. This effect is ſtill more complete if the cloth be ſoaked in chlorine, and then dipped into the infuſion of the extractive. Hence we ſee that the extractive

matter requires no other mordant than oxygen to fix it on cloth.

11. When diſtilled, extractive yields an acid liquid impregnated with ammonia.

It cannot be doubted, continues Dr. Thomſon, that there are many different ſpecies of extractive matter, though the difficulty of obtaining each ſeparately has prevented chemiſts from aſcertaining their nature with preciſion. Watery extracts, when obtained by ſlow evaporation to dryneſs, always have an acid taſte, and redden litmus. They all yield a precipitate while liquid on the addition of ammonia. This precipitate is a compound of lime and inſoluble extractive. Lime always cauſes them to exhale the odour of ammonia. It has been aſcertained, that the extractive principle is more abundant in plants that have grown to maturity than in young plants.

All the extracts prepared by apothecaries are compounds of the extractive principle with ſeveral others, even as many as eight or more, according to Dr. Thomſon. In ſhort, this department of vegetable chemiſtry is at preſent in a very confuſed and imperfect ſtate.

VOL. XIV.

EYE, *Phyſiology of the*, col. 6, l. 26 from bottom, for an inch *r.* one-tenth of an inch.

EYE, *Humours of*, *Chemical Properties of.* Some experiments have been made on theſe fluids, the reſults of which deſerve to be briefly mentioned.

Aqueous Humour.—Mr. Chenevix found the ſp. gr. of the aqueous humour of the ſheep at 60° to be 1.009. This fluid ſcarcely affects vegetable blues while freſh. On expoſure to heat, a ſlight coagulum is formed. Tannin occaſions a precipitate in it, both before and after boiling. Nitrate of ſilver likewiſe produces a precipitate, but no other metallic ſalt. According to Berzelius, 100 parts of it conſiſt of

Water - - -	98.10
Albumen, a trace - -	
Muriates and lactates -	1.15
Soda with animal matter, ſoluble only in water -	.75
	100.

Vitreous Humour.—This poſſeſſes very nearly the ſame properties as the aqueous. Even its ſp. gr. is the ſame, or only a very little heavier. According to Berzelius, it is compoſed of

Water - -	98.40
Albumen - -	.16
Muriates and lactates -	1.42
Soda with animal matter, ſoluble only in water -	.02
	100.

Cryſtalline Lens.—The ſp. gr. of this is 1.100. When freſh it has little taſte. It putrefies very rapidly. It is almoſt completely ſoluble in water. The ſolution is partly coagulable by heat, and gives a copious precipitate with tannin both before and after boiling. According to Berzelius, it is compoſed of

Water - - -	58.0
Peculiar matter - -	35.9
Muriates, lactates, and animal matter ſoluble in alcohol -	2.4
Animal matter, ſoluble only in water, with ſome phoſphates	1.3
Portions of the remaining inſoluble cellular membrane -	2.4
	100.

The peculiar matter of the lens poſſeſſes all the chemical properties of the colouring matter of the blood, except colour.

The humours of the human eye are compoſed of the ſame ingredients as thoſe of the ſheep; but they differ in their ſp. gr. Thus the ſp. gr. of the human aqueous and vitreous humour is 1.0053; that of the cryſtalline 1.0790. The humours of the eyes of oxen alſo reſemble thoſe of the ſheep. The ſp. gr. of the aqueous and vitreous humours is 1.0088; that of the cryſtalline 1.0765. The cryſtalline of the ox weighed thirty grains. When the whole was pared away, except ſix grains in the centre, the ſp. gr. was found to be 1.194.

Sir H. Davy found the ſame conſtituents in the eyes of birds; but the ſp. gr. of the vitreous humour in theſe animals is greater than the ſp. gr. of the cryſtalline.

Pigmentum Nigrum.—This curious ſubſtance has been examined by Gmelin. From 500 eyes of oxen and calves he collected 75 grains. Its colour is blackiſh-brown. It is taſteleſs, and adheres to the tongue like clay. It is inſoluble in water, alcohol, ether, oils, lime-water, and acetic acid. It diſſolves in potaſh and ammonia by the aſſiſtance of heat, and is again precipitated by acids. Sulphuric acid diſſolves it, and becomes black. Muriatic acid alſo forms an imperfect ſolution. Nitric acid diſſolves it, and changes its colour to reddiſh-brown. When diſtilled it yields water, brown oil, and carbonate of ammonia. The reſiduum conſiſts almoſt entirely of charcoal.

EYE, col. 2, l. 6, *r.* In the year 1811, the town and pariſh conſiſted of 326 houſes, and 1893 inhabitants.

EYEMOUTH. Add—By the return of 1811, the pariſh contained 115 houſes, and 962 inhabitants.

EYNSHAM, or ENSHAM, l. *ult.*—In 1811, the number of inhabitants was 1418, and of houſes 246.

F.

FABER, Jacobus Stapulensis. See Fevre.

FAHRENHEIT, l. 2, Hamburgh or Dantzic.

FAIRFAX, l. 3, *r.* 13,111 inhabitants, of whom 5942 were ſlaves in 1810. At the cloſe, add—Alſo, a town of Maine, in Kennebeck, containing 924 inhabitants.

FAIRFIELD, l. 4, *r.* 17; l. 5, *r.* 40,950; l. 6, *r.* 83; l. 17, *r.* 4125; l. 23, add—divided into 15 townſhips, containing 11,361 inhabitants. For Kennebeck *r.* Somerſet; l. 26, *r.* 1348; l. 30, *r.* 1618; l. 36, add—containing 2279 perſons; l. 43, *r.* 1973; l. 47, add—It contains 11,857 inhabitants, of whom 4034 are ſlaves.—Alſo, a townſhip in Crawford county, in Pennſylvania, having 421 inhabitants.—Alſo, a townſhip of Butler county, in Ohio, having 1414 inhabitants.—Alſo, a townſhip of Columbiana county, in Ohio, having 852 perſons.—Alſo, a townſhip of Highland county, in Ohio, having 1167 inhabitants.

Fairfield, *New*. See New, &c.

FAIRFORD. In 1811, the pariſh contained 295 houſes, and 1444 perſons; *viz.* 688 males, and 756 females.

FAIRHAVEN, l. 6, *r.* 645; add—Alſo, a ſmall townſhip of Maine, in Somerſet county, having 116 inhabitants.

FAIRLEE. At the cloſe, add—983.

FAIR VIEW, a townſhip of York county, in Pennſylvania, containing 1298 perſons.

FALHERZ. See Mineralogy, *Addenda*.

FALLOWFIELD, *Eaſt* and *Weſt*. Two townſhips in Cheſter county, in Pennſylvania; the former containing 991, and the latter 1157 perſons.—Alſo, a townſhip of Waſhington county, in Pennſylvania, having 1934 inhabitants.—Alſo, a townſhip of Crawford county, in Pennſylvania, having 551 perſons.

FALLS, a townſhip of Bucks county, in Pennſylvania, having 1649 perſons.—Alſo, a townſhip of Muſkingum county, in Ohio, having 951 inhabitants.

FALMOUTH. At the cloſe, add—By the return of 1811, the town of Falmouth contains 465 houſes, and 3933 inhabitants.

Falmouth, in America, l. 3, *r.* 4105. Col. 2, l. 11, *r.* 2237.

FANNET, a townſhip of Franklin county, in Pennſylvania, containing 1398 inhabitants.

FAQUIER, l. 3 and 4, *r.* 22,689 inhabitants, of whom 10,361 are ſlaves.

FAREHAM. In 1811, the pariſh contained 596 houſes, and 3325 perſons; *viz.* 1592 males, and 1733 females.

FARM, col. 5, l. 9 from the bottom, for *Led-farms r. Lea-farms.*

FARMER, Richard, col. 2, l. 12, for which he exchanged for *r.* for which he exchanged.

FARMINGTON, l. 7, *r.* 1639. After Boſton, add—Alſo, a town of Strafford county, in New Hampſhire, having 1272 inhabitants; l. 15, *r.* 2748.

FARRIERY, denotes the buſineſs or practice of a farrier, which, in its more limited ſenſe, pertains to the ſhoeing of horſes, (ſee Shoeing,) and the various circumſtances attending it; but in its more extenſive ſenſe, and as it is often uſed and underſtood, it comprehends the whole veterinary art, as it relates to the management of animals in general, including the knowledge and proper treatment of their diſeaſes. See each diſeaſe under its appropriate term.

FARRINGDON. In 1811, the pariſh of Great Farringdon contained 327 houſes, and 1843 perſons; *viz.* 900 males, and 943 females: 175 families being employed in agriculture, and 131 in trade, manufactures, and handicraft.

FARSETIA, in *Botany*, a genus originally founded by Dr. Antonio Turra, of Vicenza, in a quarto diſſertation, (publiſhed at Venice in 1765,) reduced by Linnæus to *Cheiranthus*, is reſtored by Mr. Brown, in Ait. Hort. Kew. v. 4. 96. It commemorates Philip Farſeti, a noble Venetian, celebrated for his botanical erudition. Mr. Brown gives the following

Eſſ. Ch. Pouch elliptic-oblong, ſeſſile, compreſſed, with flattiſh valves. Cotyledons accumbent. Seeds ſeveral; either bordered, or ſome of the filaments are toothed. Six ſpecies are defined in *Hort. Kew.*

FARSISTAN, l. 6, after province, add—is divided into the Germaſeer and Sirhud, or the warm and cold climates. The former is that tract which extends from the ſea to the latitude of Kazeroon, and runs parallel with the gulf, from the banks of the Tab to the confines of Lariſtan. The Sirhud, denoting boundary, and metaphorically applied to a cold region, comprehends moſt of the mountainous part of Fars, extending from the latitude of Kazeroon to that of the town of Yezdekhaſt, ſituated on the bed of a former river, which ſeparates this province from Irak. Fars, &c.

FAVART, l. 23, for *retrouſſé* r. *retrouſſé.*

FAVERSHAM, col. 3, l. 30, *r.* in 1811—672—3872.

FAWN, l. 3, *r.* 1402.

FAYETTE, l. 4, *r.* 9; l. 6, 24,714 inhabitants, of whom 58, in 1810, were ſlaves.—Alſo, a county of Ohio, containing 1854 inhabitants. Col. 2, l. 4, *r.* 8039; l. 5, *r.* 2905; l. 9, *r.* 804; add—Alſo, a townſhip of Alleghany county, in Pennſylvania, containing 2016 inhabitants.

FAYSTON, a town of Chillendon county, in Vermont, having 149 inhabitants.

FEARING, a town of Ohio, in Waſhington county, having 454 inhabitants.

FEATHERS, *dry-pulled*, *ſcalded*, *dele* the reference to Bed, FELAHI, or Dorak, one of the principal towns of Chuſiſtan or Kuziſtan, in Perſia, founded by Sheikh Soliman when the ancient Dorak, one of the eight cities of Suſiana, was abandoned. It is ſituated in low marſhy ground, on the banks of two of the branches of the Jerahi, ſurrounded with mud walls, ſixteen feet thick and two miles in circumference, flanked at intervals with towers. The inhabitants, amounting to 8000, live chiefly without the walls in the ſuburbs. This town is celebrated for the manufacture of the abba, or Arabian cloak, which is tranſported in great numbers all over Perſia and Arabia.

FELSPAR. See Felspar and Mineralogy, *Addenda*.

FELUGIA, or Anbar, in *Geography*, a town in the pachalic of Bagdad, which, under the appellation of Periſabur, is ranked, in the hiſtory of the campaigns of Julian, as the head city in Aſſyria. The city was reduced to aſhes, and on its ruins a palace was erected by Soliman the Great, pacha of Bagdad. Pilgrims going to Kerbela generally croſs the river at this ſpot, on a bridge of boats.

FENCE, col. 2, l. 20, *dele* low. Col. 3, *dele* hedge, laſt word, and the comma in l. 2. Col. 21, l. 4, for thus above *r.* thus formed above; l. 34, 35, for under the plough *r.* into graſs.

FEREDUN, in *Geography*, a ſmall diſtrict of Irak, in Perſia, behind the S.W. ridge of the mountains of Khonſar, peopled with Georgians and Armenians, brought hither by Abbas the Great. The former, amounting to 1000 families, are Mahometans, who never intermarry with either Perſians or Armenians. The capital of the diſtrict is Puaſhiſh.

FERGUSON, a townſhip of Centre county, in Pennſylvania, having 1066 inhabitants.

FERMANAGH, l. 2, *r.* 1954.

FERMENTATION, Vinous, in *Chemiſtry*. The recent obſervations of chemiſts enable us to ſtate with greater preciſion the changes which ſugar undergoes during its converſion into alcohol, than could be done when this article was written for the Cyclopædia.

Sugar is compoſed, according to Dr. Prout's analyſis, of

Hydrogen - - -	6.66
Carbon - - -	40.00
Oxygen - - -	53.33
=	100.

which correſpond with 1 atom of each element.

Alcohol, according to Dr. Thomſon, is a compound of about

Hydrogen - - -	13.04
Carbon - - -	52.16
Oxygen - - -	34.80
	100.

which correſpond with 3 atoms of hydrogen, 2 atoms of carbon, and 1 atom of oxygen; and carbonic acid gas is compoſed of

Carbon - - -	27.27
Oxygen - - -	72.72
=	100.

or of 1 atom of carbon and 2 atoms of oxygen.

Hence, if we ſuppoſe (for the ſake of round numbers) 3 atoms of ſugar to be decompoſed during the proceſs of fermentation, they will be converted into 1 atom of alcohol and 1 atom of carbonic acid; for

	Hydrogen.	Carbon.	Oxygen.
1 atom alcohol conſiſts of	3 atoms	+ 2 atoms	+ 1 atom
1 atom carbonic acid gas of		1 atom	+ 2 atoms
which make together	3	+ 3	+ 3

or three atoms of ſugar.

Now this determination very nearly coincides with the actual experiments of Lavoiſier, and the more recent determination of Thenard, reſpecting the proportional quantities of theſe two products obtained by the fermentation of ſugar. Thus 100 parts of ſugar (as deduced by Dr. Thomſon from Thenard's experiments) were converted into

Alcohol - - -	57.44
Carbonic acid - -	42.56
	100.

Whereas the proportions, according to the above calculations, ought to have been

Alcohol - - -	51.12
Carbonic acid - -	48.88
	100.

A coincidence as near as could have been expected, conſidering the very difficult nature of the experiment.

With reſpect to the *modus operandi* of ferments, we have nothing to add, but that the ſubject ſtill remains a myſtery. See Wine, and Yeast.

FERRABAD, in *Geography*, a town of Mazanderan, in Perſia, ſituated at the mouth of a river, 30 miles E. of the village of Meſhed Sir, which carries on a ſmall trade in rice, ſalt-fiſh, and pottery.

FERRISBURGH, a town of Addiſon county, in Vermont, having 1647 perſons.

FERROCYANIC Acid, in *Chemiſtry*. See Cyanogen.

FERRURETTED *Chyazic Acid*. See Cyanogen.

FEVRE, or Fabri, James de. Add—See Faber, Jacobus Stapulensis.

FEZA, in *Geography*, a ſmall town of Perſia, 18 furſungs from the capital of Fars or Farſiſtan, having about 4000 inhabitants, on the banks of a ſmall ſtream, which is totally abſorbed in the irrigation of the gardens and fields adjoining the town.

FIBRIN, *Chemical Properties of*. See Blood.

FIBROLITE. See Mineralogy, *Addenda*.

FICARIA. Refer to Ranunculus *Ficaria*.

FIDUCIAL Edge. See Plain *Table*, and Circle.

Fiducial *Line*. See Line.

FIELD-Scabins, *r.* Field-*Scabious*.

Field-*Fortification*, col. 6, l. 23 from the bottom, for at top *r.* at top and at bottom.

FIFESHIRE, col. 3, l. 32, *r.* 1811; l. 33, *r.* 17,518—101,272.

FIGURE, in *Heraldry*, col. 2, l. 12, for *paſſive r. paſſant.*

FIGURED, in *Manufactures*, laſt line but three, for the turning *r.* then turning.

FINLEY, in *Geography*, a town of Waſhington county, in Pennſylvania, having 1636 perſons.

FIRMAN. Add—In general, it denotes an order or mandate, and is applied to any imperial decree, or royal grant or charter.

FIRMNESS, l. *ult.* after gold, add—or platina. Col. 2, l. 7, for motion *r.* notion.

FIROZEABAD, an ancient city of Fars, in Perſia, founded by Artaxerxes Babegon, which became the capital of Firoze Shah, the grandſon of Naſhirvan. Its ruins occupy a large ſpace in a plain about 17 miles in length, and half as wide. Here are the remains of Attaſh Kudda, or fire-temple of Firoze Shah.

FIRUZABAD. See the preceding article.

FISCARD, l. *ult.* *r.* 250. Col. 2, l. 2, *r.* 1811—391—1572; l. 14, *dele* lately and received; l. 15, for Fridays *r.* Thurſdays; l. 22, *dele* having been recently aſſiſted by the erection of a pier; l. 28, for about fifty *r.* ſeveral; l. 29, *r.* from 30 to 100 or more tons burthen; l. 40 and 41, *r.* at a diſtance near St. David's is a vaſt, &c.

FISCHERA, in *Botany*, ſo named by profeſſor Sprengel, in honour of his pupil Mr. Ferdinand Fiſcher, now curator of the Razoumoffsky garden, near Moſcow.—Spreng. Prodr. Umbell. 27. (Azorella; Labill. Nov. Holl. v. 1. 73.)—Claſs and order, *Pentandria Digynia.* Nat. Ord. *Umbellatæ.*

Eſſ. Ch. Fruit ovate, ſolid, corrugated and muricated. General and partial involucrum of many leaves. Perianth of five deciduous teeth. Petals ovate, undivided.

1. F. *lanceolata.* Lanceolate Fiſchera. Spr. n. 3. (Azorella lanceolata; Labill. 74. t. 99.)—Leaves linear-lanceolate, keeled.—Native of Port Jackſon, New South Wales, *Dr. White*; of Lewin's land, *Labillardiere.* *Stem* ſhrubby, twelve or eighteen inches high, with roughiſh branches. *Leaves* ſcattered, numerous, ſpreading, entire, ſmooth, an inch and a half long; tapering at the baſe. *Umbels* terminal, ſtalked, compound, many-flowered.

2. F. *ovata.* Ovate Fiſchera. Spr. n. 4. (Azorella ovata; Labill. 74. t. 100. Trachymene ovata; Spr. Umb. 8.)—Leaves elliptic-ovate, triple-ribbed.—From the ſame countries. Differs from the foregoing chiefly in the broader ſhorter figure of the *leaves,* and the more evident combination of their ribs. We ſuſpect Labillardiere has confounded a more lanceolate variety of the preſent with his real *lanceolata.*

3. F. *linearis.* Linear Fiſchera. (F. linearifolia; Spr. n. 2. Azorella linearifolia; Cavan. Ic. v. 5. 57. t. 485.)—Leaves linear-awlſhaped.—Native of Port Jackſon. *Dr. White.* Like the two former in habit, but the ſmall, narrow, heath-like *leaves* ſeem to diſtinguiſh it, if the foliage of this genus can at all be truſted for ſpecific characters.

We conceive the compound *umbels,* totally different *habit,* more oblong leſs flattened *fruit,* and other characters above indicated, muſt keep theſe plants generically diſtinct, both from the original *Azorella,* (ſee Bolax,) and from Mr. Rudge's Trachymene, hereafter deſcribed, though the learned Sprengel now refers them to the latter. His *T. compreſſa* (Azorella compreſſa; Labill. t. 101.) appears not well to accord with either, in character or habit. The *fruit* is broader than long, tumid and reticulated, not rough. *Umbels* compound.

FISH, *Anatomy of,* *dele* all the references to plates.

Under *Kidnies and Urinary Bladder,* col. 2, l. 46, *dele* the paragraph beginning—It may, and ending, place.—Under *Brain,* col. 4, l. 12, *dele* after uſual, and begin—immediately, &c. Under *Integuments,* col. 2, l. 10 from bottom, *r.* renewed. Col. 5, *dele* after ſkin, l. 3 and l. 4. Under *Organs of Viſion,* col. 5, l. 15, for the refragibility of the humour *r.* it. Under *Electric Organs,* col. 2, l. 15 from bottom, for hexagonal *r.* pentagonal; l. 14, for one or two *r.* two or three.

FISHERY, Pilchard, col. 2, l. 24, for 35,0000 *r.* 35,000.

Fishery, *Salmon,* col. 3, l. 7, for ſtrikes *r.* ſtrike; l. 8 from bottom, for killed *r.* kitted.

Fishery, *Whale,* col. 2, l. 29, after ſplit, add—wood. Col. 4, l. 17 from bottom, for forty-two *r.* ſixty-ſix; l. 5 for ſix harpooners *r.* one or two harpooners.

FITZBURG, in *Geography,* a town of Worceſter county, in Maſſachuſetts, having 1566 perſons.

FITZJAMES, l. 8 from bottom, for France *r.* Spain.

FITZWILLIAM, l. 5, *r.* 1301.

FIXED Bodies, l. 20, after ſilver, add—and platina.

FLAG, col. 2, l. 7, ſince Nov. 1805, the red flag at the main-maſt has been the firſt in rank after the union flag.

FLAHERTI, l. 7 from bottom, after Scottiſh *r.* and Iriſh; l. 5, *dele* Iriſh.

FLAME, col. 8, l. *ult.* add—This experiment ſhould be cautiouſly performed.

FLAX-Dressing, col. 2, l. 2. See a "Notice of a Method of Bleaching Flax in Half an Hour, without the Uſe of Acids or Alkalies." Anderſon's Bee, vol. x. p. 335. Col. 2, l. 25, *r.* diſtance.

Flax *Foot-Brake,* l. 29, *r.* higher than the diſtance.

Flax-*Seed Jelly,* col. 2, l. 32, for oils *r.* ſoils.

FLEMING, l. 5, *r.* 8947, and 549.

FLEMINGIA, in *Botany,* ſo called in juſt commemoration of Dr. John Fleming, the able preſident of the Eaſt India company's medical board at Bengal.—Roxb. Corom. v. 3. 44. Ait. Hort. Kew. v. 4. 349.—Claſs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ,* Linn. *Leguminoſæ,* Juſſ.

Eſſ. Ch. Calyx five-cleft. Standard ſtriated. Legume ſeſſile, oval, turgid, of two valves, with two ſpherical ſeeds.

Six ſpecies are defined in Hort. Kew. all from the Eaſt Indies. *F. ſtricta,* Roxb. t. 248, and *ſemialata,* t. 249, have handſome axillary ſpikes of crimſon *flowers: ſtrobilifera,* which is *Hedyſarum ſtrobiliferum* of Linnæus, has ſimple *leaves;* all the reſt are ternate.

FLETCHER, l. 2, *r.* 382.

FLEUR-de-Lis. See Flower-de-Luce.

Fleur *de Lis, r.* Fleur *de Liſſé.*

FLINDERSIA, in *Botany,* in honour of capt. Flinders; commander of the botanical expedition in which Mr. Brown was employed.—Br. Bot. of Terr. Auſtr. 63.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Cedreleæ,* Br.

Eſſ. Ch. Calyx five-cleft, inferior. Petals five. Nectary cup-ſhaped, bearing the ſtamens, with five intermediate barren filaments, oppoſite to the petals. Capſule woody, of five valves, and five cells, with as many looſe partitions. Seeds winged, two in each cell.

1. F. *auſtralis.* Br. t. 1.—A tree found on the eaſt coaſt of New Holland, lat. 23°. *Leaves* ternate or pinnate, entire. *Panicles* cymoſe, downy. *Capſules* muricated.

Arbor radulifera, Rumph. Amb. v. 3. 201. t. 129, is ſuppoſed to belong to this genus.

FLOAT-STONE. See Mineralogy, *Addenda.*

FLOOR, in *Building,* col. 2, l. 37, for heading points *r.* heading joints.

FLORAL Games, l. 10, add—It is ſaid that Clementina-Iſaura, counteſs of Thoulouſe, publiſhed an edict that aſſembled all the poets of France with artificial crowns, dreſſed with flowers, &c. Warton's Hiſt. of Poetry, vol. i. p. 467.

FLORIDA, col. 2, l. 1, after Appalachicola, add—and Pearl river, N. by 31° N. lat. and S. by Bayou Iberville, Amite river, and lakes Maurepas and Pontchartrain; extending over 4850 ſquare miles of ſurface. Soon after the incorporation of this part of W. Florida into the ſtate of Louiſiana, it was divided into the four pariſhes of Baton Rouge, New Feliciana, St. Helena, and St. Tammany. The rivers are, the Miſſiſſippi, the Comite, Amite, Tickſah, Tangipoo, Chiſuneté, Bogue Chito, and Pearl. The Comite riſes in Wilkinſon county, in the Miſſiſſippi territory, and, after a courſe of forty miles, falls into the Amite. The Amite riſes in the ſame territory in Amite county, and having joined the Iberville, falls into lake Maurepas, after a courſe of 100 miles. The Tickſah riſes in the ſame territory, and after entering W. Florida, becomes much augmented, and purſuing a ſouth courſe of fifty miles falls into lake Maurepas. The Tangipoo riſes in the ſame territory, and running nearly S. 70 miles, falls into lake Pontchartrain. The Chiſuneté riſes in W. Florida, and purſuing a courſe of about 60 miles, enters into lake Pontchartrain. The thriving town of Madiſonville lies on its banks. The Bogue Chito has its ſource in the Miſſiſſippi territory, and after a S.E. by S. courſe, enters the Pearl *River;* which ſee.

Florida, a town of Berkſhire county, in Maſſachuſetts, containing 392 inhabitants.

FLORIN, col. 2, l. 19, after diviſions, add—A florin is a ſilver coin in Holland, Flanders, and Germany, called alſo "Guilder," or "Gulden." Accounts are kept in Holland in gilders or florins of 20 ſtivers, each ſubdivided into 16 pfenings. A rix-dollar is worth $2\frac{1}{2}$ ſtivers, and a pound Flemiſh is equal to 6 gilders; hence, the rix-dollar being = 3*s.* 4*d.* Flemiſh, the gilder is = 3*s.* 4*d.* Flemiſh. A gold gilder, with which accounts are kept in the corn-trade, is worth 28 ſtivers. Among the coins are ſtamped gold gilders at 28 ſtivers, unſtamped do. at 26 ſtivers. A gold gilder of 28 ſtivers muſt weigh 407 Dutch aſſes, or 301 Engliſh grains. In Germany, they have gold florins, or guldens, which are chiefly current in the countries on the banks of the Rhine, paſſing generally for 2 rix-dollars current, and they are to contain $18\frac{1}{2}$ carats of fine gold, $3\frac{2}{3}$ carats of fine ſilver, and $1\frac{5}{6}$ carats of copper. The Hanoverian gold florins contain $18\frac{3}{4}$ carats of gold, $3\frac{2}{3}$ carats of ſilver, and $1\frac{1}{3}$ carat of copper. The gold florin is a gold coin in Hanover, and other parts of Germany; but the gold gilder in Holland is a ſilver coin. See Table *of Coins* under Coin and Exchange.

FLOYD, l. 4, *r.* 3453 and 113.

FLUATES, in *Chemiſtry*. See Fluoric *Acid.*

FLUGEL-Man, in *Military Language*, a well-drilled intelligent ſoldier, advanced in front of the line to give the time in the manual and platoon exerciſes. The term *flugel* is derived from the German, and ſignifies a *wing;* the man having been originally poſted in the front of the right wing.

FLUIDS, *Animal, Chemical Properties of.* The blood is the general ſource of all other animal fluids, moſt of which, more or leſs, reſemble it in their properties. The operation by which other fluids are formed from the blood is termed *ſecretion.* See Blood and Secretion.

Berzelius divides ſecreted fluids into two claſſes; namely, the *ſecretions* properly ſo called, or the fluids intended to fulfil ſome ulterior purpoſe in the animal economy; and the *excretions*, which are directly diſcharged from the body. The fluids of the former claſs, according to this diſtinguiſhed chemiſt, are all *alkaline;* of the latter, all *acid.* The excretions are, the urine, the perſpirable fluid, and the milk; all the other fluids appear to belong to the former claſs. The alkaline ſecreted fluids may be divided into two very diſtinct ſpecies. The former of theſe contains the ſame quantity of water as the blood, ſo that the change induced by the nervous influence ſeems to be confined to that of altering the chemical form of the albuminous materials, without affecting their relative proportions to the water and other ſubſtances diſſolved in the blood. The bile, ſpermatic fluid, &c. are of this kind. The latter ſpecies conſiſts of fluids, in which the influence of the nervous ſyſtem has ſeparated a large portion of the albuminous matter, and left the remaining liquid proportionally more watery. The ſaliva, the humours of the eye, and the effuſed ſerum of membranes, are of this ſpecies; and in theſe, the quantities of ſalts, and in general alſo of alkali, are the ſame as in the blood.

The influence of the chemical agent of ſecretion is therefore, according to Berzelius, chiefly ſpent upon the albuminous materials of the blood, which ſeem to be the ſource of every ſubſtance that peculiarly characteriſes, and is the principal conſtituent of each ſecretion, and which is *ſui generis.* All the other parts of the ſecretion ſeem to be rather accidental, and to be found there only, becauſe they were contained in the blood out of which the ſecretion was formed.

The *excretions* are of a more compound nature. They all contain a free acid, which is the *lactic*, and in the urine this is mixed with the uric acid. Urine ſeems to contain only a ſingle peculiar characteriſtic matter, but milk has as many as three, namely, butter, curd, and ſugar of milk. The perſpired fluid appears to have no peculiar matter, but to be a mere watery liquid with hardly a veſtige of the albumen of the blood, and in ſhort to be the ſame as the other excreted fluids would be if deprived of their peculiar matter.

An account of moſt of the animal fluids will be found under their proper heads. The following is a tabular view of the analyſes of what have been termed *albuminous* fluids, many of which have been omitted.

Name of Fluid.	Albumen.	Incoagulable matter, &c.	Salts.	Water.
Fluid from ſpina bifida	·5	·7	1.0	97·8
Liquor pericardii	5·5	2.0	·5	92.0
Ditto	3·0	1.0	1.0	95·0
Fluid from hydrocephalus	.12	.28	1.0	98.6
Fluid from hydrocele	6.85	1.1	0.8	91.25
Liquor amnii	.16	.1	1.4	98·34
Fluid from aſcites	4·25	1.0	1.0	93·75
Fluid from a bliſter	6.0	.14	1.0	92.86
Ditto *	18.	—	4·0	78.0
Albumen ovi	12.0	2·7	0·3	85.00

The above are the reſults of Dr. Boſtock's experiments, with the exception of the fluid from a bliſter marked *, which is taken from Margueron.

With reſpect to the nature of the *incoagulable matter* and *ſalts*, they are the ſame as thoſe conſtantly found in the ſerum of the blood; we refer our readers therefore to what we have ſaid on this ſubject under the article Blood.

FLUOBORIC Acid, in *Chemiſtry*. See Fluoric *Acid.*

FLUORIC Acid. Since this article was written for the Cyclopædia, many important additions have been made to our knowledge reſpecting fluoric acid, which deſerve to be mentioned here.

Pure fluoric acid, according to Gay Luſſac and Thenard, may be obtained by diſtilling together in lead veſſels a mixture of one part of white fluor ſpar in a ſtate of powder, and two parts of concentrated ſulphuric acid. The lead receivers muſt be kept as cool as poſſible by a mixture of common ſalt and ſnow or ice.

Fluoric acid thus obtained is, at 32°, a colourleſs liquid, like water. It remains a fluid between —4° and 60°. Its boiling point has not been determined, but it is low. When expoſed to the air it ſmokes violently, giving out a ſmell ſimilar to that of muriatic acid, but much ſtronger. It is very ſpeedily diſſipated in the open air, and can only be preſerved in metallic veſſels. Thoſe beſt adapted for the purpoſe are made of pure ſilver, with air-tight ſilver ſtoppers. This acid, according to Davy's experiments, when as concentrated as poſſible, contains no water. In this ſtate, its ſpecific gravity is 1.0609. When united to a certain portion of water, its ſpecific gravity becomes as high as 1.250. When a drop is let fall into water, a hiſſing noiſe is heard, ſimilar to that occaſioned by a hot iron. When a few drops of water are let fall into fluoric acid, it enters into ebullition. A large proportion of water may be added without deſtroying its fuming property. Care muſt be taken not to breathe the fumes of this acid, as they are very deleterious. When a drop of it falls upon the ſkin, it acts as a powerful corroſive, and occaſions a ſore which does not ſoon heal.

Reſpecting the nature of this acid, the opinion of the older chemiſts, and even of Gay Luſſac and Thenard, was, that it is compoſed of an unknown baſis and oxygen. M. Ampere, however, ſtarted the notion that it is analogous to muriatic acid, or a compound of hydrogen, and a ſupporter of combuſtion, to which the name of *fluorine* has been given ; and this opinion has been ſince ſupported by Sir H. Davy, and though its truth has not been abſolutely demonſtrated, yet upon the whole perhaps it is the moſt probable. On this ſuppoſition, fluoric acid is a compound of one atom fluorine, and one atom hydrogen. See SIMPLE *Bodies*.

Fluoric acid combines with all the baſes forming *fluates*.

Fluate of Ammonia.—This ſalt may be formed by ſaturating pure fluoric acid with ammonia. It is neutral when firſt formed, but becomes acid when evaporated. It does not cryſtallize, but when heated, flies off in thick white vapours.

Fluate of Potaſh.—This ſalt may be formed in the ſame manner as the laſt. It has a very ſharp taſte, cryſtallizes with difficulty, is very deliqueſcent, and of courſe ſoluble in water. When heated, it undergoes firſt the aqueous, and afterwards the igneous fuſion. Sulphuric acid decompoſes it, driving off fluoric acid in vapour.

Fluate of Soda.—This ſalt may be formed as above. It has much leſs taſte than fluate of potaſh. It is not altered by expoſure to the air, and is rather more ſoluble in hot than in cold water. On cooling, therefore, it ſeparates in ſmall cryſtals, or more frequently in the form of a ſolid and tranſparent cruſt on the ſurface of the water.

Fluate of Lime.—This ſalt exiſts abundantly native. It is called FLUOR SPAR (which ſee), and is the ſubſtance from which this acid is always obtained. It is compoſed, according to Davy's analyſis, of

Fluorine	20.	100.
Calcium	26.25	131.25

Fluate of Barytes.—This ſalt is taſteleſs, inſoluble in water, but ſoluble in exceſs of fluoric acid, and likewiſe in nitric and muriatic acid. It is compoſed of

Fluorine	20.	100.
Barium	87.5	437.5

Fluate of Strontian.—This ſalt poſſeſſes the ſame properties as fluate of barytes.

Fluate of Magneſia.—This is a taſteleſs powder, inſoluble in water, and ſcarcely ſoluble in acids.

Fluate of Yttria, *Fluate of Alumina*, and *Fluate of Zirconia*, are likewiſe white inſoluble powders. The

Fluate of Glucina is ſoluble in hot water, and precipitates in ſmall cryſtals as the water cools.

It is extremely probable, as Dr. Thomſon remarks, that the above ſalts are in reality *fluorides*, or compounds of *fluorine*, with the metallic baſes of the earths.

The metallic fluates are not upon the whole an intereſting claſs of bodies. The *fluates of iron, manganeſe, zinc*, and *tin*, are white inſoluble powders. The *fluate of cobalt* is of a red colour. The *fluate of lead* exiſts in the form of brilliant plates. The *fluate of copper*, of ſmall blue-coloured ſoluble cryſtals. The *fluate of mercury* of ſmall lamellar yellow cryſtals. The *fluate of ſilver* is very ſoluble in water, and does not cryſtallize. It cannot be formed by the direct union of fluoric acid and ſilver, but it is formed when fluate of mercury is made to act upon ſilver.

Fluoboric Acid.—Fluorine has the property of combining with boron, and forming an acid which has received the above appellation. It may be formed by mixing together in a retort one part of finely pounded fuſed boracic acid, and two parts of fluor ſpar in powder, and twelve parts of ſulphuric acid. The heat of a lamp is then to be applied, and the acid comes over in the form of a gas, which muſt be received over mercury. For this proceſs we are indebted to Dr. John Davy, but the acid itſelf was firſt diſcovered by Gay Luſſac and Thenard in 1808.

Fluoboric acid thus obtained is colourleſs, and poſſeſſes the mechanical properties of common air. Its ſmell is ſimilar to that of muriatic acid, and its taſte is exceedingly acid. It inſtantly gives a red colour to vegetable blues. Its ſpecific gravity, as determined by Dr. Davy, is 2.3709. Water abſorbs about 700 times its bulk of this gas, and becomes ſlightly viſcid, like ſulphuric acid, and like it requires a high temperature to make it boil. It alſo charrs animal and vegetable ſubſtances, and is capable of forming an *ether* when diſtilled with alcohol. It combines with the different baſes, and forms a claſs of ſalts called *fluoborates*, which have been little examined. On the ſuppoſition that it is a compound of *fluorine* and *boron*, which ſeems to be the moſt probable opinion, its compoſition will be

Fluorine	20.	100.	228.57
Boron	8.75	43.75	100.

Fluoſilicic Acid.—Fluorine has alſo the property of combining with *ſilicon*, and forming a powerful acid. This compound was firſt diſcovered by Scheele, but it is to Dr. J. Davy that we are principally indebted for the correct account of its properties. It may be formed by putting a mixture of equal parts of pounded fluor ſpar and glaſs into a retort, and pouring over the mixture ſulphuric acid ſufficient to convert the whole into a paſte. Heat is then to be applied, and the acid ſpeedily comes over in the form of a gas, and may be collected over mercury. Fluoſilicic acid gas is colourleſs, and poſſeſſes the mechanical properties of common air. Its ſmell reſembles that of muriatic acid. It ſmokes when allowed to eſcape into the atmoſphere. It inſtantly reddens vegetable blues. Its ſpecific gravity, according to Dr. Davy, is 3.5735. Water abſorbs about 263 times its bulk of it, but at the ſame time it is partly decompoſed, and ſilica is depoſited. When paſſed through liquid ammonia, the whole of the ſilicon is depoſited in the form of ſilica : this enabled Dr. Davy to effect its analyſis, the reſult of which appears to ſhew that it is a compound of one atom ſilicon and one atom fluorine.

The *fluoſilicates* have not been much examined. The *fluoſilicate* of lime exiſts abundantly native, and has not hitherto been diſtinguiſhed from fluor ſpar. It may, however, be eaſily recogniſed by heating it in metallic veſſels with ſulphuric acid, when it yields fluoſilicic acid gas, while fluor ſpar does not.

FLUORINE. See FLUORIC *Acid.*

FLUOSILICIC ACID, FLUOSILICATES. See FLUORIC *Acid.*

FLUTE TRAVERSIERE. See TRAVERSIERE.

FLUVANNA, l. 5, *r.* 4775, of whom 2142 are ſlaves.

FOAL-BIRTH. See AGE *of the Horſe*, and HORSE.

FOLKINGHAM, or FALKINGHAM, l. 5 and 6, *r.* 106 houſes, and 659 inhabitants.

FOLKSTONE, l. 15. In 1811 this town contained 765 houſes, and 3697 perſons; *viz.* 1673 males, and 2024 females: 23 families being employed in agriculture, and 157 in trade and manufactures.

Vol. XV.

FOOD, col. 9, l. 1, for animal *r.* gramineal or gramineous.

FORCE, col. 28, *dele* the paragraph from l. 3 to l. 6. Col. 38, under Force, l. 1, inſert—.6; l. 2, .69. Under Continuation, l. 4, 1′; under *Day's work*, l. 4, *r.* 2. Col. 39, under *Performance of Men by Machines*,—Continuance, l. 1, 145″; l. 2, 2′. Col. 41, under *Work of Mules*, l. 1, *r.* Cazand; l. 23, *r.* 72 horſes, and burns a chaldron, &c.

FORCEPS, col. 2, l. 30 from bottom, *r.* Rueff; l. 19, *r.* Mauriceau Pratique.

FORDINGBRIDGE, l. 11, *r.* 1811; l. 12, *r.* 445—2259; l. 13, *r.* 281.

FORDOUN. In 1811 this pariſh contained 513 houſes, and 2535 perſons; *viz.* 1197 males, and 1338 females.

FORDYCE, a pariſh of Bamff county, in Scotland, containing 641 houſes, and 2767 inhabitants.

FORFAR, l. 21, *r.* 1811; l. 22, *r.* 759—5652.

FORFARSHIRE. Add—By the return of 1811, this county had 16,135 houſes, occupied by 107,264 perſons; 48,151 being males, and 59,113 females: 4980 families employed in agriculture, and 13,616 in trade and manufactures.

FORFICULA, col. 2, under Auricularia, add—The popular dread in which this inſect is held, from an apprehenſion of its entering the cavity of the ear, and piercing the tympanum, is now generally conſidered as an ancient and vulgar error.

FORMIC Acid, in *Chemiſtry*. The diſtinct nature of this acid appears now to be generally admitted by chemiſts. In its ſenſible properties, it approaches the acetic acid. But Suerſen has ſhewn, that it has the property of neutralizing much leſs of alkaline bodies than acetic acid. Gehlen alſo has ſhewn, that the formiates of ſoda and copper, differ altogether from the acetates of the ſame baſes. Berzelius has lately analyſed this acid with his uſual preciſion: according to him, it is compoſed of

$$\left.\begin{array}{ll}\text{Hydrogen} & 2.84\\ \text{Carbon} & 32.40\\ \text{Oxygen -} & 64.76\end{array}\right\}\begin{array}{c}\text{which nearly cor-}\\ \text{reſpond with}\end{array}\left\{\begin{array}{l}\text{1 atom hydrogen.}\\ \text{2 atoms carbon.}\\ \text{3 atoms oxygen.}\end{array}\right.$$

Hence it appears to reſemble oxalic acid cloſely in its compoſition.

FORRES, l. 4, after Moray, add—or Elgin; l. 12, *r.* 1811—672; l. 13, *r.* 2925, and 295 families, &c.

FORTH, col. 2, l. 7, for Camburkenneth, *r.* Cambuſkenneth.

FORTIFICATION, col. 7, l. 4 from bottom, for Four *r.* Your.

Fortification, *Profile of a*, l. 14, for 3 toiſes 18 feet *r.* 3 toiſes or 18 feet.

FOSSE, col. 2, l. 44, for thus *r.* then.

FOSSIL Copal. See Mineralogy, *Addenda.*

FOSTER, l. 2, *r.* 2613.

FOTHERINGHAY, l. 28, *r.* 1587. Col. 2, l. 15 and 16, *r.* and the whole pariſh contains 55 houſes, and 313 perſons.

FOUNDERY—*The manner of caſting bells*, col. 2, l. 6, for $\frac{2}{15}$ *r.* $\frac{12}{15}$.

FOURTH, col. 2, l. 3, *r.* Fourth, *Great Sharp.*

Fourth, *Greateſt Sharp*, *r.* *Great.*

FOWEY, col. 2, l. 20 from bottom, *r.* 1811; after houſes—in the borough and pariſh was 227, containing 1319 inhabitants.

FOWLER, a townſhip of Trumbull county, in Ohio, having 224 inhabitants.

FOX, George, col. 2, l. 25, *r.* led people.

FOXBOROUGH, l. 4, *r.* 870.

FOYERS, l. 9, *r.* moſſy; l. 11, *r.* breach; l. 15, *r.* aſtoniſhed rents; l. 16, *r.* ceaſeleſs; l. 17, after wide, inſert—a comma.

FRAGUIER, col. 2, l. 31, after farther on."

FRAISED Rails, l. 12, for rails *r.* poſts; and in l. 11, for rails *r.* fraiſes.

FRAMINGHAM, l. 3, *r.* 1670.

FRANCE, col. 26, l. 16, add—See *French* Revolution. Col. 33, l. 5, for ſheds *r.* ſtuds.

FRANCESTOWN, l. 5, *r.* 1810 and 1451.

FRANCO, col. 5, l. 11 from bottom. N. B. the tails ſhould not have been black.

FRANCONIA, in America, l. 4, *r.* 358. Add—Alſo, a townſhip of Montgomery county, in Pennſylvania, having 656 inhabitants.

FRANKFORT, l. 3, *r.* 1493; l. 4, for village *r.* borough. Col. 2, l. 1, inſert—1233 inhabitants; add—Alſo, a town of Suſſex, in New Jerſey, containing 1637 inhabitants.—Alſo, a town of Cumberland county, in Pennſylvania, having 807 inhabitants.

FRANKLIN. Add—The following is an authentic copy of Franklin's epitaph, tranſcribed from his correſpondence, in his own hand-writing. "The body of B. Franklin, like the cover of an old book, its contents torn out, and ſtripped of its lettering and gilding, lies here, food for worms. But the work ſhall not be wholly loſt; for it will, as he believed, appear once more in a new and more *perfect* (elegant) copy, *corrected* and *amended* (reviſed and corrected, P. C.) by the Author. He was born, Jan. 6, (Jan. 17, original,) 1706. Died 17———

Franklin, in *Geography*, l. 3, *r.* 19; l. 4, *r.* 16,427; l. 14, *r.* 23,083; l. 16, containing 159 inhabitants; l. 20, *r.* containing 5730 inhabitants, of whom 709 are ſlaves; l. 24, *r.* 6914; l. 25, *r.* 1794; l. 26, after Franklin, containing 1099 perſons, of whom 407 are ſlaves; l. 27, *r.* 10,166—5330; l. 41, *r.* 10,815—1656; l. 45, *r.* 1398; l. 54, *r.* with 1542 inhabitants; l. 55, for three *r.* five; after York county, having 706 inhabitants, in Huntingdon county, with 571, in Franklin county, with 1781, in Fayette county, with 1623, in Greene county, with 1943 inhabitants; l. 58, *r.* 1161; l. *ult.* after Ohio, add—with eight townſhips, and 3484 inhabitants.—Alſo, a townſhip of Portage county, in Ohio, having 230 inhabitants.—Alſo, a townſhip of Roſs county, in Ohio, having 725 perſons.—Alſo, a townſhip of Ohio, in Scioto county, having 217 perſons.—Alſo, a townſhip of Warren county, in Ohio, having 2302 perſons.—Alſo, a county of New York, containing 2617 inhabitants.—Alſo, a town of Somerſet county, in New Jerſey, containing 2539 inhabitants.—Alſo, a town of Bergen county, in New Jerſey, having 2839 inhabitants.—Alſo, a county of the territory of Miſſiſſippi, containing 2016 inhabitants, of whom 735 are ſlaves.

FRANKS, l. 3, *r.* 1114.

FREDERICK I. col. 2, l. 14, after Urban III. inſert—claim of.

Frederick, l. 12, *r.* 34,437; l. 13, *r.* 3671. Col. 2, l. 2, *r.* 22,574 inhabitants, of whom 6117 are ſlaves.

Frederick, a townſhip of Montgomery county, in Pennſylvania, having 828 inhabitants.

FREEHOLD, l. 4, *r.* 1810—4784; l. 7, *r.* 1810—3843.

FREEMAN, a townſhip of Maine, in Somerſet county, having 237 inhabitants.

FREEPORT, l. 5, *r.* 2184.

FREEZING, l. 15, *r.* $\frac{1}{40}$.

FRENCH *Creek*, in *Geography*, a townſhip of Mercer county, in Pennſylvania, having 183 inhabitants.

FRICTION, *Calculation of the Quantity of*, col. 2, l. 22, *r.* a third part of its own weight.

FRIENDSHIP, in *Geography*, a town of Maine, in the county of Lincoln, having 480 inhabitants.

FRODSHAM, l. 11 from the bottom, *r.* 1811; l. 10, *r.* 262, and 1344.

FROME, l. 17 from the bottom, *r.* 1811—1722; l. 16, *r.* 9493, and *dele* But this eſtimate is glaringly defective.

FRUIT-FLIES, col. 2, l. 14, *r.* theſe ſnails.

FRUIT-*Stones*, l. 5 from the bottom, for cuts *r.* coats; l. *ult.* *r.* theſe ſeeds, &c. were carried off.

FRYBURGH, l. 2, for York *r.* Oxford; l. 4, *r.* 1004.

FUNGI, *Chemical Properties of the.* Braconnot has lately detected three diſtinct new principles in this claſs of plants. Two of theſe are acids, one of which he has denominated *boletic acid*, the other *fungic acid;* the third is a principle neither acid nor alkaline, to which he has given the name of *fungin.* We ſhall briefly deſcribe here the leading properties of each of theſe principles.

Boletic Acid.—This was obtained from the juice of the *boletus pſeudo-ignarius.* Its colour is white; it is not altered by expoſure to the air, and its cryſtals are irregular four-ſided priſms. Its taſte is ſimilar to that of tartar. It is ſoluble in 180 times its weight of water at a temperature of 68°, and in 45 times its weight of alcohol. The aqueous ſolution reddens vegetable blues. It combines with the different baſes forming *boletates*, which have been but little examined. The boletate of ammonia cryſtallizes in flat four-ſided priſms, and is ſoluble in 26 times its weight of water at 68°. The *boletate* of *potaſh* is very ſoluble in water, and cryſtallizes with difficulty. The *boletate* of *lime* cryſtallizes in flat four-ſided priſms, and is ſoluble in about 110 times its weight of water at 72½°. No one hitherto appears to have repeated the experiments of Braconnot on this acid.

Fungic Acid.—This was extracted from the *boletus juglandis*, and other fungi. This acid is colourleſs, does not cryſtallize, has a very ſour taſte, and when evaporated to dryneſs, deliqueſces on expoſure to the air. The *fungates* of *potaſh* and *ſoda* do not cryſtallize, are very ſoluble in water, but not in alcohol. The *fungate* of *ammonia* cryſtallizes in regular ſix-ſided priſms. The *fungate* of *lime* is not altered by expoſure to the air, and is ſoluble in about 18 times its weight of water at 73°.

Fungin.—This ſubſtance approaches woody fibre in its properties, but ſeems to be ſufficiently diſtinguiſhed from it by various characters, particularly by conſtituting a nouriſhing article of food, and by being leſs ſoluble in alkaline leys.

FUNGUS *of the Antrum*, l. 13, for he *r.* ſhe.

FURCRÆA, in *Botany*, after M. Fourcroy, the great chemiſt.—Venten. in Uſt. Annal. v. 19. 54. Ait. Hort. Kew. v. 2. 302.—Claſs and order, *Hexandria Monogynia.* Nat. Ord. *Coronariæ*, Linn. *Bromeliæ*, Juſſ.

Eſſ. Ch. Petals ſix, ſuperior, ſpreading. Filaments ſhorter than the corolla, obovate in their lower part. Style triangular, thickened at the baſe.

F. *gigantea*, De C. Pl. graſs. (Agave fœtida, *Linn.*) and F. *tuberoſa*, (A. tuberoſa, Willd. Sp. Pl. v. 2. 194.) are the only ſpecies.

FURIES, col. 3, l. 22, *r.* thoſe ſerpents.

FURR, in *Heraldry*, the 4th paragraph, *r.* Furrs either conſiſt of one colour (which is white, but cannot be uſed in arms ſingly), or more than one; and theſe either two, or more than two.

FURRINGS, in *Architecture.* Add—Joiſts are furred, by which operation the uneven joiſts of an old floor are levelled for the reception of the flooring boards.

FURZE, col. 4, l. 18, for 1*l.* 16*s.* *r.* 3*l.* 12*s.*, the furze being cut only every other year.

FURZE-*Mill*, col. 2, l. 20, for melted cake *r.* melted coke.

FUSION, col. 2, l. 20 from the bottom, *dele* all and except gold.

G.

G, l. 21, after *ſing*, &c. add—It has been aſſerted, however, by an ingenious correſpondent, that he finds this ſo far from the fact, that G hard is eaſily ſounded with any of the vowels, either before or after it, whilſt the tongue is probably kept at the bottom of the mouth; nor does he believe that the preſſure here deſcribed is at any time neceſſary for the pronunciation of this letter. It does indeed take place in two of the three examples here given, *viz. gate, go,* and *geld;* but it is for the formation of the letters *t* and *l.* This preſſure takes place alſo with the G ſoft.

GADUS. Obſ. Some ſpecies, *viz.* Molva, Albidus, Tau, Lota, Muſtela, Tricirratus, and Cimbrius, all *bearded*, are arranged in the ſame diviſion, the character of which is *without beards.*

GAGE, in *Carpentry*, l. 9, for a ſtaff *r.* the ſtick; for to ſtrike *r.* or ſtrike; l. 10, for ſtaff *r.* ſtuff; l. 11, for it *r.* the tooth.

GAINSBOROUGH, l. 9 from bottom, for quadrangular *r.* quadrangle.

GALANGAL, l. 3, add—See ALPINIA, *Addenda.*

GALAPAGOS, col. 1, l. 5 from bottom, for 68° *r.* 86° or 89°; *dele* the paragraph.

GALARDIA, in *Botany*, Lamarck Dict. v. 2. 590.

Illuſtr. t. 708. Schreb. Gen. 573. Willd. Sp. Pl. v. 3. 2245. Ait. Hort. Kew. v. 5. 129. Purſh 572. Juſſ. 189. (Virgilia; L'Herit. Monogr.)—Claſs and order, *Syngeneſia Polyg.-fruſtranea*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Recept. hemiſpherical, chaffy. Seed-down of many chaffy ſcales. Calyx imbricated, many-leaved, flat. Radiant florets deeply three-cleft.

1. G. *bicolor*. Two-coloured Galardia. Willd. n. 1. Ait. n. 1. Purſh n. 1. (Virgilia helioides; L'Herit. t. 1, 2. Sm. Exot. Bot. v. 1. 71. t. 37.)—Stem branched. Leaves lanceolate. Scales of the ſeed-down awned, entire.—Found in dry ſandy ſoil, from Canada to Florida. Annual. *Flowers* handſome, orange, variegated with red and purple.

We have already announced this genus under the VIRGILIA now eſtabliſhed. There are two more ſpecies, *G. fimbriata* and *ariſtata*, from N. America.

GALEOPITHECUS, COLUGO, in *Zoology*, a genus of the order Primates, the characters of which are, that it has no front teeth in the upper jaw; that thoſe in the lower are ſix, ſhort, broad, diſtant, and pectinated; that the canine teeth are very ſhort, triangular, broad, ſharp, and ſerrated; that the grinders are four, truncated and muricated with conical protuberances; and that it has a flying-ſkin ſurrounding the body, limbs, and tail. For the deſcription of this genus with appropriate figures, naturaliſts are indebted to Dr. Pallas; and it may be found in the Tranſactions of the Academy of Peterſburgh for the year 1780. The galeopithecus volans, or flying colugo, is the lemur volans of the Linnæan ſyſtem, and the flying macuaco of Pennant's quadrupeds. It is a native of the Molucca and Philippine iſlands, where it feeds principally on fruits, and almoſt conſtantly reſides on trees. It has two young ones, which are ſaid to adhere to its breaſts by the mouth and claws. Its whole length is about three feet, and of the ſame breadth when expanded; the tail is ſlender, and about a ſpan long. Its expanſile ſkin, which enables it to fly, is continued on each ſide from the neck to the fore-feet; thence to the hind-feet, and again to the tip of the tail. It is covered with fur, like the body of the animal; the upper ſide of which is generally of a deep aſh colour: the back, in animals that are full grown, is croſſed tranſverſely with blackiſh lines, having towards the edges a tinge of yellow; and the whole underſide, both of the body and membrane, is of a yellowiſh colour. The head is long, the mouth ſmall, and the tongue fleſhy, broad, rounded, attenuated on the edges, and ciliated with papillæ, and alſo ſlightly beſet with papillæ on its ſurface. The legs are clothed with a ſoft yellow down, and on each foot are five toes, united by a common membrane, and terminating in very ſharp crooked claws. The animal is called by the Indians caguang, colugo, and gigua. It is a gregarious animal, flies chiefly in the evening, and its body is ſaid to be about the ſize of a cat. M. Geoffroy ſays there are two varieties; *viz.* one of the colour uſually deſcribed; the other of a fine cinereous or ferruginous colour, vivid on the back and paler beneath, and without any variegations. It is ſuggeſted, that theſe may be merely ſexual differences. Dr. Shaw has availed himſelf of Pallas's deſcription and figure in the firſt vol. of his Zoology, to which we refer.

GALINSOGEA, in *Botany*, after the ſuperintendant of the Madrid garden. "Ruiz and Pav. Prodr. 110." Ait. Hort. Kew. v. 5. 122.—Claſs and order, *Syngeneſia Polyg.-ſuperflua*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Recept. chaffy. Seed-down of many chaffy ſcales. Calyx imbricated.

1. G. *parviflora*, Cavan. Ic. t. 281.

2. G. *trilobata*, ib. t. 282.—Both natives of South America.

GALIUM, col. 2, l. 34, for dried *r.* freſh.

GALLATIN, l. 2, *r.* 3159, and 664.

GALLIC ACID, in *Chemiſtry*. This acid has been recently analyſed by Berzelius. He found it compoſed of

Hydrogen - - -	5.90
Carbon - - -	56.64
Oxygen - - -	38.36
	100.00

According to which analyſis, the conſtitution of gallic acid is as follows:

3 atoms hydrogen - -	3.75
6 atoms carbon - -	45.
3 atoms oxygen - -	30.
and the weight of its atom will be	78.75

Gallic acid has been found in the following plants, in the different proportions ſtated.

Elm - -	7	Sallow - -	8
Oak, cut in winter	8	Mountain-aſh -	8
Horſe-cheſnut -	6	Poplar - -	8
Beech - -	7	Hazel - -	9
Willow (boughs)	8	Aſh - -	10
Elder - -	4	Spaniſh cheſnut -	10
Plum-tree -	8	Smooth oak -	10
Willow (trunk)	9	Oak, cut in ſpring	10
Sycamore -	6	Huntingdon or Leiceſter willow	10
Birch - -	4		
Cherry-tree -	8	Sumach - -	14

GALLICIA, NEW, l. 5, *r.* Zacatecas.

GALLIPOLIS, a townſhip of Ohio, in the county of Gallia, containing 448 inhabitants.

GALVANISM, col. 3, l. 25, after inch, inſert—a part.

GALVANISM, *Medical.* See VOLTAISM, and particularly ELECTRICITY, *Medical.*

GALVANOMETER, an apparatus conſtructed by Mr. Pepys, by an alteration in Bennet's electrometer, adapted for meaſuring very minute quantities of electricity, and which perhaps could not be rendered ſenſible by any other means. This apparatus conſiſts of a glaſs cylinder, covered with a lid, which is compoſed of two circular plates of braſs, attached to a cork that fits into the cylinder. To the lid is fixed a thin ſlip of ſilver, the end of which hangs down in the body of the cylinder, and has a pair of gold leaves attached to it; and the whole is ſo contrived as to be capable of being moved nearer to, or farther from, the pieces of zinc which ſtart up from the bottom of the cylinder. The pieces of zinc are ſo contrived, that the parts of them which project upwards from the bottom of the cylinder may be fixed at different diſtances from each other by means of a ſlide and ſcrew. See a deſcription and figure of this inſtrument in Boſtock's "Hiſtory of Galvaniſm," 8vo. 1819.

GAMING, col. 3, l. 30, *r.* 8 Geo. I.

GARDENING, l. 17, *r.* Loudon.

GARDINER. Add—containing 1029 perſons.

GARDNER, l. 4, *r.* 815.

GARGLE, a diſeaſe of horned cattle, which conſiſts of an external hard ſwelling in the dew-lap, which afterwards ſpreads to the breaſt and throat. For the cure, profuſe bleeding is recommended; and then an opening is to be made in the dew-lap at the ſeat of the ſwelling, into which are introduced the leaves of bear's-foot pounded; the opening is then ſewn with two or three ſtiches, and thus will be produced a running which will cure the diſeaſe; or a common rowel will anſwer the purpoſe.

GARRARD. Add—It contains 8926 inhabitants, of whom, in 1810, 2000 were ſlaves.

GARSTANG, l. 3, *r.* 178 and 790.

GARUGA, in *Botany*, a very barbarous Indian name. —Roxb. Corom. v. 3. 5. Ait. Hort. Kew. v. 3. 37.— Claſs and order, *Decandria Monogynia*. Nat. Ord. *Meliæ*, Juſſ.

Eſſ. Ch. Calyx bell-ſhaped, five-cleft, bearing the ſtamens and the five equal petals. Stigma five-lobed. Drupa with ſeveral nuts.

1. G. *pinnata*. Roxb. t. 208.—A *tree* found on the mountains of India. *Leaflets* ſerrated. *Flowers* panicled, yellow. *Fruit* auſtere, uſed for pickling. *Wood* ſoft.

GAS, col. 2, l. 25, after atmoſphere, add—will be found under AIR, ATMOSPHERE, &c.; *dele* ſtated under the head of PNEUMATICS.

GAS, in *Chemiſtry*. Great revolutions have taken place in the chemiſtry of the *gaſes* ſince this article was written for the Cyclopædia. Not only have their number been increaſed, but the laws of their combination, expanſion by heat, &c. have been further inveſtigated, and in many inſtances found very different from thoſe ſtated under the above article. Several of theſe particulars have been already given under the article ATOMIC *Theory*, a few others remain to be mentioned here. The following table from Dr. Thomſon includes the gaſes at preſent known.

1. *Simple gaſes.* Oxygen, chlorine, iodine vapour, hydrogen, azote, ſulphur.
2. *Compound gaſes.*
   - *a.* Simple gaſes combined. Hydriodic acid, protoxyd of chlorine, protoxyd of azote. Muriatic acid, deutoxyd of azote, ſteam, ammonia.
   - *b* Oxygen and a ſolid baſe. Sulphuric acid, ſulphureous acid. Carbonic oxyd, carbonic acid.
   - *c.* Hydrogen and a ſolid baſe. Cyanogen, ſulphuretted hydrogen, olefiant gas, carburetted hydrogen, hydroguret of phoſphorus, bihydroguret of phoſphorus.
   - *d.* Fluorine, chlorine, and cyanogen with a baſe. Fluoboric acid, chlorocyanic acid, hydrocyanic acid, chlorocarbonic acid.
   - *e.* Two ſolid baſes. Sulphuret of carbon.
   - *f.* Triple or quadruple compounds. Hydriodic ether, chloric ether, ſulphuric ether, muriatic ether, alcohol, oil of turpentine.

Combination of Gaſes with one another.—The important law firſt obſerved by Gay Luſſac reſpecting the combination of gaſeous bodies, and alluded to in our original article, is now, we believe, nearly univerſally admitted. This law is, that gaſeous bodies always unite with reference to their volumes; that is to ſay, that either equal volumes of different gaſes combine together, or one volume of the one, with two, three, or more of the other, and not with any intermediate proportion; and further, that when a gaſeous reſult is obtained by ſuch union, the volume of this is either equal to the united volumes of the two gaſes, or to half, one-fourth, or ſome other ſubmultiple of the original volumes.

The combinations of gaſes with one another have been arranged by Dr. Thomſon under the following heads.

1. Gaſes that unite by mere mixture, ſuch are: Oxygen with nitrous gas, forming nitrous or nitric acid. Ammonia with vapour, forming liquid ammonia—with muriatic acid, forming muriate of ammonia—with fluoboric acid, forming fluoborate of ammonia—with fluoſilicic acid, forming flluoſilicate of ammonia—with carbonic acid, forming carbonate of ammonia—with ſulphureous acid, forming ſulphite of ammonia—with ſulphuretted hydrogen, forming hydroſulphuret of ammonia.
2. Gaſes that may be mixed without any ſtriking combination, though they are capable of uniting in certain circumſtances, ſuch are: Oxygen with hydrogen, forming water—with carbonic oxyd, forming carbonic acid—with azote, forming nitric acid—with chlorine, forming chloric acid—with ſulphureous acid, forming ſulphuric acid—with nitrous oxyd, forming nitric acid. Hydrogen with chlorine, forming muriatic acid—with iodine, forming hydriodic acid—with cyanogen, forming hydrocyanic acid. Chlorine with carbonic oxyd, forming chloro-carbonic acid.
3. Gaſes which mutually decompoſe each other when mixed together, ſuch are: Oxygen with phoſphuretted hydrogen. Chlorine with ammonia—with phoſphuretted hydrogen—with carburetted hydrogen—with olefiant gas—with ſulphuretted hydrogen—with nitrous gas. Sulphuretted hydrogen with nitrous gas—with ſulphureous acid.
4. Gaſes which mix without ſpontaneous decompoſition, but which may be made to decompoſe each other in particular circumſtances, as on the approach of an ignited body, when electric exploſions are paſſed through them, &c. Theſe are more numerous then the preceding, and are as follow: Oxygen with ſulphuretted hydrogen—with carburetted hydrogen—olefiant gas—vapour of ether—vapour of alcohol. Nitrous oxyd with hydrogen—with phoſphuretted hydrogen—ſulphuretted hydrogen—carbonic oxyd—carburetted hydrogen—olefiant gas—vapour of ether—vapour of alcohol—ſulphureous acid. Nitric acid with hydrogen, and probably all the preceding combuſtible gaſes and vapours—with ſulphureous acid. Nitrous gas with hydrogen—with ſulphureous acid. Hydrogen with ſulphureous acid—with carbonic acid. Vapour of water with carburetted hydrogen—with olefiant gas.

Combination of Gaſes with Liquids. Gaſes may be conſidered with reference to their combination with water and with other fluids. With reſpect to water, by far the moſt important of all fluids, gaſes may be divided into two claſſes; thoſe that are abſorbed in a ſmall proportion, and thoſe that are abſorbed in a great. Almoſt all gaſes belong to the firſt claſs. In the following liſt of this claſs, the gaſes are arranged in the order of their abſorption, beginning with the leaſt abſorbable: azotic gas—hydrogen gas—arſenical hydrogen—carburetted hydrogen—carbonic oxyd—phoſphuretted hydrogen—oxygen gas—nitrous gas—olefiant gas—nitrous oxyd—carbonic acid—ſulphuretted hydrogen.

The following laws ſeem to be pretty well eſtabliſhed reſpecting the abſorption of gaſes by water.

1. When the preſſure, temperature, and purity of the water, are the ſame, water abſorbs a determinate quantity of every individual gas.

2. Water of the ſame temperature always takes up the *ſame bulk* of each gas, whatever be its denſity.

3. The proportion of any gas abſorbed by water depends greatly upon the nature of the gaſeous reſidue.

4. The proportion of gaſes abſorbed by water is conſiderably influenced by the temperature.

All the very abſorbable gaſes belong to the claſs of ſupporters, acids, or alkalies. The following is a liſt of ſuch of them as have been hitherto examined, arranged in the order of their abſorbability. Chlorine, cyanogen, ſulphureous acid, fluoſilicic acid, muriatic acid, fluoboric acid, ammoniacal gas.

When water is ſaturated with the above gaſes its bulk is augmented. Thus one cubic inch of water ſaturated with

	Cubic Inches.
Chlorine becomes - -	1.002 +
Sulphureous acid - -	1.040
Muriatic acid - -	1.500
Ammoniacal gas - -	1.666

With reſpect to the abſorption of gaſes by other fluids leſs is known. It appears, however, that in general alcohol and oils abſorb a much greater proportion of gaſes than water.

Our limits will not permit us to enter upon this ſubject ſo much as its importance demands, we muſt therefore content ourſelves with preſenting our readers with the following table of the proportions of different gaſes abſorbed by water, according to the beſt experiments.

Table I.—Gaſes combining with Water in ſmall Proportion.

At a temperature of 60°, 100 Meaſures of Water	abſorb, according to		
	Henry.	Dalton.	Sauſſure.
Sulphuretted hydrogen	106	100	253
Carbonic acid - -	108	100	106
Nitrous oxyd - -	86	100	76
Olefiant gas - -	——	12.5	15.3
Nitrous gas - -	5	3.7	——
Oxygen gas - -	3.7	3.7	6.5
Phoſphuretted hydrogen	2.14	——	——
Carburetted hydrogen	1.4	3.7	5.7
Azotic gas - -	1.53	1.56	4.1
Hydrogen - -	1.61	1.56	4.6
Carbonic oxyd - -	2.01	1.56	6.2

Table II.—Gaſes combining with Water in large Proportion.

One Meaſure of pure Water	abſorbs, according to				
	Dalton.	Sauſſure.	Thomſon.	Gay Luſſac.	Davy.
Chlorine -	2	—	—	—	—
Cyanogen -	—	—	—	4½	—
Sulphureous acid	—	43.78	33	—	—
Fluoſilicic acid	—	363 +	—	—	—
Muriatic acid	—	—	516	—	—
Fluoboric acid	—	—	—	—	700
Ammoniacal gas	—	—	780	—	—

Combination of Gaſes with Solids.—The ſimple gaſes are only four, oxygen, chlorine, hydrogen, and azote. Oxygen combines with all the ſimple bodies known. Chlorine, with by far the greater number. Hydrogen, with carbon, phoſphorus, and ſulphur, and ſome of the metals. Azote, as far as is known, with carbon only.

Of the union of compound gaſes with ſolids little is known, and ſuch combinations are very rare.

With reſpect to *the weights of the atoms*, *ſpecific gravities*, *compoſition*, *&c.* of the different gaſeous bodies that have been well aſcertained, they will be found in the titles appended to the article Atomic *Theory*, to which, therefore, we refer our readers. Other particulars, ſuch as their chemical properties, &c. will be found under their reſpective heads.

Expanſion of Gaſes by Heat. (See Expansion.)—To what has been there advanced we may add, that it is now conſidered as eſtabliſhed, that all elaſtic fluids expand equally and uniformly by heat; and the following table gives us nearly the bulk of a given quantity of air at all temperatures, from 32° to 212°, by the aid of which the expanſion of gaſes for all other temperatures may be eaſily aſcertained.

Temp.	Bulk.	Temp.	Bulk.	Temp.	Bulk.
32°	1000000	59°	1056249	86°	1112499
33	1002083	60	1058333	87	1114583
34	1004166	61	1060416	88	1116666
35	1006249	62	1062499	89	1118749
36	1008333	63	1064583	90	1120833
37	1010416	64	1066666	91	1122916
38	1012499	65	1068749	92	1124999
39	1014583	66	1070833	93	1127083
40	1016666	67	1072916	94	1129166
41	1018749	68	1074999	95	1131249
42	1020833	69	1077083	96	1133333
43	1022916	70	1079166	97	1135416
44	1024759	71	1081249	98	1137499
45	1027083	72	1083333	99	1139583
46	1029166	73	1085416	100	1141666
47	1031249	74	1087499	110	1162499
48	1033333	75	1089383	120	1183333
49	1035416	76	1091666	130	1204166
50	1037499	77	1093749	140	1224999
51	1039583	78	1095833	150	1245833
52	1041666	79	1097916	160	1266666
53	1043749	80	1099999	170	1287499
54	1045833	81	1102083	180	1308333
55	1047916	82	1104166	190	1329166
56	1049999	83	1106249	200	1349999
57	1052083	84	1108333	210	1370833
58	1054166	85	1110416	212	1374999

GASOMETER. See Laboratory.

GASTRIC Juice. See Digestion.

GASTROLOBIUM, in *Botany*, Br. in Ait. Hort. Kew. v. 3. 16, a papilionaceous genus, with ten ſeparate ſtamens, named from the tumid, or *bellying legume.* We have had no opportunity of examining it.

GATES, l. 4, *r.* 5965 and 2790.

GATTON, l. 3, for 112 *r.* 99.

GAZANIA, in *Botany*, perhaps from *γαζα*, *riches*, in alluſion to the ſplendour of the flowers.—Gærtn. v. 2. 451. t. 173. Br. in Ait. Hort. Kew. v. 5. 140. Lam. Illuſtr. t. 702.—Claſs and order, *Syngeneſia Polyg.-fruſtranea.* Nat. Ord. *Compoſitæ.*

Eſſ. Ch. Receptacle without ſcales. Seeds very hairy. Seed-down of chaffy hairs. Calyx of one leaf.

G. rigens, (Gorteria rigens; Linn. Sp. Pl. 1284. Curt. Mag. t. 90.); *G. pavonia*, (Gorteria pavonia; Andr. Repoſ. t. 523.); and *G. ſubulata*, Br. are the only ſpecies; all natives of the Cape of Good Hope. See Gorteria.

GEAUGA, in *Geography*, a county of Ohio, containing 8 towns, and 2917 inhabitants.

GEDDINGTON, l. *ult.* This pariſh conſiſts of 141 houſes—*r.* 651.

GELATINE, in *Chemiſtry*. This animal principle has been lately analyſed by Gay Luſſac and Thenard, according to whom it conſiſts of

Hydrogen -	7.914
Carbon - -	47.881
Oxygen - -	27.207
Azote - -	16.998
	100.

Gelatine does not exiſt in the blood, nor in any known animal fluid ready formed, but appears to be produced by the action of boiling. See Blood.

GELONIUM, in *Botany*, Roxb. in Willd. Sp. Pl. v. 4. 831. Ait. Hort. Kew. v. 5. 406.—Claſs and order, *Dioecia Icoſandria*. Nat. Ord......

Eſſ. Ch. Male, Calyx of five leaves. Cor. none. Stam. twelve or more. Female, Cal. and Cor. like the male. Styles none. Stigmas three, jagged. Capſule of three cells, three valves, with three ſeeds.

1. G. *bifarium*. Willd. n. 1. Ait. n. 1.—Leaves elliptical, rather acute.

2. G. *lanceolatum*. Willd. n. 2.—Leaves oblong-lanceolate, obtuſe.—Eaſt Indian trees, with alternate *leaves*, the tubular *ſtipula* of a *Ficus*, and axillary *flowers*.

Vol. XVI.

GENESEE, l. 5, *r.* 1810, and 12,588 perſons.

GENEVA, New, a townſhip of Fayette county, in Pennſylvania, having 232 inhabitants.

GENEVIEVE, l. 7, add—and diſtrict. In 1810, it contained 4620 inhabitants, of whom 988 were ſlaves. This town is famous for its lead-mines, which occupy an extent of country, commencing about 30 miles W. of the Miſſiſſippi, and extending W. and N.W. It was the diſcovery of theſe lead-mines that gave riſe to the famous Miſſiſſippi ſcheme, projected by Law in 1719, which ruined hundreds of families in France, as they were then ſuppoſed to be a ſilver-mine: and though the bubble burſt immediately, yet Du Pratz, who wrote thirty-nine years afterwards, perſiſted in the error, and ſpeaks of a ſilver-mine on the Marameg in his account of Louiſiana. The Marameg is now called the Marrawal, on a branch of which, called the Negro-Fork, the mines of St. Genevieve are ſituated. Theſe mines have been worked ſince about the year 1725, and they belong to a number of proprietors moſtly held by grants from the Spaniſh governors, formerly reſiding about St. Louis. Bradbury's Travels, &c.

GEODORUM, in *Botany*, from γεα, *the earth*, and δωρον, *a gift*, becauſe, contrary to the nature of moſt of its neareſt allies, this genus grows on the ground, not on trees.—Jackſon in Andr. Repoſ. 626. Br. in Ait. Hort. Kew. v. 5. 207.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Lip hooded, ſeſſile, not articulated with the column. Calyx and petals uniform, ſpreading, rather aſcending. Anther a terminal deciduous lid. Maſſes of pollen two, each with a poſterior lobe.

G. purpureum, (Limodorum nutans; Roxb. Corom. v. 1. t. 40. Malaxis nutans; Willd. Sp. Pl. v. 4. 93.); *G. citrinum;* Andr. t. 626; and *G. dilatatum*, (L. recurvum; Roxb. t. 39.); all Eaſt Indian plants, are the only deſcribed ſpecies. Their *leaves* are elliptical, many-ribbed; *cluſters* or *ſpikes* on radical ſtalks, pendulous, handſome.

GEOLOGY. (See Geology.) At the period when that article was written, geology as a ſcience had ſcarcely excited any conſiderable degree of intereſt in this country; and thoſe who were deſirous of acquiring a knowledge of the ſtructure of the earth directed their attention more to the expoſition of it which Werner had given, than to the actual ſtate of the earth itſelf. Indeed ſuch was the ſuppoſed infallibility of the German profeſſor, and the attachment to theory, that for ſeveral years the reſearches of geologiſts were undertaken chiefly to make facts coincide with preconceived ſyſtems; but in proportion as our knowledge of facts extended, the difficulty of reconciling them with received theories became more and more apparent, and ſome of the warmeſt advocates of theſe theories began to perceive the neceſſity of deſcribing phenomena as they really exiſt, without any further attempt to bind nature in the fetters of an artificial ſyſtem.

The ſyſtem of Werner (ſee Systems *of Geology*) preſumes, that all the principal beds of rock, or rock formations, are univerſal, or, in other words, that each of theſe rocks encircles the whole earth, like the rind of an onion, and that they are placed over each other in a regular ſucceſſion, which is the ſame in every part of the globe. This regular ſucceſſion is a neceſſary conſequence of another poſition in the Wernerian ſyſtem, that the materials of all the different beds of rock were held in ſolution by water, which covered the globe univerſally, and at ſucceſſive periods depoſited its contents as the waters retired; hence the *retiring of the waters* is an important part of the ſyſtem, and is often referred to in ſome of the articles relating to geology, in the early volumes of the Cyclopædia. Had the ſtrata been depoſited from water covering the whole globe, their order of ſucceſſion in each country would doubtleſs be the ſame; but this is not confirmed by experience. The ſtrata are not univerſal formations, but are of limited extent, and vary much in different parts of the world, and even in different diſtricts of the ſame country. See Rocks and Strata.

Some of the univerſal formations of Werner occur only in one place, as the topaz rock. The abſurdity of deſcribing this rock among ſuch univerſal formations is ſo manifeſtly abſurd, that it is aſtoniſhing ſuch an arrangement could ever have been admitted. To explain the difference in the order of ſucceſſion obſerved in different countries, the German geologiſt had recourſe to what were called *ſubordinate formations*. Theſe are ſtrata of different kinds, which, it was admitted, might occur in other rocks without any regular order of ſucceſſion.

By this admiſſion, all variations from the order of ſucceſſion of rock formations laid down by Werner were ſuppoſed to be accounted for. The ſtrata which were not arranged in the Wernerian order were called *ſubordinate formations;* by ſuch a verbal device, geologiſts thought they could reconcile to their theory all oppoſing facts. Mr. Bakewell, in his Introduction to Geology, was, we believe, the firſt perſon in this country who ventured publicly to ſtate that many of the ſuppoſed univerſal formations of Werner were local, but of greater or leſs extent, and that the ſame regular order of ſucceſſion was not univerſal in different countries.

This, we believe, is now admitted by all thoſe who have had the moſt extenſive range of obſervation.

"The ſecondary ſtrata are local formations, and ſome of the upper ſtrata were evidently formed in detached lakes or inland ſeas. A ſtill more comprehenſive view will prove that even all the ſtratified rocks above the red ſand-ſtone and alpine lime-ſtone are alſo local formations, which had their origin in detached hollows or ſeas of great extent, but which were limited to certain portions of the globe. The obſervation of travellers in different parts of the world inconteſtibly prove that theſe formations are local. I am even inclined to conſider the red ſand-ſtone and alpine lime-ſtone as local formations, but of greater extent than any of the ſtrata above them. If this view of the ſubject were admitted, geologiſts would be relieved from the great difficulties under which the ſcience labours at preſent, and it would go far to eſtabliſh a ſimple and perſpicuous ſyſtem, which will at once account both for the ſimilarity and diverſity of rock formations in various parts of the world. If the mountains were once much higher than at preſent, it muſt be admitted, that before the formation of the ſecondary ſtrata the valleys and hollows were deeper in a far greater proportion, becauſe to the height of the ſurrounding mountains we muſt add the whole depth of the ſecondary ſtrata which were then wanting. By whatever proceſs the ſecondary ſtrata were formed, the exiſtence of organic remains in them inconteſtibly proves that they were depoſited in ſucceſſion, and the regular manner in which they are ſpread over each other further proves that the greater part of them were depoſited in a fluid medium. As there are inconteſtible proofs that water once covered nearly all the exiſting continents, it follows, that when the ocean retired, or, which is the ſame thing in effect, when the dry land emerged from the ſea, vaſt inland lakes or ſeas would be left at the bottom, of which the ſecondary ſtrata were formed. As the ſea retired further, the higher grounds being left dry, theſe inland ſeas or lakes would become contracted, and a number of ſmaller lakes would occupy the loweſt cavities and depreſſions, in each of which ſeparate depoſitions of ſtrata might take place. The lower ſtrata would be the moſt widely ſpread, and the upper would conſtitute detached or inſulated formations of greater or leſs extent, in which there might be a great ſimilarity in ſome ſituations, and a great diverſity in others. Now ſuch is found to be the fact." (Bakewell's Introduction to Geology, 2d ed. chap. x.) This view of the ſubject, we think, receives much ſupport from the poſition of the mountain ranges in Europe, as may be ſeen in Mr. Arrowſmith's excellent map, in which the phyſical geography is diſtinctly marked. Theſe ranges form the borders of numerous baſins, which muſt evidently have once been the boundaries of inland ſeas when the ocean retired from the preſent continents.

Though great diverſity may prevail in the ſucceſſion of the ſtrata in different parts of the world, yet there are certain rock formations that we may regard as univerſal, without aſſerting that they were formed at the ſame epoch in very diſtant countries; for it is only where organic remains of the ſame ſpecies occur in rocks that we may infer that their formation was cotemporaneous. In the preſent ſtate of our information, we may regard granite as the loweſt and moſt extenſive rock, forming the foundation of all other rocks or ſtrata, where we have opportunities of tracing their ſucceſſion. With granite we include gneiſs, and alſo mica-ſlate, which may be regarded as granite in a ſchiſtoſe form, but with one or other of the ingredients nearly wanting, or occurring in a very ſmall proportion. (See Rocks, Granite, Gneiss, and Mica-Slate.) Clay-ſlate (ſee Slate) generally covers the granite, gneiſs, or mica-ſlate, and may be regarded as a univerſal formation, or, perhaps more correctly, as a general covering of granite, gneiſs, and mica-ſlate. The ſlate formation contains various anomalous beds of porphyry, compact felſpar, lime-ſtone, hornblende, ſerpentine, and ſienite. (See Porphyry, Felspar, &c.) No obſervable regularity has yet been diſcovered in the ſucceſſion of theſe latter rocks in different countries, and ſome of them may often be obſerved paſſing by gradation into each other. They have generally a cryſtalline ſtructure in the vicinity of granite (ſee Rocks), and have not been obſerved to contain organic remains.

The beds of rock which cover ſlate appear, many of them, to be a coarſer kind of ſlate, with an intermixture of quartz, or other minerals, until at laſt they loſe the character of ſlate, and become ſand-ſtone. This coarſe ſlate, in its paſſage from ſlate to ſand-ſtone, forms that kind of rock which has been denominated grey wacke or waccé. Various beds of lime-ſtone occur in the coarſer ſlate. Of theſe, the moſt conſiderable in England is called the mountain lime-ſtone: it has a ſubcryſtalline ſtructure; it abounds in organic remains in many parts, and contains metalliferous veins, principally of lead and zinc. This lime-ſtone lies below all the principal coal formations in England and Wales. (See Strata.) Between this lime-ſtone, and a dark grey compact lime-ſtone called lias, occur the coal ſtrata, with the various beds of ſand-ſtone and ſhale. The order of ſucceſſion of theſe beds is not ſimilar in different diſtricts. The lias ſtratum is the moſt remarkable in England, both for its regularity and extent, and the organic remains which it contains. The ſame ſtratum occurs in Flanders. The ſtrata above the lias were firſt correctly deſcribed by Mr. Farey, whoſe account we have given in the article Strata. (See Strata.) The ſtrata above the lias occur with remarkable regularity over a great part of the eaſtern ſide of England, deſcribed by Mr. Bakewell, in his Geology, as the 'low diſtrict,' extending in a waving line from Dorſetſhire to the county of Durham, and delineated in his map. Theſe ſtrata conſiſt of a ſucceſſion of beds of roe-ſtone, or oolite, (ſee Roe-stone,) and coarſe lime-ſtone, with thick beds of ſand and clay, over which occurs the chalk. Theſe beds are arranged with great regularity compared with the beds that occur between the lias and the mountain lime-ſtone; but the order of ſucceſſion and thickneſs, particularly of the oolite, is variable; for in many parts, beds of vaſt thickneſs occur which are not found in other ſituations, and in ſome ſituations the oolite is entirely wanting, and the green ſand, inſtead of covering it, reſts immediately on the lias. See Mr. Bakewell's ſection of the ſtrata, *Plate* III. *fig.* 2. *Geology*.

A tabular arrangement of the ſtrata of England, given by Mr. Buckland, profeſſor of mineralogy at Oxford, has recently been publiſhed, which we ſhall preſent to our readers. At the ſame time we muſt obſerve, that they would be greatly miſtaken were they to ſuppoſe that the whole of theſe rock formations had ever been obſerved in any one ſituation in England or elſewhere, or that the ſtrata preſerve the thickneſs here given throughout their whole extent. There is no part of England, we believe, in which all the ſtrata here enumerated could be found, were it poſſible to perforate through them. The table may be regarded as an approximation to the true order of ſucceſſion whenever ſeveral of theſe formations occur in the ſame diſtrict, and the localities annexed will make it both intereſting and uſeful. Perſons who ſtudy nature in their cloſets are diſpoſed to believe, that the thickneſs of the ſtrata between the chalk near London, and the granite of Devonſhire, is much greater than what it really is, taking it for granted that the dip of the ſtrata is always regularly to the eaſt; but this is not the caſe. A ſtratum of any conſiderable extent has waves and irregularities, by which it is generally ſpread over a large ſpace compared with its true thickneſs and ſuppoſed angle of inclination. A ſtratum not more than ſeventy yards in thickneſs may extend in the line of its dip ten miles or more, and may appear to have a conſiderable dip when obſerved in certain ſituations; and were we to calculate its thickneſs from the extent of ground which it covers, and from the dip, we might infer that it exceeded two thouſand yards or more. More accurate obſervations will convince us, that the numerous fractures or bendings of the ſtrata in the line of their dip generally ſpread them over a much wider ſpace than the angle of inclination and thickneſs would lead us to believe; and the compariſon which has been made of ſliding a number of books under each other to repreſent the ſuppoſed thickneſs of the whole ſtrata of England is utterly inapplicable to the caſe. In ſections of particular diſtricts, to repreſent the arrangement and dip of the ſtrata, it is impoſſible to delineate the irregularities and wavings of the ſtrata on a ſmall ſcale. In the ſection of England by Mr. Bakewell, (ſee *Plate* III. *fig.* 1. *Geology,*) the various ſtrata from the German ocean to Croſs-fell are repreſented riſing regularly from under each other, like a number of books in a ſlanting poſition, it being impracticable to repreſent on ſuch a ſmall ſcale all the irregularities of each ſtratum. In *Plate* III. *fig.* 2. the ſection is on a larger ſcale, and the lias ſtratum, *d, d, d, d,* is repreſented riſing from under the green ſand *b, b, b,* near Bridport in Dorſetſhire, and continued to the valley, M, at Axmouth; whereas had not the ſtrata been diſlocated by a great number of fractures, as repreſented in the ſection, the lias ſtratum *d* would have terminated or cropped out eaſt of the letter L, which repreſents the ſituation of the town of Lyme. The aggregate thickneſs of all the beds of lias cannot be more than two hundred yards, and the regular inclination is at leaſt one yard in twenty, which would make the loweſt bed of lias crop out about four thouſand yards, or two miles and a quarter weſt of its firſt appearance near Bridport.

Plate III. *fig.* 6. *Geology,* repreſents the waving ſtructure of the beds of ſlate, provincially called ſhillet in Devonſhire. In ſome ſituations, as near Moreton, beds of black lime-ſtone are interpoſed, and take the twiſted form of the ſlate. Now in paſſing from Exeter to Dartmoor over the fractured edges of the ſtrata, as repreſented *fig.* 6, the traveller may croſs portions of the ſame ſtratum *a, a, a,* repeatedly at a conſiderable diſtance from each other, and were he to ſuppoſe each of theſe portions to be a ſeparate ſtratum, and to calculate accordingly, the thickneſs of the whole bed of ſlate, from the red ground on the eaſt, to Dartmoor on the weſt, he would make it not leſs than ten miles; whereas in all probability it may not exceed three or four hundred yards. On a ſmaller ſcale, the ſtrata are often extended over a large ſpace by fractures in many of the coal diſtricts; by which a bed of coal is brought near the ſurface ſeveral times in the line of its dip, as repreſented *Plate* I. *fig.* 1. *Geology,* and deſcribed in the article COAL. See COAL, and VEINS, *Mineral.*

It too frequently happens, that geological obſervers meaſure nature by the ſtandard of their own limited experience in paſſing through a country, and deſcribe certain rock formations as deſtitute of organic remains, becauſe they have not found them in travelling through a diſtrict. The alpine part of Weſtmoreland and Cumberland near the lakes conſiſts of grey wacke, clay-ſlate, compact felſpar, porphyry, ſienite, trap, clinkſtone, and granite; a thin bed of ſtratified lime-ſtone is interpoſed, and runs through a ſpace of fifteen miles, containing organic remains of coralloids, though the rocks which cover this lime-ſtone, to a great depth, and the rocks on which it reſts, contain no obſervable veſtiges of organic life. Their relative poſition in the valley of Long Sleddale in Weſtmoreland, is repreſented *Plate* III. *fig.* 5. *Geology.* The ſlate which covers the lime-ſtone appears to dip at an angle of ſeventy degrees; but on more attentive examination it will be found, that what might be miſtaken for regular ſtrata are merely the ſchiſtoſe laminæ of the ſlate arranged in the direction of the cleavage, the dip of the ſlate being in reality the ſame as that of the lime-ſtone on which it reſts. Under the lime-ſtone occurs a bed of horn-ſtone, reſembling compact felſpar, but infuſible; this is eighty yards thick, and reſts on other beds of ſchiſt, as repreſented *Plate* III. *fig.* 5. *Geology.* This ſchiſt and horn-ſtone contain no organic remains, and appear to be connected with the granite, which makes its appearance in the adjacent valley at no great diſtance. The diſcovery of organic remains under rock formations of great extent which are deſtitute of them is a circumſtance of great intereſt to the geologiſt wherever it occurs, and proves the neceſſity of caution in deciding whether certain rocks were formed prior to the exiſtence of organic beings. Baſaltic or trap rocks, whoſe ſituation is not conformable with the general dip or poſition of the ſtrata, and which bear a near ſimilarity to volcanic rocks in appearance and compoſition, are deſcribed under the articles TRAP, ROWLEY-RAGG, WHINSTONE, and VEINS, *Mineral;* and alſo the article BASALT, *Addenda;* which ſee. *Plate* IV. *fig.* 2. *Geology,* repreſents the arrangement of a ſeries of columnar and amorphous beds of baſalt placed over regular ſtrata in an unconformable poſition, and interſected by veins or dykes of baſalt *b b,* in which the ſtructure is columnar; but the columns or baſaltic priſms in theſe dykes are arranged horizontally.

Fig. 4. repreſents a baſaltic rock on the coaſt of the county of Antrim, which incloſes a bed of chalk that it appears to have broken and enveloped; an effect which ſeems to require that the baſalt ſhould once have been in a melted ſtate like lava. The baſalt is repreſented in the *fig.* immediately beneath the above, as it occurs in veins in another ſituation on the ſame coaſt, cutting through the chalk, and changing it to a certain diſtance into cryſtalline lime-ſtone or marble. See TRAP and WHINSTONE.

Plate IV. *fig.* 1. *Geology,* repreſents the ſection of a regular metallic vein, which divides into two, and meets again, leaving an intervening ſpace, filled with earthy minerals called rider. The vein is repreſented as ſeparated from the rock by a thin lining of clay *c c,* which generally accompanies veins. The interſection of metallic veins in the ſame plate repreſents two veins containing the ſame kind of ore, and having the ſame dip as *a, a, a, a,* interſected by a vein of a different kind *b b,* which has cut through and diſplaced the former: in theſe inſtances, the vein *b b* is ſuppoſed to be of poſterior formation to the veins *a, a, a, a.* In the ſame *fig.* is ſhewn the diſplacement of a vein without any interſection of other veins. (See VEINS, *Metallic.*) For an account of volcanic rocks, ſee the articles VOLCANO and VOLCANIC PRODUCTS, and alſo SYSTEMS *of Geology.* For an account of the organic remains in rocks, ſee PETRIFACTIONS, ROCKS, STRATA, and FLETZ ROCKS. For an account of the organic remains of extinct ſpecies of large quadrupeds in alluvial ſoil, ſee MAMMOTH, MASTODON, MEGALONIX, and MEGATHERIUM, *Addenda.*

A Tabular Arrangement of all the Rock Formations in England.

Class I.—*Primary Rocks.*

Granitic Formation.

Nº 1.

Granite	Order of ſucceſſion variable; thickneſs unknown.
Gneiſs	
Mica-ſlate	
Quartz-rock	
Marble	
Trap	
Serpentine	
Porphyry	
Sienite	

Class II.—*Tranſition Rocks.*

Grey Wacke Formation.

Nº 2.

Lime-ſtone	Order of ſucceſſion variable; thickneſs unknown.
Trap	
Porphyry	
Grey wacke-ſlate	
Grey wacke	

Class III.—*Secondary Fletz Rocks.*

Structure uſually ſtratified, but the Strata much diſlocated and inclined.

			Localities.	Greateſt obſerved thickneſs of the ſtrata. Feet.
Nº 3. First ſand-ſtone	Old red ſand-ſtone	Red, often micaceous ſand or ſand-ſtone, containing ſubordinately conglomerate pebbles from the older rocks	Van Mountain, Brecon - -	2000
		Calcareous concretions in beds and inſulated maſſes	Heavytree, Exeter	
		Porphyry and trap in beds and maſſes	Thoverton, near Exeter	
	Mountain, or metalliferous lime-ſtone	Often a compact coralline marble, alternating with beds of ſhale, chert, grit-ſtone, and trap	Derbyſhire, four beds, and three of trap	1782
			Croſs-fell, 19 of lime-ſtone, 50 of grit-ſtone, 60 of ſhale	2749
	Mill-ſtone grit	Coarſe ſiliceous ſand-ſtone, with pebbles of white quartz	Yorkſhire, and Derbyſhire -	260
	Principal coal meaſures	- - - - - -	Newcaſtle, 82 beds of grit-ſtone, ſhale, and coal, of which nine of coal are wrought	1482

Strata often lie horizontally on the Edges of the inclined Beds of the laſt Formation.

Nº 4. Second ſand-ſtone, or grand gypſum, and ſalt formation	Magneſian lime-ſtone	Yellowiſh, fine-grained, and ſometimes of a pink hue	Knareſborough, Bolſover, and Sunderland	300
	New red ſand-ſtone, ſecond ſand-ſtone of Werner	Fine-grained, red ſiliceous, ſometimes with pebbles of quartz, and alternating with red marle, containing ſalt and gypſum	Salop, Lancaſhire, Staffordſhire, Devon, Cambridge, Plains of Cheſhire, and Worſterſhire	400

Nº 5.

N° 5.

			Localities.	Greateſt obſerved thickneſs of the ſtrata. Feet.
Oolite formation. Second fletz lime-ſtone, Werner. Jura lime-ſtone, Humboldt	Lias.—Blue ſlaty marle	Sometimes bituminous, with their beds of blue, grey, and white argillaceous lime-ſtone	Lyme, Newark, Whitby	893
		Rarely oolitic	Radſtock, near Bath, and Shepton Mallet	
		Contains chert rarely	Dunraven, Glamorganſhire	
		Sand of inferior oolite micaceous	Henton, Somerſet	
		Sometimes calcareous	Near Bath	
	Inferior baſtard oolite	Coarſe calcareous, ſlightly oolite with ſhelly fragments	Doulting and Ham-Hill, Somerſet	
	Fullers' earth	Sterile grey clay, with beds of fullers' earth	Near Bath	
	Great oolite.—Durable free-ſtone	Compoſed of oolitic concretions and ſhelly fragments, united by a calcareous cement	Farley Down, near Bath; and Ketton, Northamptonſhire	
	Stonesfield ſlate	Calcareous ſiliceous oolite, ſometimes paſſing into ſand	Coly Weſton, near Stamford Henton, near Bath	30 400
Middle oolite		With ſhale and thin beds of coal	Cleveland Hills, Yorkſhire	
	Foreſt marble	Compact, compoſed of fragments and ſhells	Henton, near Bath, and Long Burton, Dorſet	
	Corn braſh	Soft earthy lime-ſtone	Witch-Wood Foreſt, Oxon	
	Kelloway rock	Coarſe ſandy lime-ſtone	Campsfield, Oxon, Malmſbury, and Trowbridge	
	Oxford-foreſt, or Fen-clay	Sterile clay, with ſeptaria	Vale of Thames, upwards, Oxon; Ooſe, Bedford, downwards	200
	Calcareous grit	Siliceous ſand and lime	Near Abington, Weymouth; Filey, Yorkſhire	
	Coral rag	Looſe earthy lime-ſtone, full of coralline remains	Heddington near Oxford; Calne, Wilts; Kirkby Moorſide, Yorkſhire	
Upper oolite	Upper oolite	Oolitic concretions, and ſhelly fragments, periſhable free-ſtone	Heddington, Calne, New Malton	
	Kimmendge clay	Sometimes bituminous	Iſle of Purbeck, Dorſet	
	Portland-ſtone	Calcareo-ſiliceous free-ſtone, with beds and nodules of chert	Wiltſhire, Iſles of Purbeck and Portland, near Sandwich	
	Purbeck-beds	Strata of ſandy clay and marle, alternating with beds of coarſe ſhelly lime-ſtone	Sandwich, Iſle of Purbeck	

N° 6.

	Iron-ſand	Contains beds of clay	Haſtings, Wealds of Suſſex	500
		———— of ochre	Summit of Shotover Hill	
		———— of fullers' earth	Woburn, Bedfordſhire	
Green ſand-ſtone formation	Tetſworth clay	Lead coloured	Vale of Ayleſbury, and White-horſe, Berkſhire	150
		Micaceous ſandy, and almoſt black	Devizes, and White-horſe, Berkſhire	
Third ſand-ſtone of Werner	Green ſand	Sand and ſand-ſtone, with grains of green earth	Vale of Powſey	
		Alternating, and paſſing into grey ſand	Eaſtburn, Suſſex	
		Sometimes cemented by calcareous earth	Maidſtone, (Kentiſh ragg)	
		Containing beds of chert	Lyme, Dorſet	
		———— ſpecks of mora	Black Down	

N° 7.

			Localities.	Greateſt obſerved diſtance of the ſtrata. Feet.
N° 7.				
Chalk formation	Chalk, marle, malm, or grey chalk	Without flint or chert, paſſing into grey ſand	Benſon, Oxon, Wiltſhire, and Lewes, Suſſex	200
		Into grey clay	Folkſtone	
	Lower chalk	With few flints ſometimes hard	Warminſter, Wilts, and Flamborough-Head, Yorkſhire	300
	Upper chalk	With many flints, paſſing into the former, ſoft enough to mark with	Saliſbury Plain, and Downs of Suſſex	300
N° 8.				
Formations above chalk	Plaſtic clay	Potters' clay, alternating with beds of ſand and gravel	Blackheath, Reading, Alum-Bay, Iſle of Wight	1131
	London clay	Lead, coloured with ſeptaria, containing calcareous matter	Iſle of Sheppey, and Bognor Rocks	550
	Foſſils ſame as in the calcaire groſiere of Paris	- - - - - -	Hardwell-Cliff, near Chriſt-Church, Hants	
	Lower freſh-water beds	Sandy argillaceous lime-ſtone, contains freſh-water ſhells	Headen Hill, Iſle of White	63
	Upper marine beds	Clay-marle, with marine ſhells	Ditto	36
	Upper freſh-water beds	Yellow argillaceous lime-ſtone, with clay-ſand and freſh-water ſhells	Ditto	1222
N° 9.				
Trap	Fletz trap	Baſalt wacke, amygdaloid green-ſtone	Giants' Cauſeway	1040
N° 10.				
Alluvium	Deluvian detritus	Fragments of neighbouring and diſtant rocks, and with bones not mineralized	Generally in valleys	
	Fluviatile detritus	Poſt deluvian, accumulations of mud, ſand, and ſalt	Deltas of great rivers	
		Gravel, ſand, and mud	Channels of torrents and rapid currents	

In the preceding part of the preſent article we have ſtated, that this arrangement of the ſtrata may be taken as an approximation to the truth with certain limitations. It muſt be obſerved alſo, that the trap rocks, N° 9, moſt frequently occur covering or between many of the lower ſecondary rocks, preciſely ſimilar to what would have been the caſe had they been formed like volcanic rocks at different and diſtant epochs. The occurrence of baſalt in or over chalk, or any of the formations above the lias, is extremely rare. See Systems *of Geology*.

GEORGE, St., l. 15, add—The hundred of St. George's, in Delaware, contains 2880 inhabitants, of whom 314 are ſlaves.—Alſo, a town of Maine, in the county of Lincoln, having 1168 inhabitants.

George-*Town*, col. 2, l. 14, *r.* 1998; l. 29, add—Alſo, a diſtrict of North Carolina, containing 15,679 inhabitants, of whom 13,867 are ſlaves.

George, a townſhip of Fayette county, in Pennſylvania, having 2086 inhabitants.

GEORGIA, in America, l. 2, *r.* 1760.

GERMAN, l. 2, *r.* 2079.

German-*Town*, col. 2, l. 1, *r.* Maſon county, in Kentucky, containing 36, &c.; add—Alſo, a town of Ohio, in the county of Montgomery, having 1256 inhabitants.

GERRY, l. 3, *r.* 839.

GEYSERS, celebrated fountains ſituated on the ſide of a hill, about 16 miles to the N. of Skalhalt; for an account of which we refer to the article Uxahver.

GEZANGABEEN, or *Perſian Manna*. This ſubſtance has been lately aſſerted by Capt. E. Frederick, of the Bombay Eſtabliſhment, to be the production of inſects. It is obtained, according to the ſame gentleman, from a ſmall ſhrub ſomewhat reſembling the broom, on which the inſects reſide, by beating the buſhes with a ſtick. When firſt ſeparated, it is a white ſticky ſubſtance, not unlike hoar froſt, of a very rich ſweet taſte. It is purified by boiling, and then mixed up with roſe-water, flour, and piſtachio-nuts into cakes, and in this form conſtitutes the ſweetmeat, called in Perſia *gezangabeen*, and which by the Perſians is highly valued. This ſubſtance, in its original ſtate, is ſaid to liquify at a temperature of about 68°. The Perſians, however, themſelves conſider this ſubſtance as a ſpontaneous exudation from the tree on which it is found; hence the term *gezangabeen*, a term meaning literally *juice of the gez*, which is the Perſian name of the tree producing it. Thomſon's Annals of Philoſophy, vol. xiii. See Manna.

GHAUT. See Gaut.

GHONI, a large market-town of Mingrelia, carrying on ſome trade, ſituated between the Araſcha and the Hippas.

GHURZI, a well-built and populous town of Mingrelia, on the left bank of the Taghuri.

GILBERT, col. 2, l. 32, *r.* 1759.

GILDER, or Guilder. See Florin.

GILEAD, in *Geography*, a town of Maine, in the county of Oxford, having 215 inhabitants.

GILES, a county of Virginia, containing 3475 perſons, of whom 242 are ſlaves.

GILL, l. 4, *r.* 762.

GILLINGHAM, l. 4 and 5, *r.* 875, and 5135.

GILMANTOWN, l. 4, *r.* 4338.

GILSON, or Gilsum, l. 2, *r.* 513.

GIRARDEAU, Cape, a diſtrict of Louiſiana, containing 3888 inhabitants, of whom 589 are ſlaves.

GIRVAN, l. *penult.* and *ult.*—In 1811, the number of houſes was 533, and of inhabitants 3097, of whom 358, &c.

GISBOROUGH, or Guisborough, l. 5, *r.* 1811—435; l. 12, *r.* 2094.

GLAMORGANSHIRE, laſt parag.—Glamorganſhire is divided into ten hundreds, excluſive of the two towns of Cardiff and Swanſea, and 118 pariſhes, which, in 1811, contained 85,067 inhabitants; 41,365 being males, and 43,702 females: of whom 7915 families were employed in trade and manufacture, and 8217 in agriculture.

GLANCE Coal. See Mineralogy, *Addenda*.

GLASGOW, col. 2, l. 11 from the bottom, add—By the parliamentary returns of 1811, the city and burgh of Glaſgow contained 17,543 houſes, and 100,749 inhabitants; 45,275 being males, and 55,474 females: of whom 17,669 families were employed in trade and manufactures, and 544 in agriculture.

GLASS, *Laws relating to*, l. 14, add—By 49 Geo. III. c. 63. the former duties upon crown glaſs and broad glaſs were repealed, and new duties were impoſed. This act alſo contains directions and regulations with regard to the conſtruction and uſe of the annealing arch or oven.

GLASTONBURY, col. 2, l. 42, *r.* 1811—448; l. 43, *r.* 2337—121.

Glastonbury, in America, l. 2, *r.* 76; l. 5, *r.* 2766.

GLOUCESTER, col. 6, l. 6, *r.* 1811; l. 7, *r.* 1509—8280; *dele* the next paragraph, and inſert—3726 being males, and 4554 females; of whom 1312 families were employed in trade and manufactures, and 12 families in agriculture.

Gloucester, in America, l. 3, *r.* 5943; l. 21, *r.* 2319. Col. 2, l. 2, for Woodbury inſert—Weymouth; l. 9, *r.* 19,744; l. 10, *r.* 74; l. 17, after Philadelphia, add—having 555 inhabitants.—Alſo, a town of the ſame county, having 1726 inhabitants:—l. 25, *r.* 10,427 inhabitants, of whom 5798 were ſlaves in 1810.

Gloucester, *New*, a town of Maine, in the county of Cumberland, having 1649 inhabitants.

GLOUCESTERSHIRE, col. 2, l. 26, inſert after amounted to—52,042, of inhabitants 285,514, of whom 133,192 were males, and 152,322 females; 29,988 families being employed in trade and manufactures, and 20,782 in agriculture.

GLOVER, l. 3, *r.* 378.

GLUCINA, in *Chemiſtry*, the name of an earth. (See Glycine.) Dr. Thomſon, from the experiments of Berzelius and others, eſtimates the weight of the atom of glucina at 22.5.

GLUCINUM, the metallic baſis of *glucina*. When glucina was heated by ſir H. Davy with potaſſium, that metal was converted into potaſh, and grey metallic particles were obſerved mixed with the potaſh, which when put into water gradually evolved hydrogen gas, and were converted into glucina. This is all we know at preſent reſpecting this metal.

GLUTEN, ſuppoſed to be the active principle of yeaſt. See Yeast.

GLUTTON, *r.* Ursus *Gulo*.

GLYN, l. 4, *r.* 3417, of whom, in 1810, 2845 were ſlaves.

GLYPHIS, in *Botany*, from γλυφω, *to emboſs*, expreſſing the appearance of the warty cruſt.—Achar. in Tr. of Linn. Soc. v. 12. 36. t. 2, 3.—A genus of cruſtaceous Lichens, of which four ſpecies are deſcribed and figured, found on the barks of different tropical trees. See Chiodecton.

Eſſ. Ch. Warts flattiſh, of the ſubſtance of the cruſt. Receptacles ſuperficial, numerous, irregular, black, ſolid, each with a depreſſed diſk, and tumid margin.

The ſpecies are, *G. labyrinthica*, t. 2. f. 1. Ach. Syn. 107: *tricoſa*, f. 2: *cicatricoſa*, f. 3: *favuloſa*, t. 3. f. 1.

GODALMING, l. 2, *r.* 672, and 3543.

GOFFSTOWN, l. 5, *r.* 2000.

GOLD. See Gold, and Mineralogy, *Addenda*.

Gold, in *Chemiſtry*. A few particulars lately aſcertained reſpecting this metal deſerve to be briefly noticed here.

Sulphur is ſtated in the Cyclopædia to exert no action on gold, and this is true in ordinary caſes. But if an alkaline hydroſulphuret be dropped into a ſolution of gold, a black powder falls to the bottom, which is found to be a ſulphuret of gold; and which, according to the experiments of Bucholz and Oberkampf, is compoſed of

	Bucholz.	Oberkampf.
Gold - -	100	100
Sulphur -	21.95	24.39

With reſpect to the oxyds of gold, there are ſtill very great confuſion and uncertainty. According to Berzelius, who is one of the moſt recent experimentaliſts on gold, the purple oxyd is a compound of 100 gold + 12.077 oxygen; and the protoxyd of 100 gold + 4.026 oxygen. On this ſuppoſition, the weight of an atom of gold, as eſtimated by Dr. Thomſon, will be 248.75, and this determination agrees tolerably well with Oberkampf's analyſis of the ſulphuret of gold above-mentioned. Still, however, theſe reſults are by no means ſatisfactory.

GOLDSINNY, *r.* Goldfinny.

GOMPHOSUS, in *Ichthyology*, a genus of fiſhes of the Thoracici order, inſtituted by count de Cepede from the MSS. of Commerſon; the characters of which are, that the jaws are lengthened into a tubular ſnout, and that the teeth are ſmall, thoſe in front being larger. There are two ſpecies, both natives of the Indian ſeas, *viz.* G. *cæruleus*, or G. entirely of a blue colour, about the ſize of a tench, with a blackiſh caſt on the pectoral fins; body arched above, and in a greater degree beneath; ſnout about one-ſeventh of the whole fiſh; upper jaw larger than the lower; the ſides of the mouth ſmooth and blue, head and gill-covers plain, the reſt of the body covered with ſcales, the lateral line through its whole courſe marked with ſmall ſtreaks like Chineſe characters: and G. *variegatus*, or variegated with red, yellow, and blue; a beautiful fiſh, obſerved by Commerſon about the coaſts of Otaheite.

GOOCHLAND, l. 4, *r.* 10,203 inhabitants, of whom 5664 were ſlaves in 1810.

GOODYERA, in *Botany*, dedicated by Mr. Brown, to the worthy memory of Mr. John Goodyer, a Hampſhire botaniſt, celebrated in various parts of Gerarde's Herbal, (ſee ed. 2. 1018, 228, &c.)—Br. in Ait. Hort. Kew. v. 5.

197.—This genus founded on *Satyrium repens*, Linn. we have not as yet ventured to ſeparate from NEOTTIA ; ſee that article.

GORHAM, l. 4. *r.* 2632.

GOSHEN, in America, l. 4, *r.* 692 ; l. 7, containing 86 inhabitants ; l. 8, *r.* 1273 ; l. 10, *r.* 1641. At the cloſe, add—Alſo, a town of Cheſhire county, in New Hampſhire, having 563 inhabitants.—Alſo, a town of Lincoln county, in Georgia. See LINCOLN.—Alſo, a townſhip of Columbiana county, in Ohio, having 277 inhabitants.—Alſo, a town of Ohio, in Tuſcarawa county, having 320 inhabitants.

GOSPORT, col. 2, l. 30, *r.* 1811—7788 ; l. 31, *r.* 1439.

GOSPORT, in America, l. 3, *r.* 72.

GOTHEBORG, col. 2, l. 5, *r.* amounted in 1811 to 24,858 perſons, &c.

GOULDSBOROUGH. Add—the town contains 471 perſons.

GRABS, the name of veſſels peculiar to the Malabar coaſt, generally with two maſts, and of 180 tons burthen, but ſometimes with three maſts, and about 300 tons burthen. They are ſo conſtructed as to draw little water, being very broad in proportion to their length, becoming narrow from the middle to the end, and having a prow projecting like that of a Mediterranean galley : others are conſtructed with a ſtrong deck fixed with the main-deck of the veſſel, from which, however, it is ſeparated by a bulk-head that terminates the forecaſtle ; on the main-deck under the forecaſtle are mounted two pieces of cannon, of nine or twelve pounders ; the cannon of the broad-ſide are from ſix to nine pounders.

GRAFTON, l. 4, *r.* 1365 ; l. 8, *r.* 35 ; l. 9, *r.* 28,462 ; l. 12, *r.* 931 ; l. 18, *r.* 946.

GRAIN, as a weight, l. 11, *dele* bread.

GRAINS *of Paradiſe*. See AMOMUM and CARDAMOM.

GRAINGER, l. 6, *r.* 6397 and 537.

GRAMPOUND, l. *penult.* *r.* 601 and 96.

GRANBY, l. 5, *r.* 850 ; l. 8, *r.* 2696.

GRAND ISLE. Add—It contains 3445 inhabitants by the cenſus of 1810.

GRAND *Junction Canal*, l. 16 from bottom, for began *r.* begun.

GRAND *View*, a townſhip of Ohio, in Waſhington county, having 463 inhabitants.

GRANLEY, a townſhip of Eſſex county, in Vermont, having 120 inhabitants.

GRANTHAM. In 1811, the borough and pariſh contained 673 houſes, and 3646 perſons ; *viz.* 1677 males, and 1969 females : 61 families being employed in agriculture, and 430 in trade and manufactures.

GRANVILLE, l. 2, *r.* 15,576 ; l. 3, *r.* 7746 ; l. 9, *r.* 1504.

GRANVILLE, a townſhip of Licking, in Ohio, having 674 inhabitants.

GRAPHITE. See PLUMBAGO, and MINERALOGY, *Addenda*.

GRAVESEND, col. 2, l. 3, *r.* 3119 ; l. 4, *r.* 525.

GRAY, l. 3, *r.* 1310.

GRAYSON, l. 2, *r.* 4941 inhabitants, of whom 270 were ſlaves in 1810 ; add—Alſo, a county of Kentucky, containing 2301 inhabitants, of whom 103 were ſlaves in 1800.

GREEN, l. 6, *r.* 19,536 inhabitants, of whom 367 were ſlaves ; l. 10, *r.* 12,544 ; l. 14, *r.* 6603, of whom 1354 were ſlaves ; l. 16, *r.* 4567 and 1842 ; l. 19, *r.* 1277 ; l. 23, *r.* 1497 ; l. 24, for Franklin county, add—Alſo, a townſhip in Waſhington, *r.* Green, adding after ſtate—with 1708 inhabitants ; then add—Alſo, a townſhip of Ohio, in Fayette county, with 290 inhabitants.—In Gallia county, with 421.—In Hamilton county, with 916.—In Jefferſon county, with 875.—In Roſs county, with 1183.—In Scioto county, with 507.—In Trumbull, with 559.—In Columbiana county, with 338 inhabitants ; all in the diſtrict of Ohio.

GREEN *Briar*, l. 4, *r.* 5914 inhabitants, of whom 494 were ſlaves in 1810.

GREEN *Earth*. See MINERALOGY, *Addenda*.

GREENE, l. 2, *r.* 9713 and 655 ; l. 7, containing, together with Greenborough town, 11,769 inhabitants, the county having 4992, and the town 244 ſlaves, included in the above number ; l. 12.—By the cenſus of 1810, it contains ſix townſhips, and 5870 perſons.

GREENE, in Pennſylvania. See GREEN.

GREENE, in Maine. See GREEN.

GREENE, a town of Adams' county, in Ohio, having 393 inhabitants.

GREENFIELD, l. 5, *r.* 1165 ; l. 7, *r.* 980 ; add—Alſo, a townſhip of Bedford county, in Pennſylvania, having 855 inhabitants.—Alſo, a townſhip of Ohio, in Fairfield county, having 743 inhabitants.

GREENLAND, in America, l. 3, *r.* 592.

GREENLAW, col. 2, l. 2, *r.* In 1811, it contained 253 houſes, and 1260 inhabitants.

GREENOCK, l. 3, after Glaſgow, add—The pariſh, including Eaſt, Middle, and Weſt Greenock, contained, in 1811, 1138 houſes, and 19,042 perſons.

GREENSBOROUGH, in Georgia. See GREEN ; l. 6, *r.* 566.

GREENSBURGH. Add—It contains 132 inhabitants, including 47 ſlaves.

GREEN-STONE, in *Geology*, *grunſtein*, Werner, a ſpecies of granular trap or baſalt, compoſed of hornblende and felſpar, and deſcribed in our article TRAP. (See TRAP.) It has recently been diſcovered, that the mineral called augit, or pyoxene by Haüy, is a conſtituent part of many rocks of green-ſtone, which confirms ſtill further the ſimilarity between volcanic and baſaltic rocks. See VOLCANIC *Products*.

GREENSVILLE, l. 4, *r.* 6853 inhabitants, of whom 4599 were ſlaves in 1810.

GREENVILLE, l. 3, *r.* 13,133 and 2353.

GREENUP, a county of Kentucky, containing 2369 perſons, of whom 484 were ſlaves in 1810.

GREENWICH, col. 4, l. 28 from bottom, *r.* 16,947 and 2315.

GREENWICH, in America, l. 3, *r.* 1225 ; l. 6, add—containing 2858 perſons ; l. 9, in 1810, 2528 ; l. 13, add—in 1810, 858 inhabitants ; l. 12, *r.* 3533. Add—Alſo, a townſhip in Berks county, in Pennſylvania, having 1104 inhabitants.

GREENWICH, *Eaſt*, l. 3, *r.* 1530.

GREENWICH, *Weſt*, a townſhip in the ſame county and ſtate, containing 1619 inhabitants.

GREENWOOD, l. 1, *r.* Northumberland ; l. 2, *r.* 1028 ; add—Alſo, a townſhip in Cumberland county, having 1102 inhabitants.

GREGORY, DAVID, l. *ult.* It appears by the inſcription on his monument in St. Mary's church, Oxford, that he died Oct. 10, A.D. 1708 ; and not, as the writer of his life in the Biog. Brit. ſays, in 1710, whence this date is cited. He died at an inn at Maidenhead, in his way to London from Bath, and was buried in this town.

GRENATITE. See MINERALOGY, *Addenda*.

VOL. XVII.

GREY *Antimony Ore.* See MINERALOGY, *Addenda*.

GRIESBACH, JOHN JACOB, in *Biography*, an eminently learned divine of Germany, was born in 1745, in Heſſe-Darmſtadt; and at the Gymnaſium at Frankfort, and the univerſity of Tubingen, acquired that acquaintance with the learned languages, for which he was ſo diſtinguiſhed, and which he applied to the moſt valuable biblical purpoſes. He ſought further means and opportunities for improvement at Halle and Leipſic. In order to acquaint himſelf with the variety of religious ſects, and for the purpoſe of conſulting public libraries, he commenced in 1769 an extenſive tour, viſiting Holland, England, and Paris. In 1770 he returned to Frankfort, with a view of arranging the ſtores which he had collected. In 1773 he was appointed profeſſor extraordinary of divinity at Halle; and in 1774–1775 appeared his firſt great work, which was a critical edition of the hiſtorical books of the New Teſtament in Greek. From Halle he removed to Jena in 1775, and became third profeſſor of divinity. Having previouſly publiſhed ſeveral critical diſſertations in reference to biblical ſubjects, he completed, in 1777, his edition of the whole Greek Teſtament in 2 vols. As his reputation increaſed, his appointments and labours multiplied. But the great object to which his attention was principally devoted, was the completion of his edition of the New Teſtament, which appeared in 1803, 4, 6, and 7, in 4 vols. A larger edition, begun in 1796 and finiſhed in 1806, was adapted for ſale in England as well as in Germany; and was liberally encouraged by the munificence of the late duke of Grafton. In 1811 profeſſor Grieſbach's health began to decline, and in 1812 he was under a neceſſity of giving up the province of lecturing; and a diſorder in the cheſt terminated his life on the 24th of March 1812, in the 68th year of his age. His corporeal form was athletic, his aſpect grave and ſomewhat auſtere; but he poſſeſſed a kind heart, excellent moral principles, an independent ſpirit, and univerſal philanthropy. Gen. Biog.

GRIMSBY, l. 19 from bottom, after Grimſby inſert—(both borough and pariſh); l. 18, *r.* 619 and 2747.

GROGGINESS, in *Farriery*, a ſtiffneſs in the foot of a horſe occaſioned by battering the hoof on hard ground, which is often ſucceeded by ſwelling of the leg and contraction of the ſinews. A horſe that bears altogether upon his heels in trotting is denominated "groggy;" and the defect is generally incurable.

GROTON, l. 3, *r.* 549; l. 6, *r.* 449; l. 8, *r.* 1886; l. 11, *r.* 4451.

GROTTO, col. 2, l. 36. Add—The grotto in Savoy is a prodigious work, ſaid to have been begun by Cæſar, but principally executed by Charles II. duke of Savoy in 1760. It is a paſſage cut through the mountain near the delightful valley of Echelles to the length of 5000 yards, and in perpendicular height above 100 feet; it is wide enough for two carriages to paſs. About half way is a complete tunnel, running in another direction, 1000 feet long, and 36 feet high, cut by order of Buonaparte for the conveyance of cattle. Six years, both night and day, were devoted to the completion of it.

GRYLLUS. Under genus GRYLLUS, ſpecies CRYSTATUS, add—See LOCUST and ACRIDOPHAGI.

GUADALAJARA, col. 2, l. 3, after annually, add—The population is eſtimated at 75,000, but according to Humboldt 19,500 in 1803, and that of the adminiſtration 5,630,500. N. lat. 20° 50′. W. long. 105°.

GUAIACUM, *Chemical Properties of.* Guaiacum was formerly conſidered as a reſin, though in its properties it differs conſiderably from reſins. Guaiacum always aſſumes a green colour when expoſed to the light in the open air. When heated, it melts and diffuſes at the ſame time rather a fragrant odour. Its ſp. gr. is 1.2289. It is very ſparingly ſoluble in water, but imparts to that fluid a greeniſh-brown colour, and a ſweetiſh taſte. Alcohol diſſolves it with facility, and forms a deep brown coloured ſolution. Sulphuric ether alſo diſſolves it, but not in ſuch large proportions as alcohol. It is readily ſoluble in alkaline ſolutions. Moſt of the acids alſo act upon it with conſiderable energy; thus ſulphuric acid diſſolves it, and forms a deep red ſolution. Nitric acid diſſolves it completely with effervefcence, and when the ſolution is evaporated, it yields a very large proportion of oxalic acid, but no artificial tannin. Muriatic acid acts but ſlightly on guaiacum. When guaiacum is ſubmitted to deſtructive diſtillation, it yields a little acidulous water, a conſiderable proportion of brown empyreumatic oil, ſome gaſeous products, and a quantity of charcoal is left on the retort nearly equal to one-third of the original weight of the guaiacum.

GUANAJUATO, l. 2, *r.* Quaractaro, and between 21° 30′ and 22° 30′ N. lat., and 100° and 105° W. long., extending from N. to S. 75 miles, from E. to W. 85 miles. Humboldt eſtimates the population of the adminiſtration at 517,300, and of the capital, in N. lat. 21°. W. long. 105°, at 41,000.

GUANARA, at the end, *r.* Depons' &c.

GUAXACA, l. 5, after diſtance, add—between 16° and 18° N. lat., 98° and 112° W. long.; from E. to W. 230 miles, from N. to S. 175 miles:—l. 32, after perſons—that of the province 534,800. At the cloſe—W. long. 96° 25′.

GUERNSEY, a county of Ohio, containing 9 townſhips, and 3050 inhabitants.

GUGAH, a town of Scind, in the Perſian empire, built at the foot of a hill, at the bottom of which runs a ſmall creek in N. lat. 24° 45′. E. long. 68° 7′, and containing 600 inhabitants.

GUILDER, or GILDER. See FLORIN.

GUILDFORD, laſt lines, *r.* 495 and 2974.

GUILDHALL, l. 3, *r.* 544.

GUILFORD, l. 2, *r.* 1961; l. 4, *r.* 1872.

GUM, *Chemical Properties of.* The beſt teſt for gum in ſolution, according to the experiments of Dr. Thomſon, is ſilicated potaſh. When added to a very dilute ſolution of gum, it produces a white flaky precipitate. Gum arabic is compoſed, according to

	Gay Luſſac and Thenard.	Berzelius.
Of Hydrogen	6.93	6.788
Carbon	42.23	41.906
Oxygen	50.84	51.306
	100.	100.

The varieties of gum are very numerous, and probably differ conſiderably in their chemical properties, though few of them have been examined. (See CERASIN.) It has been remarked by Mr. Barrow, and probably alſo by others, that all trees which yield gum have an aſtringent bark.

GUNPOWDER, col. 2, l. 31 from the bottom, after 1326, add—or, as others ſay, 1354, (Watſon's Chem. Eſſ. vol. i.)

GUN-SHOT WOUNDS. At the end, add—See WOUNDS.

GURIEL, *r.* a ſmall country of Aſia.

GURMSYL, or GURMESSEER, meaning a warm climate, a diſtrict of Mekran, which is a narrow tract, about five days' journey N.W. of Nooſhley, probably the bed of a river, half a mile wide, between two high banks, fertile in grain, and being watered by the Heermund river, needs little cultivation. The inhabitants are notorious robbers, compoſed of the outcaſts of the ſurrounding country.

GYMNADENIA, in *Botany*, Br. in Ait. Hort. Kew. v. 5. 191, (*Orchis conopſea* of Linnæus, &c.), is ſeparated from Orchis, (ſee that article,) merely becauſe the *glands* ſupporting the *pollen*, are, as the name expreſſes, *naked*, or not encloſed in any hood; a character which appears to us not eſſential.

GYMNETRUS, in *Ichthyology*, a genus of the Thoracici order of fiſhes; the characters of which are, body very long, compreſſed; teeth numerous, ſubulate; gill-membrane four or five rayed; and deſtitute of anal-fin. The ſpecies are, *G. Aſcanii*, or ſilvery G. ſpeckled longitudinally with brown points. A native of the northern ſeas, and probably firſt deſcribed by Aſcanius, in his "Icones rerum naturalium," and length ten feet, diameter about ſix inches; head ſhort, mouth ſmall, and eyes rather large. This fiſh is ſaid to be generally ſeen either preceding or accompanying the ſhoal of herrings in the northern ſeas, and therefore is popularly known by the appellation of "king of the herrings." Of this there is a variety, as Dr. Shaw ſuggeſts, called the Ruſſelian Gymnetrus.

G. argenteo-cæruleocus, or a blueiſh-ſilvery G. with oblique, linear, brown bands, and rounded ſpots, red fins, and four central proceſſes. A native of the Indian ſeas, and occaſionally ſeen in thoſe of Europe.

G. cepedian is a doubtful ſpecies, of a gold colour, ſhaded with brown. See Shaw's Zoology, vol. iv. pt. ii.

GYMNIAS. Add—The ſcite of Gymnias, according to Rennell's "Illuſtrations of the Hiſtory of the Expedition of Cyrus, &c." was a town and village, named by others Camuſour, and by others Coumbas and Kumakia, which ſtands on the northern bank of the river Æraſk, about 31 miles below its ſource, and on the eaſtern border of Perſia, in the country of the Phaſiani.

H.

HACKENSACK, in *Geography*, a town of Bergen county, in New Jerſey, having 1918 inhabitants.

HACKNEY, l. 3 from the bottom, *r.* given by Mr. Decuyer. By the returns of 1811, the pariſh of St. John, Hackney, contains 2699 houſes, and 16,771 inhabitants: but this, like the other villages in the neighbourhood of London, is daily increaſing.

HADDAM, l. 3, *r.* 2205; l. 5, *r.* 2537.

HADDINGTON, l. 7, *r.* 1811—1671, and 4370.

HADDINGTONSHIRE, col. 2, l. 36, *r.* 1811—5882, and 31,164.

HADLEY, l. 4, *r.* 509—2592—1811.

Hadley, l. 5, *r.* 1247.

HAIGH, l. *ult.* *r.* 1811—213—1118.

HAIR, *Chemical Properties of.* See Integuments, and Wool.

HALES-OWEN, in *Geography*. In 1811, the pariſh contained 1360 houſes, and 6888 perſons; 3451 being males, and 3437 females: 127 families employed in agriculture, and 1261 in trade, manufactures, and handicraft.

HALESWORTH, l. 4, for townſhip *r.* pariſh; *r.* 342, and 1810.

HALIFAX, col. 2, l. 5 and 6, *r.* 1811—2151, and 9159; l. 3 from the bottom, *r.* 703; l. *ult.* *r.* 1758; after inhabitants, add—Alſo, a townſhip of Dauphin county, in Pennſylvania, having 1365 inhabitants. Col. 2, l. 5 and 6, *dele* the numbers; l. 8 and 9, *r.* 15,620—6624; l. *ult.* *r.* 22,133 inhabitants, of whom 9663 were ſlaves in 1810.

HALLATON, l. 3, *r.* 147, and 598.

HALLOWELL, l. *ult.* *r.* 2068.

HALSTEAD, l. 5 and 4 from the cloſe, *r.* 1811—722—3279

HALTON. In 1811, this townſhip contained 151 houſes, and 894 perſons; 463 being males, and 431 females.

HALTWHISTLE. In 1811, this townſhip contained 142 houſes, and 751 perſons; 368 being males, and 383 females.

HAM, l. 6, *r.* 1811—182, and 1267; l. *ult.* after marſh, add—The number of houſes, in 1811, was 1344, and of inhabitants 8136.

HAMBATO, l. 3, after Quito, add—See Riobamba.

HAMDEN, l. 4, after Wincaſſet, add—See Hampden; l. 6, *r.* 1716.

HAMILTON, in Scotland. This town and pariſh, in 1811, contained 768 houſes, and 6453 perſons; 2928 being males, and 3525 females: 243 families employed in agriculture, and 1131 in trade, &c.

Hamilton, l. 3, *r.* 780; l. 6, after Northampton, add—the latter having 1044, the ſecond having 1263 inhabitants; l. 8, add—and others, *r.* 15,258. Add—Alſo, a townſhip of Ohio, in Trumbull county, having 326 perſons.—Alſo, a townſhip of Ohio, in Warren county, having 1238 inhabitants.

HAMILTONIA, in *Botany*, Ait. Hort. Kew. v. 5. 480. See Pyrularia.

HAMLETS, Tower, a particular diſtrict in the county of Middleſex, commanded by the conſtable of the Tower, or lieutenant of the Tower-hamlets, for the ſervice and preſervation of that royal fort.

The *Royal Tower-Hamlets* comprehend the militia raiſed in the diſtrict of the Tower, which is divided into two battalions, *viz.* 1ſt and 2d, officered like other corps belonging to that eſtabliſhment, and ſubject to the ſame regulations.

HAMMERSMITH, l. 3, *r.* 1811—978—7391.

HAMPDEN. Add—containing 1279 inhabitants.

HAMPSHIRE, col. 2, l. 14, *r.* 1811; l. 15, *r.* 43,210; l. 16, *r.* 245,080—118,855; l. 17, *r.* 126,228.

Hampshire, in America, l. 7, *r.* 64—76,275; l. 16, *r.* containing 9784 inhabitants, of whom 929 are ſlaves.

HAMPSTEAD, col. 2, l. 8 from the end, *r.* 1811—842—5480.

Hampstead, in America, l. *ult.* *r.* 1810—738.

HAMPTON, l. *ult.* *r.* 1811—229—1984.——In America, l. 2, *r.* 1274.

Hampton, *Eaſt*, l. 3, *r.* 660; l. 9, *r.* 1810; l. 10, *r.* 990; l. 18, *r.* 1810; l. *ult.* *r.* 570.

HANCOCK, l. 7, *r.* 31,031; l. 13, *r.* containing together with its town 13,330 inhabitants, of whom the ſlaves in the county are 6278, and in the town 78; l. 19, *r.* 1049; l. 23, *r.* 1184; l. 26, *r.* 311.

HANIFAH, Abou, in *Biography*, a celebrated Mahometan doctor of the 8th century, who was the founder of the ſect denominated Hanifites, and who was impriſoned at Bagdad by the caliph Almanſor, becauſe he would not ſubſcribe to the doctrine of abſolute predeſtination. He was born at Cuſa in the year 700, and died in priſon in the 70th year of his age. After his death his doctrine acquired reputation; and in the year 1092 a mauſoleum was erected to his memory, and alſo a college for the votaries of his ſect. This brief account of him may not be unamuſingly cloſed with the following anecdote:—Having received from an adverſary a rude blow on his face, he ſaid to the perſon who thus aſſaulted him, "I could return you outrage for outrage, but I will not; I could accuſe you to the caliph, but I will not; I could pray to God to avenge the affront, but I will not: if the day of judgment were now come, I would pray to God that I might enter heaven with you." D'Herbelot, Bibl. Orient.

HANOVER, col. 3, l. 6, after Pennſylvania, add—with 63 inhabitants; l. 9, add—the former having 1387, and the latter 2461 perſons; l. 14, *r.* 1171; l. 16, add—containing 2135 inhabitants; l. 22, add—having 3843 inhabitants.—Alſo, a town of Burlington county, New Jerſey, having 2536 perſons:—l. 25, *r.* containing 15,082 perſons, of whom 8454 are ſlaves.

Hanover, a townſhip of Ohio, in Columbiana county, having 735 inhabitants.—Alſo, a townſhip of Ohio, in Licking county, having 651 inhabitants.

Hanover, *New.* Add—Alſo, a county of New Orleans, having 11,465 perſons, of whom 6442 are ſlaves.

Hanover, *Upper*, a townſhip in Montgomery county, in Pennſylvania, with 725 inhabitants.—Alſo, a townſhip in Northampton county, in the ſame ſtate, having 939 perſons.—Alſo, a townſhip in Beaver county, in the ſame ſtate, having 1090 perſons.

HARAN. Add—This is a town of the pachalic of Orfa, inhabited by wandering Arabs, who were led hither by a plentiful ſupply of water, and ſituated in N. lat. 36° 52'. E. long. 36° 5', on a flat ſandy plain. See Charræ.

HARBOROUGH, col. 2, l. 30, *r.* 1811—335—1704.

HARDEN. See Hardin.

HARDIN, or Harden, *r.* 7330—893; add—Alſo, a townſhip of Prebble county, in Ohio, having 802 inhabitants.

HARDISTON, a town of Suſſex county, in New Jerſey, having 1702 perſons.

HARDWICK, l. 2, *r.* 734; l. 4, *r.* 1657; l. 6, add—containing 2561 perſons.

HARDWICKIA, in *Botany*, ſo called in honour of a moſt able and indefatigable botaniſt and zoologiſt, Col. Thomas Hardwicke, F.L.S. long reſident in the Eaſt Indies. Roxb. Corom. v. 3. 6.—Claſs and order, *Decandria Monogynia.* Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx none. Petals five, nearly equal. Legume with one ſeed.

1. H. *binata.* Roxb. t. 209.—Native of the mountains of the coaſt of Coromandel. A large and handſome *tree*, yielding valuable timber. *Leaves* alternate, ſtalked, binate; leaflets unequally elliptical, entire, ſmooth, from one to three inches long. *Flowers* numerous, rather ſmall, yellowiſh, in axillary and terminal panicles. *Legume* lanceolate, an inch and a half long. *Seed* wedge-ſhaped, inſerted at the ſummit.

HARDY, l. 2, *r.* 5525, of whom 749 are ſlaves.

HAREWOOD, l. 5, *r.* In 1811, its five townſhips contained 259 houſes, and 1315 perſons.

HARFORD, l. 3, *r.* 21,258—4431; add—Alſo, a townſhip of Luzerne county, in Pennſylvania, having 478 inhabitants.

HARLEM, l. 2, *r.* 939.

HARLESTON, l. 17, *r.* 1811; l. 18, *r.* town and Reddenhall; *r.* 277—1516.

HARLOW. In 1811, the pariſh contained 256 houſes, and 1695 perſons; 883 being males, and 812 females: 191 families employed in agriculture, and 102 in trade, manufactures, and handicraft.

HARMONY. Add—It contained, in 1810, 80 perſons.—Alſo, a townſhip of Ohio, in Champaign county, having 595 inhabitants.—Alſo, a townſhip of Maine, in the county of Somerſet, having 351 inhabitants.

HARP, col. 2, l. 10 from the bottom, for lyre *r.* liar.

HARPERSFIELD. Add—Alſo, a townſhip of Geauga county, in Ohio, having 490 inhabitants.

HARPSWELL, a townſhip of America, in Maine, and county of Cumberland, having 1190 inhabitants.

HARRAN. See Haran.

HARRINGTON, l. 3, *r.* 469; at the cloſe, add—It contains 2187 inhabitants.

HARRISON, l. 6, *r.* 9958 inhabitants, of whom 458 were ſlaves in 1810; l. 9, *r.* 7883, of whom 989 were ſlaves. Add—Alſo, a town of Maine, in Cumberland county, having 439 inhabitants.—Alſo, a townſhip of Ohio, in Pickaway county, having 291 inhabitants.—Alſo, a county of Indiana, containing 2338 inhabitants; of whom, in 1810, 15 were ſlaves.—Alſo, a townſhip of the ſaid county, the other being Exeter.—Alſo, another county in the ſame territory, which, with its townſhip, Waſhington, contains 1257 perſons, including 6 ſlaves.

HARROW, col. 2, l. 9, inſert—The town, with the hamlet of Roxath and Sudbury, contains 283 houſes, and 1689 inhabitants.

HARROWGATE, l. *penult.* add—The townſhip of Bilſon and Harrowgate contains 286 houſes, and 1583 perſons.

HARTFORD, l. 3, *r.* 1831; l. 6, *r.* Oxford for Cumberland; l. 7, *r.* 720; l. 12, *r.* 19; l. 13, *r.* 44,733.

Hartford *City*, l. 11, *r.* 3955. Add—Hartford, except the city, a townſhip of Hartford county, Connecticut, contains 2048 inhabitants.

Hartford, *Eaſt*, l. 4, *r.* 3240.

HARTLAND, l. 5, *r.* 2352. Add—Alſo, a town of Hartford county, in Connecticut, having 1284 inhabitants.

HARWARD, a town of Worceſter county, in Maſſachuſetts, containing 1431 inhabitants.

HARWICH, l. 3 and 4, *r.* 1811—564—3732.

Harwich, in America, l. 4, *r.* 1942.

HARWINGTON, l. 2, *r.* 1718.

HASLEMERE, l. 4, *r.* 146—756.

HASLINGDEN, l. 3 and 4, *r.* 962—5127.

HASSELQUIST, l. 5, *r.* 1722. Col. 2, l. 26, *r.* 1747; l. 32, *r.* 1749.

HASTINGS, l. 4, *r.* 5268—34,826.

HATFIELD, l. 3, *r.* 409—2066.

Hatfield, l. *ult.* *r.* 1811—2677—501.

Hatfield, l. *ult.* *r.* 805 inhabitants. Add—Alſo, a townſhip of Montgomery county, in Pennſylvania, containing 652 inhabitants.

HATHERLEIGH, l. *ult.* *r.* 1811—1380, and 223.

HAVANT, l. 6, *r.* 1811; l. 7, *r.* 357, and 1824.

HAVEN, East, l. 3, *r.* 1209; l. 5, add—containing 30 inhabitants.

Haven, *Fair*, a town of Rutland county, in Vermont, having 645 inhabitants.

Haven, *New*, col. 2, l. 2, for 14 *r.* 18; l. 3, *r.* 1810—37,064 inhabitants, of whom 50 are ſlaves; l. 17, after in, add—1810, 5772 perſons; l. 26, add—For ſome further particulars, ſee New Haven and United States.

Haven, *New*, a townſhip of New Haven, which, the city excepted, contains 1195 inhabitants.

HAVERFORD, l. 2, *r.* 754.

Haverfordwest, l. 19, *r.* and alſo ſeven fairs in the year for, &c.; *dele* on the 7th of July; l. 41 and 42, *r.* 1811—3093, and 630.

HAVERHILL, l. 5, *r.* 1811—242—1216. Do. in America, col. 2, l. 13, *r.* 2682.

HAUYNE. See Mineralogy, *Addenda*.

HAWARDEN, l. 7, *r.* 1811—832—4436.

HAWICK, col. 2, at the cloſe, add—By the return of 1811, Hawick contained 1163 houſes, and 7645 perſons.

HAWKE, l. 3, *r.* 412.

HAWKINS, l. 1, *r.* Eaſt Teneſſe; l. 4, *r.* 7643; l. 5, *r.* 930.

HAWKSHEAD, l. 18 from the bottom, *r.* 1811—149—676.

HAWLEY, l. 2, *r.* 1031.

HAY, l. 4, *r.* The parliamentary return of 1811 ſtates the number of inhabitants to be 1099, and that of houſes 231. It has one market on Thurſday, and five fairs. A woollen manufacture has lately been eſtabliſhed here.

HAYLING, l. 7, *r.* 1811—110—620.

HAYNES, a townſhip of Centre county, in Pennſylvania, having 1791 inhabitants.

HAYTI, a name given by the natives to the iſland of *St. Domingo* (which ſee). The dimenſions are differently ſtated by different writers. Some ſay, that it extends 140 or 150 miles in breadth from N. to S., and about 400 miles in length from E. to W. Mr. R. Edwards aſſigns 390 for the length: Rainsford ſays, that it is more than 450. The abbé Raynal repreſents it as 200 leagues in length, and 60, in ſome places 80, in breadth. When the French had this iſland, a proclamation, announcing its independence, was publiſhed, ſigned by Deſſalines, Chriſtophe, and Cherveaux, dated Nov. 29, 1803. The liberated blacks now determined on diſcarding the appellation which the iſland had received from Europeans, and reviving the name of Hayti, by which it was deſignated by the aboriginal inhabitants when firſt viſited by Columbus. On the 1ſt day of the year 1804, the general and chiefs of the army, in the name of the people of Hayti, ſigned a formal declaration of independence, and took a ſolemn oath to renounce France for ever, pledging themſelves to each other, to their poſterity, and to the univerſe, to die rather than ſubmit again to her dominion. At the ſame time, they appointed Deſſalines governor for life, with power to enact laws, to make peace and war, and to nominate his ſucceſſor. One of the firſt acts of his government was to arrange the return of negroes and mulattoes from the United States of America. He alſo treated with the Britiſh agent for Jamaica, offering to open his ports to ſlave ſhips, and to allow the people of Jamaica the excluſive privilege of ſelling negroes in Hayti; intending theſe not for ſlavery, but for military ſervice. Some of the French inhabitants had remained upon the general evacuation of the iſland, confiding in the favour and mercy of Deſſalines. But their confidence was miſplaced; for in a few weeks he meditated their deſtruction, and iſſued mandates, no leſs perfidious than cruel, for a general maſſacre. He then proceeded to the ſubjugation of the few Spaniards who inhabited the eaſtern part of the iſland, and with laying ſiege to the city of Domingo, which was poſſeſſed by a ſmall detachment of French troops. In this ſiege he was unſucceſsful; and after his return from it, he aſſumed the title of emperor. The empire was divided into ſix military diviſions, with a general over each, independent of one another. The generals of diviſion and brigade compoſed the council of ſtate, and they had a miniſter of finance, another of war, and a ſecretary of ſtate. All perſons decided their differences by arbitration, military crimes were ſubjected to ſpecial juriſdiction: no predominant religion was admitted, nor was the ſtate to provide for the maintenance of any religious inſtitution. Marriage was declared to be an act purely civil, and divorce in ſome caſes was allowed. In a cenſus, taken in 1805, of the inhabitants of the part of the iſland under the power of Deſſalines, the returns were about 380,000, to which ſome incidental omiſſions 20,000 were added, making the whole number 400,000. The regular army conſiſted of 15,000 men, of whom 1500 were cavalry. Conſiderable attention was paid to the ſubject of education. The young Haytians were generally taught to read and write. Deſſalines, whilſt he poſſeſſed ſeveral good qualities, was ferocious and cruel; and at length his atrocious acts of tyranny cauſed an inſurrection of the army, which was followed by his premature death by violence, on the 17th of October, 1806. Chriſtophe, who, ſince the expulſion of the French, had been ſecond in command, immediately aſſumed the ſupreme power. He had been a ſlave in St. Domingo at the revolution in 1791, and an early friend and faithful adherent of Touſſaint, whom he reſembled in character. Diſcarding the pompous title of emperor, he modeſtly deſignated himſelf "chief of the government of Hayti." He made ſeveral enactments, and iſſued proclamations favourable to commerce. Petion, however, ſoon appeared as a candidate for the ſovereign power; the ſtruggle between him and Chriſtophe was fierce, and in a battle fought January 1ſt, 1807, between the two armies, Petion was defeated, and ſaved himſelf by flight. In a council convened at Cape François, a new conſtitution was publiſhed Feb. 17, 1807, in which ſlavery was for ever aboliſhed in Hayti; and the government was veſted in a chief magiſtrate for life, who appointed his ſucceſſor. The council of ſtate conſiſted of nine members, two-thirds of whom were generals; ſo that the government approached nearly to an oligarchy. The ſtruggle for ſovereignty ſtill continued, and was carried on for ſeveral years; many battles being fought, in ſome of which Chriſtophe, and in others Petion was victorious. In the ſpring of the year 1811, Chriſtophe changed the title of preſident for that of king, and the royal dignity was eſtabliſhed by a conſtitutional act in his perſon and family. In July 1816, after Louis XVIII. was reſtored to the throne, commiſſioners were ſent to St. Domingo, entruſted with the adminiſtration of all the affairs of the iſland, both civil and military. Theſe commiſſioners addreſſed letters to Chriſtophe, which gave offence. Although the two governments which rule the northern and ſouthern diſtricts have not eſtabliſhed any relations of mutual amity, they have remained in a ſtate of perfect tranquillity, and have devoted their attention to the cultivation of their reſpective territories, and to the civilization and improvement of their people. Schools upon a Lancaſterian plan have been eſtabliſhed. From the zeal manifeſted by both chiefs in this noble cauſe of public inſtruction, and the progreſs already made in carrying their wiſe and benevolent deſigns into effect, there is great reaſon to hope, that in a few years the iſland of Hayti will exhibit a population as generally educated as that of any country on the face of the globe. See Hiſtory of the Iſland of St. Domingo, &c. London, 8vo. 1818.

HEARING, col. 2, l. *ult.* inſert after ear—(ſee Ear.)

HEAT, col. 2, l. 2, inſert after Calorimeter—in the ſequel of this article.

Heat. Many important additions have been made to our knowledge reſpecting heat and its effects, which our limits will only permit us to mention very briefly here. In doing this, we ſhall follow the ſame arrangement as that adopted in the original article, and confine ourſelves chiefly to the reſults.

Capacity for Heat, or ſpecific Heat.—In the year 1813, a moſt elaborate ſet of experiments was publiſhed by Delaroche and Berard, on the ſpecific heat of the gaſeous bodies. The reſults of former experimentaliſts reſpecting this part of the ſubject were not, as we remarked, very ſatisfactory; but from the care with which the preſent experiments were made, philoſophers in general appear inclined to admit their accuracy.

Specific Heat of the Gaſes referred to Air.			Specific Heat of the Gaſes referred to Water.	
	Same Bulk.	Same Weight.		Same Weight.
Air -	1.0000	1.0000	Water -	1.0000
Hydrogen	.9033	12.3401	Air -	.2669
Carbonic acid	1.2583	.8280	Hydrogen	3.2936
Oxygen -	.9765	.8848	Carbonic acid	.2210
Azote -	1.0000	1.0318	Oxygen	.2361
Oxyd of azote	1.3503	.8878	Azote -	.2754
Olefiant gas	1.5530	1.5763	Oxyd of azote	.2369
Carbonic oxyd	1.0340	1.0805	Olefiant gas	.4207
			Carbonic oxyd	.2884
			Aqueous vapour	.8470

From the recent experiments of Dulong and Petit it appears, that the capacity of ſolid bodies follows the ſame law as that of liquids, that is to ſay, it increaſes with the temperatures meaſured by an air-thermometer. They would be even increaſing according to theſe experimentaliſts, if we were to employ a mercurial thermometer. See the ſection *Expanſion by Heat* below. Thus,

The mean capacity of iron, from 0° to 100° = 0.1098
0 to 200 = 0.1150
0 to 300 = 0.1218
0 to 350 = 0.1255.

In the following table, for the other metals they have only given the meaſures taken at 100°, and at 300°.

	Mean Capacity between 0° and 100°.	Mean Capacity between 0° and 300°.
Mercury - -	3.0330	0.0350
Zinc - - -	0.0927	0.1015
Antimony -	0.0507	0.0549
Silver - -	0.0557	0.0611
Copper - -	0.0949	0.1013
Platinum - -	0.0355	0.0355
Glaſs - - -	0.1770	0.1900

Combuſtion, Heat produced by.—A great number of laborious experiments were made by the late count Rumford on this ſubject, the general reſults of which we ſhall briefly mention, as they differ in ſome degree from thoſe of his predeceſſors. Thus, according to him, 1 lb. of

	lbs. Ice.
Olive-oil when burnt melted	93.073
Rape-oil - -	124.097
Wax - -	126.242
Tallow - -	111.582
Alcohol - -	67.470
Sulphuric ether - -	107.027
Naphtha - -	97.834

This philoſopher likewiſe extended his experiments to the combuſtion of woods, with the view of aſcertaining which gave out moſt heat, and under what circumſtances. The general reſults were, that the wood of the lime-tree gives out moſt heat, and that of the oak the leaſt, during combuſtion. The extreme limits of his long table, which we regret we cannot give, were, that 1 lb. of lime-wood, highly dried over a chaffing-diſh, melted 54.210 lbs. of ice, while 1 lb. of oak, ſimilarly dried, melted only 39.728 lbs.

Expanſion of Bodies by Heat.—The law, as recently eſtabliſhed by Dulong and Petit, reſpecting the expanſion of the gaſes has been given under Gas. We confine our attention here, therefore, to the expanſion of liquids and ſolids. The experiments of Dulong and Petit ſhew, that the expanſion of bodies by heat is not uniform, and that the laws of expanſion, as laid down by Mr. Dalton, are not to be depended upon. Thus in the following table of the abſolute dilatation of mercury, it will be found that the expanſion above the boiling point of water increaſes as the temperature increaſes according to the air-thermometer, which from the uniform expanſibility of the gaſes is the only one that indicates equal meaſures of temperature.

Table I.—*Expanſion of Mercury.*

Temperatures deduced from the Dilatation of Air.	Mean abſolute Dilatation of Mercury.	Temperatures indicated by the Dilatation of Mercury ſuppoſed uniform.
0°	0	0°
100	$\frac{1}{5550}$	100
200	$\frac{1}{5425}$	204.61
300	$\frac{1}{5300}$	314.15

Table II.—*Expanſion of Glaſs.*

Temperatures deduced from the Dilatation of Air.	Mean apparent Dilatations of Mercury in Glaſs.	Abſolute Dilatation of Glaſs in Volume.	Temperatures deduced from the Dilatation of Glaſs ſuppoſed uniform.
100°	$\frac{1}{6480}$	$\frac{1}{38700}$	100°
200	$\frac{1}{6378}$	$\frac{1}{36300}$	213.2
300	$\frac{1}{6318}$	$\frac{1}{32900}$	352.9

In the above table, on the dilatation of glaſs, the third column ſhews that its expanſion is not uniform, but increaſes, except between 0° and 100°, where it is the ſame as ſtated by Lavoiſier and Laplace. The laſt column contains the degrees which would be indicated by a thermometer formed of a glaſs plate, whoſe increaſe in length would ſerve as a meaſure of temperatures.

TABLE III.—*Expanſion of Metals.*

Temperature deduced from the Dilatation of Air.	Mean abſolute Dilatation of Iron.	Temperature indicated by a Thermometer made of a Bar of Iron.	Mean abſolute Dilatation of Copper.	Temperature indicated by a Thermometer made of a Copper Rod.	Mean abſolute Dilatation of Platinum.	Temperature indicated by a Thermometer made of a Platina Rod.
100°	$\frac{1}{28200}$	100°	$\frac{1}{19400}$	100°	$\frac{1}{37700}$	100°
300	$\frac{1}{22700}$	372.6	$\frac{1}{17700}$	328.8	$\frac{1}{36300}$	311.6

When we compare theſe reſults with thoſe obtained from glaſs, it is ſeen that the expanſibility of ſolids referred to an air-thermometer is increaſing, and that it is unequally ſo in each of them.

Our readers will obſerve, that MM. Dulong and Petit uſed the centigrade thermometer. See further on this ſubject under REFRIGERATION.

See an Eſſay which gained the prize voted by the Academy of Sciences in 1818, entitled Reſearches on the Meaſure of Temperatures, and on the Laws of the Communication of Heat, by MM. Dulong and Petit.

Animal Heat.—The above determinations of the ſpecific heats of oxygen gas and carbonic acid by Delaroche and Berard, very much diminiſh the probability of Dr. Crawford's theory of animal heat. But the moſt formidable objections to this theory reſult from the experiments of Mr. Brodie. This gentleman found that when artificial reſpiration is kept up in the lungs after decapitation, the uſual proportion of carbonic acid gas is formed, and the circulation continues nearly as uſual, yet that in theſe animals the heat diminiſhes more rapidly than in the dead animal in which artificial reſpiration is not kept up. From theſe experiments, Mr. Brodie concludes that the production of animal heat is owing to the action of the brain, and not to reſpiration. See RESPIRATION.

HEATH, in *Geography*, a town of Hampſhire, in Maſſachuſetts, containing 917 inhabitants.

HEAVY SPAR. See MINERALOGY, *Addenda.*

HEBRON, l. 2, *r.* 563; l. 3, *r.* Oxford for Cumberland; l. 5, add after Portland—containing 1211 inhabitants; l. 8, *r.* 2002.

HEIDELBURG, l. 4, *r.* 3532; l. 6, *r.* 1433. Add—Alſo, a townſhip in Pennſylvania, in Berks county, having 2808 inhabitants.

HEITSBURY, col. 2, at the cloſe, *r.* the population of the borough and pariſh, returned in the year 1811, was 1023; the number of houſes 198.

HELEN'S, ST., l. 9, *r.* 106—658.

HELLAM, a townſhip of Pennſylvania, in York county, having 1410 inhabitants.

HELLENISTS, col. 2, l. 24, *r.* HELLENISM.

HELMSLEY, l. 5, *r.* 1811—261; l. 6, *r.* 1415.

HELSTON, col. 2, l. 2, *r.* 2297—328.

HEMATIN, in *Chemiſtry*, the name given by Chevreul to the peculiar matter conſtituting the colouring matter of the *hæmatoxyton campechianum*, or *logwood.*

Hematin may be obtained by digeſting, for ſeveral hours, logwood-powder in water, of the temperature 125°. The liquid is then to be filtered, evaporated to dryneſs, and digeſted for a day in alcohol of the ſp. gr. .837. Filter the alcohol, concentrate it by evaporation, then add a little water, evaporate a little further, and leave it to itſelf. Cryſtals of hematin are depoſited in abundance. Thus prepared, it is in the form of ſmall brilliant cryſtals, of a reddiſh-white colour, and a ſlightly aſtringent bitter and acrid taſte. It is readily ſoluble in boiling water, and the ſolution is of an orange-red colour when warm, which becomes yellow as it cools, but heat again reſtores the original colour. Acids render it at firſt yellow, then red; ſulphureous acid deſtroys it altogether. The alkalies and alkaline earths give it a purpliſh-red colour, and if in exceſs appear to decompoſe it. Moſt of the metallic oxyds unite with hematin, and give it a blue colour. Gelatine throws it down in reddiſh flocks. The other properties of this ſubſtance do not appear remarkable.

HEMEL-HEMSTED. At the cloſe, inſert—The population of the pariſh, by the return of 1811, amounted to 3240, and the number of houſes to 638.

HEMIONUS. See EQUUS.

HEMLOCK, in *Geography*, a townſhip of Northumberland county, in Pennſylvania, having 879 perſons.

HEMPFIELD. Add—The former contains 3431, and the latter 3444 inhabitants.

HENDERSON, in Kentucky, l. 2, *r.* 4544; l. 3, *r.* 1467. At the cloſe, add—containing 159 perſons, of whom 47 were ſlaves in 1810.

HENLEY-*upon-Thames*, l. *ult.* *r.* 1811—522—3117.

HENLEY *in Arden*, l. 5, *r.* 1811—242; l. 6, *r.* 1035.

HENNIKER, a town of Hillſborough county, in New Hampſhire, having 1608 inhabitants.

HENRICO, l. 2, *r.* 9945; l. 3, 4846.

HENRY, l. 4, *r.* 5611 inhabitants, of whom 1755 were ſlaves in 1810; l. 6, *r.* 6652 inhabitants, of whom 1103 were ſlaves.

HEPATICA, in *Botany*, ſo named by the earlier botaniſts and phyſicians, from a reſemblance in the lobes of the leaves to thoſe of the human liver, is reſtored as a diſtinct genus from ANEMONE, (ſee that ſupplementary article,) by profeſſor De Candolle, in his Syſt. v. 1. 215, merely becauſe the *involucrum* is placed very near to the flower, (ſome have thought it an actual perianth), and its leaves undivided. We heſitate to follow our learned friend in this meaſure, the certain ſpecies of *Hepatica* being ſcarcely more than one or two, ſo that nothing is gained as to convenience, nor is the character very deciſive. Theſe ſpecies are,

1. H. *triloba.* Common Hepatica. (Anemone Hepatica; Linn. Sp. Pl. 758. Sm. Fl. Græc. Sibth. t. 513, unpubliſhed. Fl. Dan. t. 610, not 612.)—Leaves heart-ſhaped, with three entire lobes.—Native of Europe and North America. A common hardy garden plant, with blue pink, or white, ſingle or double, very early, bloſſoms. The ſynonyms are numerous. De Candolle by a caſual error cites Engl. Bot. t. 51.

2. H. *anguloſa.* Angular, or Serrated, Hepatica. Lamarck Dict. v. 1. 169.—Leaves palmate, with five ſerrated lobes. Cultivated formerly at Paris, but now loſt. It is much to be wiſhed that we could learn more concerning this plant.

3. H. *integrifolia*, with ovate entire leaves and very hairy ſtalks, found by baron Humboldt in South America, is not clearly an *Hepatica.*

HEPATITE. See MINERALOGY, *Addenda.*

HERAT. Add—The ancient *Aria* or *Artacoana*, capital of Ariana; l. 4, after name, inſert—or Herirood; l. 5, after which, add—gives fertility to the plain, 30 miles long and 15 broad, upon which Herat is ſituated, and which, though ſurrounded with lofty mountains, is highly cultivated, and covered with villages and gardens. The Herat, or Herirood, afterwards runs, &c.; l. 5, for It *r.* Herat embraces an area of four ſquare miles, and, &c.; l. 6, add—This caſtle is of a ſquare form, elevated on a mound, flanked with towers at the angles, and built of burnt brick. The city has a gate in each face, and two in that which fronts the north, and from each gate a ſpacious and well-ſupplied bazaar leads up towards the centre of the town. It is well ſupplied with water, every houſe almoſt having a fountain independent of thoſe that are public on either ſide of the bazaars:—l. 23, add—The reſidence of the prince is a mean building, having a gallows in the centre of the ſquare, which is ſituated in its front; and the chief moſque, once a noble edifice, encloſing an area of 800 ſquare yards, is falling into decay. Herat is computed to contain 100,000 inhabitants, 10,000 being Patans, and the reſt Afghans, a few Jews, and 600 Hindoos, the laſt-mentioned of whom are highly reſpected, and they only poſſeſs capital or credit; hence they derive a very conſiderable influence. The trade of this city, as we have already ſaid, is extenſive, and accordingly it is the emporium of the commerce carried on between Cabul, Caſhmere, Bucharia, Hindooſtan, and Perſia. From the former, they receive ſhawls, indigo, ſugar, chintz, muſlin, leather, and Tartary ſkins, which they export to Meſhed, Yezd, Kerman, Iſpahan, and Tehraun, receiving in return chiefly dollars, tea, china-ware, broad-cloth, coffee, pepper, and ſugar-candy; dates and ſhawls from Kerman and carpets from Ghaen. The ſtaple commodities of Herat are, ſilk, coffee, and aſſafœtida, which are exported to Hindooſtan. The gardens are full of mulberry-trees, cultivated merely for the ſake of the ſilk-worm, and the adjoining plains produce aſſafœtida. The winters here are very ſevere, and the cold often injures the crops; but the fertility of the plain is ſuch that it affords an immenſe produce both of wheat and barley, and almoſt of every kind of fruit known in Perſia. The cattle are ſmall, but not plentiful, and the broad-tail ſheep are abundant. The revenue of this city is eſtimated at 4½ lacs of rupees. The prince in poſſeſſion pays a tribute to his Perſian majeſty of 50,000 rupees a year. N. lat. 34° 12′. E. long. 63° 14′.

HEREFORD. At the cloſe, add—By the return of 1811, Hereford contains 1583 houſes, and 7306 inhabitants.

HEREFORD, a townſhip of Berks county, in Pennſylvania, having 1140 inhabitants.

HEREFORDSHIRE, col. 2, l. 7 from bottom, *r.* 1811—18,572—94,073.

HERKIMER, a county of New York, containing 22,046 inhabitants, of whom 64 are ſlaves.

HERMINIUM, in *Botany*, a name by which Linnæus its author ſeems, in Phil. Bot. 171, to allude to Hermes, or Mercury, but without any explanation.—Linn. Gen. ed. 1. 271. Br. in Ait. Hort. Kew. v. 5. 191. Sm. Compend. ed. 2. 130.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx ſpreading. Petals three-lobed, like the lip, which has no ſpur. Anther fixed, nearly terminal.

1. H. *monorchis*. Muſk Herminium. (Ophrys monorchis; Linn. Sp. Pl. 1342. Engl. Bot. t. 71.)—"Radical leaves two, lanceolate."—Native of chalky paſtures in Europe. A ſmall plant, with yellowiſh muſky-ſcented *flowers*. No genus is better defined, but we know nothing of any other ſpecies indicated by Mr. Brown's ſpecific character.

HERO, *North*, l. 2, of Grand Iſle county; l. 3 and 4, *r.* 1810—552.

HERO, *South*, l. 3, *r.* 826; l. *ult.* *r.* 623.

HERRIOT. See HARIOT.

HERTFORD, col. 2, l. 13 from the bottom, *r.* 1811—3900; l. 12, 2038—1862; l. 11, *r.* 592.

HERTFORD, in America, l. 2, *r.* 6052—2805.

HERTFORDSHIRE, col. 2, l. 28 and 29, *r.* 1811—20,345—111,654—55,023—56,631.

HESUS, in *Mythology*. See DRUIDS.

HEXHAM, l. 4. In the year 1811, Hexham pariſh, divided into four wards, or townſhips, comprehended 478 houſes, and 3518 perſons; and Hexham ſhire, including four quarters or townſhips, had 251 houſes, and 1328 perſons.

HEYNE, CHRISTIAN GOTTLOB, in *Biography*, was born at Chemnitz, in September 1729, and roſe from humble life, after ſtruggling with many difficulties, on account of the penury of his condition, to an eminent rank, as a critical ſcholar and philologiſt. Although his parents were hardly able to derive a ſcanty ſubſiſtence from their labour, he was ſent to ſchool, and made ſuch proficiency in learning, that in his tenth year he was able by teaching others to defray the expences of his own education, and by the aſſiſtance of a neighbouring clergyman, he entered himſelf at a grammar-ſchool; and having acquired a competent knowledge of the Latin and Greek languages, he was ſent to the univerſity of Leipſic. Private teaching, however, was his reſource for further ſupplies, and thus furniſhed he devoted himſelf to the profeſſion of the law; and induſtrious in his ſtudy of the Roman law and hiſtory, he was qualified for reading lectures, which were much approved, on the Roman antiquities. Under the patronage and recommendation of count Bruhl, the Saxon miniſter, which he obtained by a Latin elegy, he was invited to Dreſden, whither he repaired in 1752 with flattering expectations, which were eventually diſappointed; ſo that he was reduced to a ſtate of indigence and diſtreſs, without the means of providing either food or lodging. At length neceſſity compelled him to become a writer, and by one of his performances as a tranſlator of a Greek romance, he acquired that taſte for criticiſms which raiſed him to that eminence in this department of literature which he afterwards occupied. His next work was an edition of Tibullus, which was followed in 1756 with his firſt edition of Epictetus. But his proſpects, which appeared promiſing in conſequence of his acceſs to the Bruhlean library, were again precluded by the incurſion of the Pruſſians into Saxony, which occaſioned the ſudden removal of count Bruhl from Dreſden, and the diſperſion of his library. After ſome changes of ſituation, he repaired to Dreſden in the year 1760; and in the following year married a lady, named Thereſa Weiſs, to whom he had for ſome time been affectionately attached. In 1763 he was invited to Gottingen to ſupply the vacant profeſſorſhip of John Matthias Geſner. The ſubjects of his firſt academic lectures were, Horace, the Georgics of Virgil, and ſome parts of the Tragic writers. In 1766 he explained the Iliad, and afterwards the Greek antiquities. His leiſure hours, after his firſt ſettlement at Gottingen, he employed as a writer and tranſlator. Having been appointed, in 1763, firſt librarian to the univerſity, he obtained, in 1770, the title of aulic counſellor, and became ſecretary to the Royal Society of Sciences, and editor of the Literary Gazette. In 1771, he collected the papers preſented to the ſociety for ſixteen years, which had been neglected, and publiſhed the firſt volume of the "Commentarii Novi," which was dedicated to the king. The firſt edition of his Pindar appeared in 1773. His "Catalogue of the Library," begun in 1777, was completed in 1787, and extended to about 150 volumes in folio. But his opus majus, on which he beſtowed the greateſt part of his attention and time, was his edition of Homer, which he began in 1787, and which was preſented to the public in 1802. A ſecond edition of his Virgil appeared in 1788; in the reviſal and improvement of which he derived great aſſiſtance from his literary friends, particularly Van Santan in Holland, and Jacob Bryant in England. During the autumn of this year, he made a tour to Switzerland, and formed an acquaintance with ſeveral of the moſt eminent literary characters in that country; and on his return he was offered the place of chief librarian at Dreſden, and a profeſſorſhip at Copenhagen, both which he declined. The principal object of his attention was the Royal Society of Gottingen, of which he was ſecretary; and which was enlarged by the admiſſion into the number of its members of ſeveral French literati. By means of his reputation and influence, he preſerved the ſociety, in 1803, from the miſeries incident to a ſtate of war, and from any moleſtation on the part of the French army. After a tour to Armſtadt in 1806, on a viſit to one of his daughters recently married, his infirmities increaſed, ſo that in 1809 he reſigned his office as profeſſor of eloquence. In 1810 he was made a knight of the Weſtphalian order of the crown, and died in the month of July 1812. Few perſons have been more diligent in the improvement of their time than Heyne, or devoted more time in the day to literary occupations, without ſecluding himſelf from domeſtic and ſocial enjoyments. He was twice married; by his firſt wife he had one ſon and two daughters, one of whom was married to George Forſter, ſon of the celebrated Dr. John Reinhold Forſter, and on his death to Mr. Huber. By his ſecond wife, who was daughter of George Frederick Brandes, aulic counſellor, he had two ſons and four daughters. His works were too numerous for recital within our limits. We refer for an account of them to the General Biography, Appendix.

Vol. XVIII.

HICKMAN, in *Geography*, a town of Weſt Tenneſſee, containing 2583 perſons.

HICKUP, l. 7, add—See Lungs.

HIETANS, the name of a people of North America, who traverſe a region extending from the limits of the ſtate of Louiſiana to the Rio Gila, and to the eaſtern declivity of the Californian coaſt, within a ſhort diſtance of the ſhores of the Pacific ocean. In following the herds of buffaloe, which change their paſture with the ſeaſons, they reſemble the wandering tribes of Tartars and Arabs, who have no ſettled reſidence. Encamped where they find water and their prey, they remain as long as they can obtain a ſupply. The Hietans have domeſticated the horſe, and vie with the moſt civilized people in their management of this uſeful animal, in mounting it and applying its force to the purpoſes of chace or war. They are the only people, aborigines of this continent, who ſeem to have acquired the ability to withſtand the ſhock of cavalry furniſhed with the principles of European tactics.

HIGHAM Ferrers, col. 2, l. 8, *r.* 1230, and 6627.

HIGHGATE, in America, l. 3, *r.* 1374.

HIGHWORTH, col. 2, l. *ult.* *r.* Highworth pariſh, in 1811, contained 480 houſes, and 2514 inhabitants.

HILLSBOROUGH, in America, l. 6, *r.* 49,249; l. 11, *r.* 1592.

HILLTOWN, l. 4, *r.* 1335.

HINEKLEY, col. 2, l. 5 from bottom, *r.* 1811—6098, and 1097.

HINDON. Add—By the returns of 1811, the borough and pariſh contained 170 houſes, and 781 perſons.

HINDSDALE, a town of Berkſhire, in Maſſachuſetts, containing 822 inhabitants.

HINESBURGH, a town of Chittenden county, in Vermont, having 1238 perſons.

HINGHAM, l. 3 and 4, *r.* 241—1263.

Hingham, l. 1, *r.* Plymouth for Suffolk; l. 7, *r.* 2382.

HINSDALE, l. 4, *r.* 740.

HIRAN, l. 2, *r.* Oxford for York, and 336; add—Alſo, a townſhip of Ohio, in Portage county, having 171 inhabitants.

HIRUNDO. At the cloſe, for Swallow *r.* Migration.

HITCHIN, l. *ult.* *r.* 1811, the hundred of Hitchin and and Pirton contained 1529 houſes, and 7732 inhabitants.

HOCKSTETT. Add—See Battle.

HOCKING, a town of Fairfield county, in Ohio, having 1078 inhabitants.

HODSON, a townſhip of Portage county, in Ohio, having 793 inhabitants.

HOLDEN, l. 3, *r.* 1072.

HOLDERNESS, l. 4, *r.* 835.

HOLLAND, in America, l. 4, *r.* 420. Add—Alſo, a town of Orleans county, in Vermont, having 126 inhabitants.

HOLLES, l. 4, *r.* 1529.

HOLLISTON, l. *ult.* *r.* 1810—989.

HOLLOW Spar. See Mineralogy, *Addenda*.

HOLLY, *Mount*, in *Geography*, a town of Rutland county, in Vermont, having 922 inhabitants.

HOLOCENTRUS, in *Ichthyology*, a genus of the Thoracici order of fiſhes; the characters of which are, habit of the genus Perca; gill-covers ſcaly, ſerrated, and aculeated; and ſcales, in moſt ſpecies, hard and rough. The ſpecies enumerated and deſcribed by Dr. Shaw are as follow: *viz.*

1. *With forked or lunated tail.*

Sago. Silvery-red H. with longitudinal yellow lines on each ſide, very beautiful, about a foot long, reſembling a carp, but of a more ſquare form, and becoming ſuddenly ſlender near the tail, eyes large and gold-coloured, ſcales large, and denticulated at the edges. Native of the Indian, American, and Mediterranean ſeas, and held in high eſtimation for the table.

Schraetser. Browniſh H. with four longitudinal black lines on each ſide, ſilvery abdomen and naked head; the *perca* ſchraetſer of Gmelin's Linnæus. Native of the Danube, and of its tributary ſtreams, eſteemed for food.

Radula. H. with the body lineated with white ſpecks; P. radula of Gmelin's Linnæus. Native of India.

Gaterina. Blueiſh H. with black ſpecks and ſcattered ſpots; Sciæna gaterina of Gmelin's Linnæus. Native of the Arabian ſeas, varying in ſize and colours.

Virescens. Greeniſh H. with tranſverſe dorſal ſemidecurrent olivaceous bands, and head ſtreaked with yellow. Native of the Indian ſeas.

Quinquilineatus. Yellowiſh H. with browniſh back, and body marked on each ſide by five longitudinal blue lines. Native of Japan.

Bengalensis. Subfulvous H., ſilvery beneath, and marked on each ſide of the upper part by five longitudinal blueiſh bands, margined with black. Native of Bengal.

Tigrinus. White H. with the body tranſverſely banded, and fins ſpotted with black. Native of the Indian ſeas, and eſteemed for the table.

Decussatus. White, with brown back, and body marked by two longitudinal and ſeven tranſverſe brown bars. Native of the American ſeas.

Striatus. Subluteous H. with browniſh back, body marked by tranſverſe brown bands, dorſal fin ramentoſe behind, and marked by a black ſpot. Native of unknown regions.

Argentinus. Browniſh H. with ſilvery ſides. Native of regions unknown.

Niger. Black H. with extremely minute ſcales: found about the coaſt of Cornwall.

Acerinus. With fourteen ſoft and ſeventeen ſpiny rays in the dorſal fin; perca acerina of Gmel. Linn. Native of the Euxine ſea, and eſteemed as food.

Cærulescens. Blueiſh H. with all the fins yellow. Native of the Indian ſeas.

2. *With undivided or rounded tails.*

Variegatus. Red H. with ſeven tranſverſe black lines, and the head and abdomen varied with blue ſtreaks: perca marina of Linn. Gmel. Native of the Mediterranean and northern ſeas.

Cottoides. With all the fins marked by two ſpeckled lines. Native of the Indian ſeas.

Philadelphicus. Perca philadelphica of Linn. Gmel.

Gigas. Ochraceous H. with brown clouds, three-ſpined gill-covers, and eleven dorſal ſpines: perca gigas of Linn. Gmel. Native of the Mediterranean.

Forskalii. Red H. with four broad tranſverſe whitiſh bands: perca faſciata of Linn. Gmel. Native of the Red ſea.

Tauvinus. Linear-oblong H. with blackiſh ferruginous ſpots: perca Tauvina of Linn. Gmel. Native of the Arabian ſeas.

Ongo. Brown H. with the body marked tranſverſely by elongated ſpots, and the dorſal, anal, and caudal fins ſpotted with yellow. A native of Japan.

Auratus. Gold-yellow H. with red ſpecks. Native of the Eaſt Indies.

Quadrilineatus. Silvery H. with browniſh back, and body marked above by four longitudinal black lines on each ſide. Native of the Eaſt Indies.

Fasciatus. Green-yellowiſh H. with tranſverſe brown bands divided beneath. Native of a region unknown.

Punctatus. Yellow H. ſprinkled over with black ſpots and red points. Native of the Braſilian ſeas.

Calcarifer. Subargenteous H. with browniſh back, large ſcales, and ſpotted gill-covers. Native of Japan.

Surinamensis. Browniſh H. with ſubluteous clouds, red head, and anterior gill-covers ſpine-ciliated. Native of Surinam.

Afer. Oblong-ovate brown H. with ſmall ſcales and ſhort tail. Native of the coaſts of Guinea, in high eſtimation for food.

Japanicus. Red H. with ſmall ſcales, and blue and yellow irides. Native of Japan.

Merra. White H. ſpotted on all parts with brown. Native of the Japaneſe ſeas.

Testudineus. Subluteous H. with ſlightly branching brown bands, blue-ſtriped gill-covers, and blackiſh fins. Native of the northern ſeas.

Marginatus. Blueiſh H. with browniſh back, red fins, and dorſal fin edged on the fore-part with black. Native place unknown.

Sonneratii. Yellowiſh H. with three tranſverſe ſilvery bands, edged with brown. Native of the Indian ſeas.

Lanceolatus. Silvery H. tranſverſely banded with brown, and with the dorſal, anal, and caudal fins ſublanceolate. Native of the Eaſt Indies.

Cæruleo-punctatus. Blueiſh H. with pale yellow clouds, and deep-brown fins ſpotted with blue. Native country unknown.

Bicolor. Blueiſh H. with irregular white ſpots. Shaw's Zoology, vol. iv. pt. ii.

HOLT, l. 7, *r.* 216—1037.

Holt, l. 1, for Greſford *r.* of the ſame name; l. *ult.* *r.* 1811—161—813.

HOLYHEAD, l. 5 from laſt, *r.* 1811—539—3005.

HOLYWELL. In 1811, the town of Holywell contained 1313 houſes, and 6394 perſons; *viz.* 2925 males, and 3469 females: 117 families being employed in agriculture, and 752 in trade, manufactures, and handicraft.

HOMER, col. 2, l. 23, for Cos *r.* Jos.

HONEY Brook, a townſhip of Cheſter county, in Pennſylvania, containing 1073 inhabitants.

HONITON, l. 16, after act, add—in the borough and pariſh; l. 17, *r.* 581 and 2735.

HOPE, col. 2, l. 13, add—Alſo, a town of the diſtrict of Maine, in the county of Lincoln, having 787 inhabitants.

HOPEA, in *Botany*, a fourth genus, (ſee our former Hopea,) thus inſcribed, in Roxb. Corom. v. 3. 7. t. 210. is very nearly allied to Dipterocarpus, (ſee that article,) though different in the aſpect of the flowers.

HOPEWELL, l. 5, after York, having 1577; after Huntingdon, 805; after Waſhington, 2193; l. 8, *r.* 1810; l. 9, *r.* 2565; l. 10, add—containing 1987 inhabitants.—Alſo, a townſhip of Fairfield county, in Ohio, having 478 inhabitants.

HOPKINS, a county of Kentucky, having 2927 inhabitants, of whom, in 1810, 404 were ſlaves.

HOPKINTON, l. 2, *r.* 1345; l. 8, *r.* 1774.

HOPS, col. 10, l. 28, *r.* 3250.—*Laws relating to*, l. 5, inſert—See alſo 45 Geo. III. c. 94. 49 Geo. III. c. 98. and the duties that are impoſed on hops.

HORNBLENDE. See Mineralogy, *Addenda.*

Hornblende *Slate.* See Mineralogy, *Addenda.*

HORNSEY, l. *ult.* *r.* In 1811, the pariſh conſiſted of 147 houſes, and 704 inhabitants.

Hornsey, l. 12 and 13, *r.* 1811—807, and 3349.

HORN-STONE. See Mineralogy, *Addenda.*

HORSE, col. 11, l. 22, *r.* 2*s.* 10*d.* Col. 12, l. 25 from bottom, *r.* 22*l.* 10*s.*; l. 21, *r.* 11*l.* 5*s.*; add—On the ſubject of duties on horſes, ſee Tax.

HORSHAM, l. 32, *r.* In 1811, the borough contained 287 houſes, and 1714 inhabitants; and the whole pariſh, including the borough part, contained 622 houſes, and 3839 inhabitants.

Horsham, in America, l. 2, *r.* 938.

HOSPITAL, Bridewell, col. 2, l. 18, *r.* which exceeded the receit by, &c.

HOVEA, in *Botany*, in memory of Mr. Pantaleon Hove. (See Poiretia.)—Br. in Ait. H. Kew. v. 4. 275. (Poiretia; Sm. Tr. of L. Soc. v. 9. 304.)—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx two-lipped; upper lip cloven, abrupt. Stamens all connected. Keel obtuſe. Legume ſeſſile, roundiſh, tumid. Seeds two creſted.

H. linearis, (very near *H. lanceolata*, Curt. Mag. t. 1624,) a linear-leaved *ſhrub*, with blueiſh-purple *flowers*, and ſmooth *legumes*; and *H. longifolia*, whoſe *leaves* are longer, and *legumes* downy, are the only ſpecies in Hort. Kew., both natives of New South Wales. Our *P. elliptica*, L. Tr. v. 9. 305 may be doubtful.

HOUGHTON-LE-SPRING, in *Geography*, a townſhip in a pariſh of the ſame name, and in Eaſington Ward, in the county of Durham. In 1811, it contained 221 houſes, and 1356 perſons; *viz.* 663 males, and 693 females: 44 families being employed in agriculture, and 68 in trade and manufacture. The pariſh includes 18 townſhips.

HOWARD, a townſhip of Centre county, in Pennſylvania, having 761 inhabitants.

HOWDEN. In 1811, this townſhip contained 314 houſes, and 1812 perſons; *viz.* 830 males, and 982 females.

HOWELL, a townſhip of Monmouth county, in New Jerſey, having 2780 inhabitants.

HUBARDTON. See HUBBARTON.

HUBBARD, a townſhip of Ohio, in Trumbull county, having 674 inhabitants.

HUBBARDSTON, l. 3, *r.* 1127.

HUBBARTON, or HUBARDSTON, l. 2, *r.* 734.

HUDDERSFIELD, l. 27, *r.* 1811—1871—9671.

HULL, col. 5, l. 9 from bottom, *r.* 1811; l. 8, 4611; l. 7, 26,792—11,998—14,794.

HULL, in America, l. 1 and 2, for Suſſex *r.* Plymouth; l. 3, *r.* 132.

HUMITE. See MINERALOGY, *Addenda*.

HUMMOCK, l. 12 from bottom, *dele* the reference (ſee that article).

HUMOURS *of the Eye, Chemical Properties of.* See EYE.

HUMPHRIES, in *Geography*, a county of Weſt Tenneſſee, having 1511 perſons, of whom 132 were ſlaves in 1810.

HUNGARY, col. 2, l. 33, after inhabitants (in 1810, 7398, 104).

HUNGERFORD, l. 2 from bottom, *r.* 1811—167—943.

HUNTINGDON, col. 3, two laſt lines, *r.* 1811—522—2397—450.

HUNTINGDON, in America, l. 7, *r.* 16,778; l. 14, *r.* 476; after Philadelphia, add—the townſhip contains 1698 perſons; l. 22, *r.* 2770.

HUNTINGDON, *North*, *South*, and *Eaſt*, three townſhips, &c. the former containing 2345, the ſecond 1656, and the laſt 1267 inhabitants.

HUNTINGDON, a townſhip in Luzerne county, in Pennſylvania, having 1114 inhabitants.—Alſo, a townſhip of Adams' county, in the ſame ſtate, having 1014 inhabitants.—Alſo, a townſhip of Adams' county, in Ohio, containing 1375 perſons.

HUNTINGDONSHIRE, l. 14, *r.* 7566 houſes, 42,208 inhabitants; 20,402 males, 21,806 females.

HUNTINGTON, l. 3, *r.* 514.

HUNTINGTON, in Connecticut. See HUNTINGDON.

HUNTSBURG, l. 3, *r.* 714.

HURD, *Richard*, in *Biography*, an eminent Engliſh prelate, was the ſon of a reputable farmer, in the pariſh of Teterſhall, in the county of Stafford, and born in January 1719-20. After a preparatory ſchool-education, he was ſent to Emanuel college in the univerſity of Cambridge, where he was graduated M.A., and was elected a fellow in 1742. In 1744 he received prieſt's orders. As a writer, he began his career by an anonymous work, which was, "Remarks on a late Book, entitled an Enquiry into the Rejection of the Chriſtian Miracles by the Heathens, by William Weſton, B.D. &c.;" and which was highly commended by Dr. Warburton. As a literary critic, he firſt laid the foundation of his future fame in 1749, by an anonymous publication, entitled "Horace's Epiſtles to the Piſos, with an Engliſh Commentary and Notes;" and alſo of his fortune by a compliment paid in the preface to Warburton, whom he afterwards reſembled, not only in his advancement, but in his mode of thinking and of writing. By his recommendation to Biſhop Sherlock, he was appointed, in 1750, one of the Whitehall preachers. In 1751, he publiſhed a "Commentary on Horace's Epiſtle to Auguſtus," reſembling in learning and ingenuity his former commentary. Both theſe Commentaries were reprinted in 1753, with two diſſertations on dramatic poetry and poetical imitation. This volume was dedicated to Warburton in a high ſtyle of panegyric; and it was followed, in 1755, by a piece, entitled "Delicacy of Friendſhip," in which the anonymous author, known to be Hurd, paid homage to his patron by an attack on Dr. Jortin, who, in his "Six Diſſertations," had not treated Warburton with that reſpect to which, in the eſtimation of his admirers, he was thought to be entitled. By this pamphlet he gained no reputation, and it is ſaid, that in conſequence of ſome remarks on his ſubſervient diſpoſition, he was deſirous of ſuppreſſing it, though it has been ſince reprinted in a late edition of his works. His firſt church preferment was a college living at Thurcaſton in Leiceſter, to which he was inducted in 1756, and here he lived for ſeveral years in retirement. Soon after Hume's "Eſſay on the Natural Hiſtory of Religion" was publiſhed, a pamphlet of "Remarks" upon it appeared, of which Hurd was thought to be the author, and which Hume notices in the following terms: "Dr. Hurd wrote a pamphlet againſt this work, with all the illiberal petulance, arrogance, and ſcurrility which diſtinguiſh the Warburtonian ſchool." Theſe Remarks have been thought to be the joint production of the maſter and diſciple. Hurd's "Letter to Mr. Maſon on the Marks of Imitation," publiſhed in 1757, is repreſented by his biographer as "one of the moſt agreeable and ingenious of the writer's works on elegant criticiſm." Our author's "Moral and Political Dialogues," which appeared in 1759, contributed to the increaſe of his literary reputation; and thoſe in particular that relate to the Engliſh conſtitution evince the writer's attachment to Whig principles. In 1762 appeared, without his name, an amuſing work, entitled "Letters on Chivalry and Romance," 12mo.; and in 1764 was publiſhed another dialogue on "The Uſes of Foreign Travel." The ſeveral dialogues now recited were publiſhed in 1765, in 3 vols. 8vo. introduced with a preface on the manner of writing dialogue. The defence of his patron and friend had in the mean time occaſioned a "Letter to the Rev. Dr. Leland of Dublin College;" in which he vindicates Warburton's idea of an inſpired language, ſtated in his "Doctrine of Grace."

Hurd's preferments in the church had not correſponded to his growing literary fame; but in 1765 he was recommended by biſhop Warburton and Mr. C. York to the office of preacher at Lincoln's-Inn; and in 1767 he was collated by the biſhop to the archdeaconry of Glouceſter. In the following year, he was graduated D.D. at Cambridge, and appointed to preach the lectures on prophecy, eſtabliſhed at Lincoln's-Inn by Warburton; theſe were compriſed in twelve diſcourſes, which formed a volume of highly valuable theological literature, publiſhed in 1772, 8vo. with his explication of the double ſenſe of prophecy, called by him "a divine artifice." With that exceſs of ingenuity which in ſome caſes ſeems to derogate from the ſimplicity of the goſpel, ſome have been diſſatisfied. Having eſtabliſhed his reputation both as an elegant writer and an ingenious theologian, Dr. Hurd was promoted without ſolicitation to the ſee of Lichfield and Coventry in 1775; and in his firſt charge to the clergy of his dioceſe, the ſubject to which he directed their attention was the excellence of the liturgy, inculcating at the ſame time the duty of ſubmitting all alterations to the wiſdom of the church, and thus guarding againſt that diſpoſition to reform which was manifeſting itſelf among thoſe who formed a conſiderable party pertaining to the eſtabliſhment.

In the following year, the learned prelate had the honour of being preceptor to the Prince of Wales and his brother the duke of York. In the ſame year, he publiſhed a volume of ſermons preached at Lincoln's-Inn; to which, in 1780, he added two additional volumes, containing a variety of elegant diſcourſes, orthodox with regard to their theology, and conformable to the articles of the church, which he profeſſes highly to venerate. His tranſlation to the ſee of Worceſter took place in 1781, when he was alſo nominated clerk of the cloſet; and though he was offered the primacy in 1783, he declined the acceptance of this high dignity. In his retired ſtation at the epiſcopal ſeat of Hartlebury, he paſſed the remainder of his life in attending to the concerns of his dioceſe, purſuing his literary avocations, and collecting a noble library, which he bequeathed as an heir-loom to the ſee of Worceſter. Of his minor publications, both before and after this period, we ſhall take no notice; but content ourſelves with mentioning his edition of the works of his eſteemed friend the biſhop of Glouceſter, preſented to the public in 7 vols. 4to. in 1788; adding afterwards, *viz.* in 1794, an account of the life, writings, and character of the author. With this performance he terminated his literary labours; and after a gentle and eaſy decline, he expired, in his ſleep, in May 1808, four months after the completion of his 88th year. The literary character of this prelate may be duly appreciated by a peruſal of his writings; but with reſpect to his private character and conduct, we ſhall adopt the opinion and language of a candid biographer, who ſays of him, "if a fair abatement be made on account of ſome literary arrogance and acrimony, probably derived from the ſame ſource," (referring to familiarity with the writings of Warburton,) "they will merit unqualified praiſe. His ſtrict regard to decorum, his liberal courteſy, his warmth of friendſhip, his moderation and diſintereſtedneſs, rendered him equally an object of regard and eſteem." Gen. Biog.

HURON, in *Geography*, a town of Cayahuga county, in Ohio, having 424 inhabitants.

HUTCHINSIA, in *Botany*, dedicated to the memory of the late Miſs Hutchins, of Ballylickey, near Bantry, in Ireland, a moſt intelligent cryptogamic botaniſt.—Br. in Ait. Hort. Kew. v. 4. 82. Sm. Compend. 98.—Claſs and order, *Tetradynamia Siliculoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch entire; valves tumid. Seeds two in each cell. Filaments ſimple.

1. H. *rotundifolia*. Round-leaved Hutchinſia. Ait. n. 1. (Iberis rotundifolia; Linn. Sp. Pl. 905. Scop. Carn. t. 37.) —Leaves undivided.—Native of mountains in the ſouth of Europe. *Flowers* roſe-coloured.

2. H. *alpina*. Alpine Hutchinſia. Ait. n. 2. ſee Lepidium *alpinum*.—Leaves pinnatifid. Petals twice as long as the calyx. Style ſhort.

3. H. *petræa*. Rock Hutchinſia. Sm. n. 1. ſee Lepidium *petræum*.—Leaves pinnatifid. Petals ſhorter than the calyx. Stigma ſeſſile.

HYÆNANCHE. See Toxicodendrum.

HYALITE. See Mineralogy, *Addenda*.

HYDE, l. 4, *r.* 6029—1882.

HYDEPARK, l. 2, *r.* 261.

HYDRIODATES, Hydriodic *Acid*, in *Chemiſtry*. See Simple *Bodies*.

HYDROCHLORIC Acid. See Muriatic *Acid*, and Chlorine.

HYDROCYANIC Acid. See Cyanogen and Prussic *Acid*.

HYDROGEN. For the recent determinations reſpecting the ſpecific gravity, &c. of this gas, ſee Atomic *Theory*.

Hydrogen, *Arſenical*. See Arsenic.

Hydrogen, *Boruretted*, the name of a gaſeous compound of hydrogen and boron. The exiſtence of ſuch a gas, however, ſeems ſomewhat uncertain. Dr. Thomſon thinks Gmelin ſucceeded in forming it by mixing together four parts of iron-filings, and one part of boracic acid, and expoſing the mixture to a ſtrong heat for half an hour. When this fuſed maſs was diſſolved in muriatic acid, an efferveſcence took place, and a gas, ſuppoſed to be boruretted hydrogen, was extricated; but it was not ſatisfactorily examined. Sir H. Davy endeavoured in vain to unite boron with hydrogen by heating them together.

HYDROGURET *of Carbon*, *Phoſphorus*, *and Sulphur*, the names by which ſome have choſen to diſtinguiſh compounds of hydrogen with theſe reſpective ſubſtances, and which were formerly called *carburetted*, *phoſphuretted*, and *ſulphuretted hydrogen*.

HYDROPHILUS. At the cloſe, add—The genus hydrophilus, like that of dytiſcus, has been greatly increaſed by the perſevering reſearches of modern entomologiſts. Mr. Marſham enumerates twenty-eight Britiſh ſpecies.

HYDROPHOSPHORIC *Acid*, Hydrosulphuric *Acid*, Hydrothionic *Acid*, in *Chemiſtry*, names which have been given, the firſt to *phoſphuretted hydrogen*, the two laſt to *ſulphuretted hydrogen*.

HYGROMETRY, col. 13, l. 22, add—Mr. Leſlie's improved hygrometer is compoſed of a tube of ivory, containing quickſilver, with a glaſs tube adapted to it, to which a ſcale of equal parts is attached. When the ivory yields moiſture to the air, which it does according to the dryneſs of the atmoſphere, it contracts, and preſſes the quickſilver higher in the tube;—when it imbibes moiſture from damp air, it ſwells, and allows the quickſilver to ſubſide. Mr. Leſlie finds, however, that theſe variations do not correſpond with the real meaſures of atmoſpheric dryneſs or humidity: near the point of extreme dampneſs, they are much augmented; while they diminiſh rapidly towards the other extreme. The addition of another ſcale, therefore, correſponding to this inequality, is neceſſary; and even with this, it cannot be regarded as either an accurate or delicate inſtrument.

There are other circumſtances, ſays the profeſſor, connected with evaporation, on which an hygrometer may be conſtructed; particularly the dilatation imparted to the air by the vapour, and the depreſſion of temperature produced on the humid ſurface.

On the firſt of theſe he has invented an hygrometer conſiſting of a ſmall tumbler, the mouth flat, having a hole ground through the bottom, in which is cemented a ſlender recurved tube, like a ſyphon, containing a portion of coloured oil. A few drops of water being put on a glaſs plate, and the tumbler being ſlipped upon this, the included air diſſolves moiſture proportional to its dryneſs; and the increaſed elaſticity, thus communicated to the air, cauſes the column of oil in the tube to aſcend. This inſtrument, however, requires addreſs in its management, which renders it difficult to obtain with it reſults perfectly preciſe.

On the other principle, Mr. Leſlie has conſtructed what he regards as the moſt accurate hygrometer. It is a happy application of the differential thermometer. One of the balls is coated with fine cambric paper, and the paper is moiſtened with pure water. Evaporation takes place; and, from the cold which accompanies this, the liquid falls in the oppoſite ſtem. The extent of its deſcent is meaſured by the ſcale attached. This indicates the degree of cold; this, again, the extent of evaporation; and this, laſtly, indicates the relative dryneſs of the air, the evaporation being proportionally greater as the air is more free from moiſture. The full effect is very ſoon obtained—generally in about two minutes; and it continues permanent under the ſame circumſtances, as long as moiſture is ſupplied to the covered ball.

This ingenious author obſerves, in conſequence of experiments adapted to the purpoſe, that the condition of the atmoſphere, with regard to dryneſs, is extremely variable.

In our climate, the hygrometer will, during winter, mark from 5 to 25 degrees; but, in the ſummer months, it will generally range between 15 and 55 degrees, and may even riſe, on ſome particular days, as high as 80 or 90 degrees. In thick fogs, the inſtrument ſtands almoſt at the beginning of the ſcale: it commonly falls before rain, and remains low during wet weather; but it mounts powerfully in continued tracts of clear and warm weather. The greateſt dryneſs yet noticed was at Paris, in the month of September, when it reached to 120 degrees. But for want of obſervations, we are totally unacquainted with the real ſtate of the air in the remote and tropical climates.

When the indication of the hygrometer does not exceed 15 degrees, we are directed by our feelings to call the air damp; from 30 to 40 degrees we begin to reckon it dry; from 50 to 60 degrees we ſhould account it very dry, and from 70 degrees upwards we might conſider it as intenſely dry. A room is not comfortable, or perhaps wholeſome, if it has leſs than 30 degrees of dryneſs; but the atmoſphere of a warm occupied apartment will commonly produce an effect of upwards of 50 degrees.

Mr. Leſlie has invented another inſtrument, which gives indications of the quantity of evaporation from a humid ſurface in a given time—which he has named the atmometer. It conſiſts of a thin ball of porous earthen-ware, two or three inches in diameter, with a ſmall neck, to which is cemented a long and rather wide tube, bearing diviſions, each of them correſponding to an internal annular ſection, equal to a film of liquid that would cover the outer ſurface of the ball, to the thickneſs of the thouſandth part of an inch. To the top of the tube is fitted a braſs cap, having a collar of leather, which, after the cavity has been filled with diſtilled or boiled water, is ſcrewed tight, to prevent the tranſudation of the liquid from being ſo copious as to drop from the ball. Evaporation of the water takes place from the external ſurface, the inſtrument being ſuſpended in the air; and the quantity evaporated in a given time, is diſcovered by the deſcent of the liquid in the tube. The uſe of this inſtrument will require ſome dexterity, particularly in adjuſting the preſſure of the collar; and its indications are ſlow,—but it may often be employed with advantage, where it is of importance to aſcertain the actual rate of exhalation.

From a variety of obſervations on the ſubject of evaporation he infers, that air has its dryneſs doubled at each riſe of temperature, anſwering to 15 centeſimal degrees. Thus, at the freezing point, air is capable of holding a portion of moiſture repreſented by 100 degrees of the hygrometer; at the temperature of 15 centigrade, it could contain 200 ſuch parts; at that of 30, it might diſſolve 400; and at 45 on the ſame ſcale 800. Or, if we reckon by Fahrenheit's diviſions, air abſolutely humid holds, at the limit of congelation, the hundred-and-ſixtieth part of its weight of moiſture; at the temperature of 59 degrees, the eightieth part; at that of 86 degrees, the fortieth part; at that of 113 degrees, the twentieth part; and at that of 140 degrees, the tenth part. While the temperature, therefore, advances uniformly in arithmetical progreſſion, the diſſolving power which this communicates to the air mounts with the accelerating rapidity of a geometrical ſeries.

The theory of the precipitation of rain, which he founds on this principle, requires, as he ſays, the aſſumption, not merely of the mixture of two maſſes of air at different temperatures, ſaturated with moiſture, but the continued contact of two currents of air under theſe conditions; as it is thus only that a ſufficient quantity of water will be furniſhed to form that copious precipitation which conſtitutes rain. And he adds a calculation, founded on the preceding law, which illuſtrates this, and illuſtrates exceedingly well, the general theory.

We ſhall here take occaſion to obſerve, that as the capacity of air for heat is increaſed by its rarefaction, its diſpoſition to hold moiſture in ſolution appears to be increaſed by the ſame cauſe; and at the ſame time the removal of preſſure, which is the conſequence of the rarefaction, facilitates the tranſition of water into vapour. From theſe cauſes, if the hygrometer be ſuſpended within a large receiver, from which a certain portion of air is quickly abſtracted, it will ſink with rapidity. But the effect is only momentary, for the rarefied air ſoon becomes charged with moiſture, and conſequently ceaſes to act on the wet ball of the thermometer. Hence there is every reaſon to believe that the higher regions of the atmoſphere are drier than thoſe beneath; and, without this condition, Mr. Leſlie remarks, our globe muſt have been ſhrouded in darkneſs; for the cold which reigns in the upper ſtrata, would have prevented the humidity from aſcending to a great elevation, and have precipitated it in continual fogs or clouds. In the actual ſtate of things, the diminution of temperature, in aſcending, predominates at firſt over the augmented power of aqueous ſolution; and the air becomes damper till a height be reached, at which the oppoſite effects of cold and rarefaction are balanced. Above this, which is the proper region of the clouds, the influence of the rarity of the medium exceeds that of the cold, and the air therefore becomes progreſſively drier, until it melts away into the clear ethereal expanſe.

On this principle is founded the very beautiful experiment invented by Mr. Leſlie, of cauſing water to freeze by the cold produced by its own evaporation. The peculiar arrangement for this conſiſts in placing water in a porous earthen cup, ſuſpended within the receiver of an air-pump, and placing, at a ſhort diſtance beneath it, ſulphuric acid in a broad ſhallow veſſel, ſo that an extenſive ſurface of the acid ſhall be preſented. On rarefying the air, the evaporation of the water is accelerated, and of courſe the degree of cold produced by that evaporation is increaſed. This, however, would ſoon be checked by the preſence of the watery vapour; but this the ſulphuric acid abſorbs, almoſt as quickly as it is formed; keeps, therefore, the rarefied air always dry; and thus allows the evaporation to proceed with the ſame rapidity. The temperature, therefore, continues to fall, until the water ſhoots into cryſtals of ice; and even after it is entirely congealed, the ice continues to ſuffer evaporation, until it wholly diſappears. See Leſlie's Short

Account of Experiments and Inſtruments, depending on the Relations of Air to Heat and Moiſture, 8vo. Edinb. 1814. Edinb. Rev. N° 48.

HYPERSTONE. See MINERALOGY, *Addenda*.

HYPOPHOSPHOROUS ACID. See PHOSPHORUS.

HYPOSULPHUROUS ACID. See SULPHUR.

HYREUS, in *Ornithology*, a genus of birds of the order Paſſeres; the characters of which are, beak conic, ſtraight and ſerrated; noſtrils ovate; tongue ſhort and obtuſe; feet with three toes, two before and one behind. There is one ſpecies, *viz.* H. *Abyſſinicus*, or black plant-cutter, with the head, throat, and jugulum red, wing-coverts brown, with white margins. It is found in Abyſſinia, and, according to Mr. Bruce, it is a ſolitary ſpecies, and ſubſiſts on the kernels of almonds and other ſeeds, which it eaſily breaks with its ſtrong ſerrated beak. It frequents woods, and is called " Guifso batito dimmo-won jerck."

I and J.

JACKSON, l. 2, containing, together with its town Jefferſon, 10,569 inhabitants, the ſlaves in the county being 1789, and in the town 27; l. 3, *r.* Weſt Tenneſſee, adding—containing 5401 inhabitants, of whom 481 were ſlaves in 1810.

JACKSONSBOROUGH, l. 2, after Carolina, add—in Scriven county. At the cloſe, add—containing 2663 inhabitants, of whom 2000 were ſlaves in 1810.

JAFFRAY, l. 4, *r.* 1336.

JAGHIRE, l. 7, after hereditary, add—There are two ſpecies of jaghire; one perſonal, for the uſe of the grantee; and the other, in truſt, for ſome public ſervice, commonly for the maintenance of troops.

JAINA, l. *penult.* *r.* Myſore. Col. 2, l. 32, after Jainas, add—ſome ſay that; l. 34, after diſtinctions, add—others, however, aſſert, that they have the ſame fourfold diviſion into claſſes or caſts.

JAMAICA, in America, l. 8, after inhabitants, add—Alſo, a town of Windham county, in Vermont, having 996 perſons.

JAMBAVANTA, l. 1, for Sni *r.* Sri; l. 5, for anatara *r.* avatara.

JAMES II. col. 3, l. 16, *r.* 5th.

JAMES *City*, l. 3, *r.* 4094 inhabitants, of whom 2320 were ſlaves in 1810.

JAMES, *St.* l. 5, after Cheſter, add—Alſo, a pariſh in the county of Acadia, in the territory of Orleans, containing 3935 inhabitants.

JAMESTOWN. Add—Alſo, a town of Newport county, in Rhode iſland, containing 504 perſons.

JAVA, l. 24, after one, add—(See BANTAM.) At the cloſe, add—See Raffles's Java.

JAY, l. 1, for Kennebeck *r.* Oxford; l. 7, *r.* 1107. Add—Alſo, a town of Orleans county, in Vermont, containing 28 inhabitants.

JAYADEVA, l. 5 from the bottom, for practical *r.* poetical.

JAYADEVI, l. 4, for Kari *r.* Kaſi; l. 7, for Sina *r.* Siva.

ICE, col. 4, l. 43, add—clouds and frequent changes of wind being certain preventives of its formation; l. 44, Dr. Wells, in his Eſſay on Dew, &c. has given an account of the proceſs deſcribed by Mr. Williams, which, from its extent, 300 perſons being employed in it, muſt have been carried on for profit, and of courſe would be conducted in the moſt economical manner. " A piece of ground, nearly level, containing about four acres, was divided into ſquare plats, from four to five feet wide, which were ſurrounded by little mounds of earth, four inches high. In theſe incloſures, previouſly filled with dry ſtraw, or ſugar-cane haum, were placed as many broad, ſhallow, unglazed earthen pans, containing unboiled pump water, as they could hold. The air was generally very ſtill, when much ice was formed; wind prevented its formation altogether. In the morning, between five and ſix o'clock, at which time alone, Mr. Williams made his obſervations, a thermometer, with its bulb naked, placed on the ſtraw, amidſt the freezing veſſels, was never found by him lower than 35°; and he has obſerved ice, when a thermometer ſo placed was 42°. Another thermometer, ſuſpended five feet and a half above the ground, was commonly 4° higher than that among the pans. It is poſſible, therefore, that Mr. Williams may have ſeen ice, a little before ſun-riſe, when the temperature of the air was 46°. But granting this were the fact, it would not hence follow, that the ice was formed, while the air poſſeſſed that heat. For, although the air is generally held to be in all countries colder about ſun-riſe than at any other time, I know, from my own obſervations, that this is not always the caſe in England; and ſimilar exceptions may occur in Bengal."

The formation of ice in the circumſtances above ſpecified is aſcribed by ſir R. Barker wholly, and by Mr. Williams in great meaſure, to cold produced by evaporation: and this opinion has been adopted by biſhop Watſon, Thompſon, Young, Davy, and Leſlie. Dr. Wells, however, is of opinion, that they have not fully conſidered the ſubject, alleging ſeveral reaſons againſt it. He conceives, agreeably to his ſentiments reſpecting the formation of dew (ſee DEW), that the formation of ice in Bengal depends upon the radiation of heat to the heavens. This cauſe, he ſays, not only exiſts, but exiſts in a degree ſufficient for the production of the effect which he attributes to it. To this purpoſe he obſerves, that according to Mr. Leſlie (on Heat, p. 80.) the power of water to radiate heat exceeds, perhaps, that of all other ſubſtances. Ice, he adds, is chiefly formed in Bengal during the cleareſt and calmeſt nights; and on ſuch nights the greateſt cold, from radiation, is perceived on the ſurface of the earth. Moreover, the cold that produces this effect in Bengal appears, in its greateſt degree, like cold from radiation in other ſubſtances, on thoſe ſtill and ſerene nights, during which little dew is depoſited by the atmoſphere. He further adds, that clouds and wind prevent the formation of ice in Bengal; and that the ſame ſtates of the atmoſphere either prevent, or conſiderably diminiſh, the occurrence of cold from the radiation of heat at night by bodies on the ground. From experiments, in procuring ice in the manner of Barker and Williams, Dr. Wells found reaſon for inferring, that water may freeze at night, in air of a temperature higher than 32°, not only without any loſs of weight from evaporation, but with a gain of weight from an oppoſite proceſs: and he concludes in general, that the formation of ice in Bengal, in the circumſtances deſcribed by Barker and Williams, muſt be attributed, in by far the greater meaſure, if not altogether, to a loſs of heat, which the water ſuffers by its own radiation, while ſituated in ſuch a manner, that it can receive little heat from other bodies, either by radiation or conduction. Our author, in the courſe of his experiments, found, that evaporation from water of 32° produces very little cold, even in the day-time: and he thinks it much more probable, that on a clear and calm night, though in a dry winter of Bengal, water at the temperature of 32° will acquire warmth from the formation of dew upon it, than that it will become cold from evaporation.

ICHNEUMON. Add—The characters are, mouth with jaws, without tongue; antennæ with more than thirty joints; abdomen in moſt ſpecies foot-ſtalked; piercer exſerted, with a cylindric-bivalve ſheath. The animals of this genus depoſit their eggs in the bodies of other living inſects, and generally in thoſe of caterpillars. Here they hatch, and the young larvæ, reſembling ſmall white maggots, nouriſh themſelves with the juices of the unfortunate animal, and at length the young brood of ichneumon larvæ creep out by perforating the ſkin in various places, and each ſpinning itſelf up in a ſmall oval ſilken caſe, changes into chryſalis, the whole number forming a group on the ſhrivelled body of the caterpillar which had afforded them nouriſhment, and, after a certain period, emerge in the ſtate of complete ichneumons. The principal ſpecies are, glomeratus, puperum, ovulorum, ramidulus, luteus. See Vespa, and Wasp.

ICHNOCARPUS, in *Botany*, Ait. Hort. Kew. v. 2. 69. See Ischnocarpus.

ICTUS Solaris, *A Stroke of the Sun*, denotes the effect of a too violent influence of the ſun upon the head. It is ranked by Dr. Cullen as a variety of apoplexy, under the name of "Carus ab inſolatione."

IDA. Add—The ſummit of Ida is denominated Gargarus; and it affords a level ſurface, of no great extent, but of an oblong form, with a rudely-built wall around it, in which are ſmall blocks of marble. This incloſure, it is conjectured, may have been a Greek church, or perhaps only a ſheep-pen, united for the protection of the flocks in the ſummer months.

IDOCRASE. See Vesuvian.

IDOLATRY, col. 5, l. 15 from the bottom, for even *r.* ever.

JEDBURGH. In 1811, the burgh and pariſh contained 669 houſes, and 4454 perſons; *viz.* 1957 males, and 2497 females: 399 families being employed in agriculture, and 405 in trade and manufactures.

JEFFERSON. (See Jackson.)—Alſo, a county of the Miſſiſſippi, containing 4001 inhabitants, of whom 1792 were ſlaves in 1810.—Alſo, a townſhip of Clarke county, in the Indiana territory.

Jefferson, in Kentucky, l. 3, *r.* 11,611; l. 4, *r.* 3746; l. 7,—It contains, together with Louiſville, 6111 inhabitants, the ſlaves in the county being 2080, and in the town 256; l. 9, *r.* 7309 inhabitants, of whom 783 are ſlaves; l. 14, *r.* 197; *r.* 11 towns with 17,260 inhabitants, of whom 6001 are ſlaves; l. 14, after Steubenville, add—Alſo, a town of Adams' county, in Ohio, having 494 inhabitants.—Alſo, a town of Fayette county, in Ohio, having 327 perſons.—Alſo, a townſhip of Madiſon county, in Ohio, having 246 inhabitants.—Alſo, a townſhip of Montgomery county, in Ohio, having 1343 inhabitants.—Alſo, a townſhip of Muſkingum county, in Ohio, having 962 perſons.—Alſo, a townſhip of Prebble county, in Ohio, having 385 inhabitants.—Alſo, a townſhip of Roſs county, in Ohio, having 1456 inhabitants.—Alſo, a townſhip of Scioto county, in Ohio, with 258 perſons.—Alſo, a townſhip of Geauga county, in Ohio, containing 168 inhabitants.—Alſo, a town in Maine, in Lincoln county, having 1205 inhabitants:—l. 16—Alſo, a county of Virginia, containing 11,581 inhabitants, including 3532 ſlaves; l. 17, for Grafton *r.* Coos, New Hampſhire; do. *r.* 197; l. 19, after Scottville, add—Alſo, a county, containing 161 inhabitants.—Alſo, a townſhip of Greene county, in Pennſylvania, having 1124 inhabitants.—Alſo, a county of New York, containing 15,140 inhabitants.

JERICO, l. 4, *r.* 1185.

JERSEY, New, after the table, add—By the cenſus of 1810, the whole number of its inhabitants is ſtated to be 245,562, and that of ſlaves 10,851. See each county, and United States.

JESSAMINE, l. 2, *r.* 8219 and 2466.

JET. See Mineralogy, *Addenda.*

JEWS, col. 16, l. 9 from the bottom, *r.* 110,000.

JINJAL, denotes a large muſket, fixed on a trivet, uſed in Indian forts, and fired with great preciſion.

ILCHESTER, l. 4 from the bottom, *r.* 1811—83—610.

ILEUM. See Intestine.

ILFRACOMBE, l. *ult. r.* 434 and 1934.

ILLINOIS. Add—The Illinois territory, now one of the United States, contains two counties, *viz.* St. Clair and Randolph: the former comprehending nine townſhips, and the latter four; and the number of inhabitants in the whole territory is ſtated, by the cenſus of 1810, to be 12,282 perſons, of whom 168 were ſlaves. See United States.

ILLORI, a town of Mingrelia, on the left bank of the Enguri, ſurrounded by a wall.

ILMINSTER. By the return in 1811, the pariſh contained 364 houſes, and 2160 perſons; *viz.* 1022 males, and 1138 females: 121 families being employed in agriculture, and 231 in trade, manufactures, and handicraft.

ILSLEY, l. 2, and Eaſt and Weſt Ilſley were returned to parliament, in 1811, as containing 179 houſes, and 996 perſons.

IMIRETTA, l. 8, after W. add—between the 43d and 44th degrees of N. lat.

IMPEDIMENTS, in *Elocution.* See Larynx, and the references under that article

IMPERATA, in *Botany*, ſo called after Ferrante Imperato,

perato, a Neapolitan botaniſt of the 16th century. See SACCHARUM, n. 15.

VOL. XIX.

INCUBATION, *dele* the account of the figures.

INDEPENDENCE, in *Geography*, a town of Suſſex county, in New Jerſey, containing 1224 inhabitants.

INDIANA. After the table, add—According to the cenſus of 1810, Indiana is divided into five counties, *viz.* Dearborn, having 7310 inhabitants; Clark, with 5670; Harriſon in two diviſions, having in one 2338, and in the other 1257 inhabitants; and Knox in two cantons, one having 4097, and the other 3848. See UNITED STATES.

INDIANA, in Pennſylvania. Add—Indiana contains nine townſhips, and 6214 inhabitants.—Alſo, a townſhip of Alleghany county, in Pennſylvania, containing 692 inhabitants.

INDICATOR, *Honey-guide*, in *Ornithology*, a peculiar genus formed of the CUCULUS *Indicator;* the characters of which are, beak ſtrong, conic, dilated at the baſe, narrow towards the tip, the upper mandible bent and carinated, the lower one recurved at the tip; noſtrils ſlightly covered with feathers, feet ſimple, with two toes before and two behind. The external hinder toe longeſt, armed with a ſtout claw. See CUCULUS, and for Dr. Sparrman's account of it, Phil. Tranſ. vol. lxvii. p. 38.

INDIGO, *Chemical Properties of.* The indigo of commerce is exceedingly impure, and ſeldom contains more than half its weight of real indigo. Thus, Bergmann could only obtain 47 *per cent.* of real indigo from the pureſt ſpecimen he could procure; and more lately Chevreul from the beſt guatimala could only obtain 45 *per cent.* The following analyſis of Chevreul will give ſome idea of the ſubſtances with which the indigo of commerce is adulterated.

Subſtances ſeparated by water	Ammonia	
	Diſoxygeniſed indigo	12
	Green matter	
	Bitter matter	
———— alcohol	Green matter	30
	Red matter	
	Indigo	
———— muriatic acid	Red matter	6
	Carbonate of lime	2
	Oxyd of iron and alumina	2
	Silica	3
	Pure indigo	45
		100

The principal properties of indigo have been already detailed. The effects of nitric acid upon indigo, however, as aſcertained by Mr. Hatchett, have been omitted, and are ſo intereſting that they deſerve to be mentioned.

Nitric acid acts on indigo with great violence, ſo as even to ſet fire to it when concentrated, as was long ago obſerved by Woulfe. When the acid is dilute, the action is leſs violent. Mr. Hatchett, however, found, that when diluted with an equal quantity of water, the action of the acid was ſtill ſo violent as to require further dilution. When the efferveſcence had nearly ſubſided, the liquid was placed on a ſand-bath for ſome days, and evaporated to dryneſs. Water poured upon this reſiduum diſſolved a conſiderable portion of it, and formed a beautiful deep yellow ſolution of an intenſe bitter taſte. This ſolution contains only a very ſmall portion of oxalic acid; but with a ſolution of iſinglaſs it forms a copious yellow inſoluble precipitate, and hence contains a portion of artificial tannin; with ammonia, cryſtals precipitate, conſiſting of *bitter principle* combined with ammonia.

When four parts of nitric acid are poured upon one part of indigo, the pigment ſoon loſes its colour, and is diſſolved. The ſolution becomes yellow, and a thin layer of a reſinous-like ſubſtance appears on the ſurface. This ſubſtance becomes ſolid on cooling if the proceſs be now ſtopped. If it be removed, and the ſolution be evaporated to the conſiſtence of honey, rediſſolved in hot water and filtered, potaſh throws down yellow ſpicular cryſtals, conſiſting of *bitter principle* combined with potaſh. Theſe cryſtals have the property of detonating with a purple light when wrapped up in a paper, and ſtruck with a hammer; the reſin by treating it with nitric acid may be converted into the ſame bitter principle. If the proceſs be ſtopped ſooner than the point above-mentioned yellow cryſtals are obtained, which on ſublimation become white, and appear to poſſeſs the properties of benzoic acid. Thus it appears, that by treating indigo with nitric acid, it is converted into tannin, oxalic acid, benzoic acid, and *bitter principles*.

INDRA, col. 2, l. 32 and 33, read thus, without a break, and omitting INDRA *Malwa*,—Malwa, the hereditary poſſeſſion, &c.

INDUSTRY, in *Geography*, a townſhip of America, in Maine, county of Somerſet, having 562 inhabitants.

INFLAMMATION *of the Breaſt.* See BREAST, *Inflammation of*, in the *Addenda*.

INGA, in *Botany*, an American name, recorded by Marcgraave, and adopted by Plumier. It was ſunk in *Mimoſa* by Linnæus; but Humboldt and Bonpland having ſeparated from thence the original genus of Plumier, have retained the appellation he had choſen, and they are followed by Willdenow, as well as by Brown and Aiton in *Hort. Kew.* If any barbarous name be tolerated, and they can hardly be all expunged, the preſent is unexceptionable. —Plum. Gen. 13. t. 19. Willd. Sp. Pl. v. 4. 1004. Ait. Hort. Kew. v. 5. 451.—Claſs and order, *Polygamia Monoecia;* rather *Monadelphia Polyandria.* Nat. Ord. *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-toothed. Corolla tubular, five-toothed. Stamens united into a cylindrical tube. Legume of one cell. Seeds imbedded in pulpy tunics. Some flowers without a piſtil.

Obſ. If *Mimoſa* be divided at all, the preſent numerous genus may commodiouſly be ſeparated from it, though the *infloreſcence*, and ſtructure of the *flowers*, come, in many inſtances, very cloſe to ACACIA; ſee that article, as well as MIMOSA and DESMANTHUS. From the laſt, *Inga* is truly diſtinct, in having monadelphous indefinitely numerous *ſtamens*, no neuter, though many male, *flowers*, and in every inſtance a very different *fruit*. The greater ſize of the *leaflets* is characteriſtic of *Inga*, and they are, for the moſt part, differently compounded from thoſe of the other genera. Willdenow enumerates fifty-eight ſpecies, ſome of them truly ſuperb in their *flowers*. We ſhall give examples of this writer's ſix ſections. The *leaves* of this whole genus are compound; none of them ſenſitive.

Sect. 1. *Leaves twice yoked.* Eleven ſpecies.

I. *dulcis.* Sweet Inga, or Sappan Fruit. Willd. n. 3. Ait. n. 1. (Mimoſa dulcis; Roxb. Corom. v. 1. 67. t. 99.) —Thorns ſtipulary, ſtraight. Leaflets elliptic-oblong, ſomewhat pointed. Footſtalks with three glands. Cluſter compound, terminal. Flowers capitate. Legume twiſted. —Native of the Philippine iſlands. Cultivated on the coaſt of Coromandel, for the ſake of its ſweet pulpy red *fruit*, which is ſix inches long, wholeſome, though rather inſipid. *Flowers* ſmall, white.

Sect. 2. *Leaves thrice yoked.* Five ſpecies.

I. *tergemina.* Martinico Inga. Willd. n. 12. (Mimoſa tergemina; Linn. Sp. Pl. 1499. Jacq. Amer. 265. t. 177. f. 81. Acacia fruteſcens, &c.; Plum. Ic. 5. t. 10. f. 1, the Linnæan characters tranſpoſed in the plate.)—Thorns none. Leaflets obovate, obtuſe; glaucous beneath. Tufts of flowers on ſolitary axillary ſtalks. Legume ſtraight.—Native of Martinico. *Leaflets* an inch long, oblique. *Flowers* purpliſh.

Sect. 3. *Leaves pinnate; common ſtalk winged. Thorns none.* Twelve ſpecies.

I. *vera.* Common Inga. Willd. n. 17. Ait. n. 3. (Mimoſa Inga; Linn. Sp. Pl. 1498. Inga flore albo fimbriato, fructu dulci; Plum. Ic. 14. t. 25. Arbor; Merian. Surin. t. 51.)—Leaflets about five pair, ovate-oblong, pointed, ſmooth, with a gland between each pair. Corolla hairy. Legume furrowed, downy.—Native of South America and the Weſt Indies, where the *legumes* are eſteemed for their agreeable ſweetneſs.

I. *faſtuoſa.* Stately Inga. Willd. n. 25. (Mimoſa faſtuoſa; Jacq. Fragm. 15. t. 10.)—Leaflets about four pair, ovate, pointed; hairy beneath; with a ſtalked gland between each pair. Corolla hairy. Legume hairy, compreſſed, twiſted.—Native of the Caraccas. We have from Dr. Mærter a fine dried ſpecimen, ſuch as that from which Jacquin's plate is taken. This is a truly magnificent plant, whoſe copious large tawny *flowers*, with long crimſon *ſtamens*, make a ſplendid appearance. The *leaflets* are from two to five inches long. *Legume* broad, flat, but containing a ſweet pulp, with large oval *ſeeds*.

Sect. 4. *Leaves pinnate; common ſtalk ſimple. Thorns none.* Ten ſpecies.

I. *nodoſa.* Knobbed Inga. Willd. n. 29. Ait. n. 6. (Mimoſa nodoſa; Linn. Sp. Pl. 1498. Phaſeolus arboreus, &c.; Pluk. Phyt. t. 211. f. 5.)—Leaflets two pair, ovate-oblong, ſmooth, unequally divided by the rib; the lower ones ſmalleſt, with a gland between.—Found in Ceylon and Cochinchina. It appears to have been raiſed in the Engliſh and Dutch ſtoves, but not preſerved. The *leaflets* are from one to two inches long, their two ſides very unequal.

Sect. 5. *Leaves conjugate, pinnate.* Nine ſpecies.

I. *purpurea.* Purple Inga, or Soldier-buſh. Willd. n. 42. Ait. n. 8. (Mimoſa purpurea; Linn. Sp. Pl. 1500. Andr. Repoſ. t. 372. Acacia fruteſcens, &c.; Plum. Ic. 6. t. 10. f. 2, the Linnæan character miſapplied.)—Leaflets four pair, obovate, obtuſe; unequal at the baſe. Footſtalks without glands. Heads of flowers ſtalked.—Native of the Weſt Indies. The *leaflets* are half an inch long, ſmooth. *Flowers* copious, very conſpicuous for their long taſſels of crimſon ſtamens.

Sect. 6. *Leaves doubly pinnate.* Eleven ſpecies; ſome thorny.

I. *Saman.* Great Downy-leaved Inga. Willd. n. 49. (Mimoſa Saman; Jacq. Fragm. 15. t. 9.)—Thorns none. Leaves with ſix pair of primary diviſions; leaflets five or ſix pair, elliptic-obovate, obtuſe; terminal ones unequal-ſided; all downy beneath as well as their ſtalks.—Native of the Caraccas. One of the largeſt and ſtouteſt trees of the *Mimoſa* tribe. *Leaves* two feet, or more, in extent, with a depreſſed gland at every ſubdiviſion. *Legume* flat, ſeven or eight inches long.

INGATESTONE, l. 5, *r.* 98 and 640.

INSTITUTE, National, &c. col. 2, after line 6, add—By a royal edict, paſſed the 26th of March, 1816, the firſt claſs reſumes the name of the Royal Academy of Sciences, preſerving the organization and diſtribution in ſections.

INVERARY, col. 2, l. 8 and 7 from bottom, *r.* 103 and 1113.

INVERKEITHING. Add—The burgh and pariſh of Inverkeithing, by the laſt returns in 1811, contained 581 houſes, and 2400 perſons.

INVERNESS, col. 2, l. 7, 8, 9, *r.* The burgh and pariſh was returned, under the act of 1811, as containing 1672 houſes, and 10,757 inhabitants.

INVERNESS-SHIRE, l. 10 and 11, *r.* comprehended, in the year 1811, 78,336 perſons, occupying 14,646 houſes; 35,722 being males, and 42,614 females.

INVERURY. In 1811, the burgh and pariſh contained 205 houſes, and 907 perſons; 453 being males, and 454 females.

INULIN, in *Chemiſtry*, a name given by Dr. Thomſon to a ſubſtance extracted by Roſe, from the *Inula helenium*, or Elecampane. This ſubſtance is extracted by boiling the roots in water, and putting by the decoction to cool, when the inulin is depoſited in the form of a white powder. Inulin reſembles ſtarch in its appearance, and ſome of its properties. It is principally diſtinguiſhed from ſtarch by ſeparating from water after boiling in the form of a white powder. Inulin has been found by Dr. John in the roots of ſeveral other plants.

IOANNA. Add—In 1809, this iſland was viſited by the ſavages of Madagaſcar, called Malagaſcars, who laid ſiege to the principal town, and deſtroyed the crops, and thus reduced the inhabitants to the moſt deplorable ſtate, ſo that nearly 200 women and children periſhed of hunger, and numbers of the latter were actually eaten by their parents, ſo that theſe ſavages have nearly deſolated the Comora iſlands. The once happy and flouriſhing iſland of Ioanna, with its 370 towns and villages, ſo enchantingly deſcribed by ſir William Jones, is now reduced to two walled towns, and a population of 5000 ſouls.

IOANNINA, a city of Albania, the capital of Ali's dominions, ſituated on the weſtern banks of a lake of the ſame name, at about two miles from its eaſtern extremity. In its utmoſt length, it may be, perhaps, about two and a half miles, and in breadth nearly a mile. Near the lake it ſtands on a flat, but the northern and weſtern parts are built on ſlopes of riſing and uneven ground. A triangular peninſula juts into the lake, and contains the reſidence of the pacha, being defended by a fortification at each angle. The entrance into theſe forts is over a draw-bridge. There is one ſtreet which runs nearly the whole length of the town, and another that interſects it at right angles, extending to the fortreſs; theſe are the principal ſtreets. Many of the houſes are large and well built, containing a court-yard, and having warehouſes or ſtables on the ground, and the apartments of the family above. A flight of wooden ſteps and a gallery connect the under and upper parts of the houſes. Although gloomy in appearance, with ſmall windows latticed with croſs bars of wood, the yard is furniſhed with orange and lemon trees; and the beſt houſes communicate with a garden, and the galleries are ſufficiently ſpacious to allow ſcope for walking in rainy weather. The bazaar, or principal ſtreet, inhabited by tradeſmen, has a ſhowy appearance; the bizeſteen, or covered bazaar, is of conſiderable uſe, and would put one in mind of Exeter Change in London. Beſide the palace of the pacha, and two houſes allotted to the ſons of Ali, there is another ſummer reſidence of the vizier's in the ſuburbs, at the N.W. end of the town. Beyond the pavilion, there are gardens belonging to the principal inhabitants of Ioannina, moſt of whom have ſummer-houſes. The population is variouſly ſtated: ſome compute the number of houſes at 8000, and others eſtimate the number of inhabitants at no more than 35,000. From the commercial tranſactions of this city, the vizier draws a revenue of 250,000 piaſtres. Hobhouſe's Journey through Albania, &c.

IODATES, Iodic *Acid*, Iodide, in *Chemiſtry*. See Simple *Bodies*.

IODINE. This newly diſcovered elementary ſubſtance has been correctly deſcribed under Simple *Bodies*, to which, therefore, we refer our readers.

JOHN *of Gaunt*, l. 2, for third *r.* fourth.

JOHN BAPTISTE, in *Geography*, a pariſh of German Coaſt county, in the territory of Orleans, containing 2990 inhabitants.

JOHNSBURY, St., l. 3, *r.* 1330.

JOHNSON, l. 2, *r.* 4867; l. 3, *r.* 2330. Add—Alſo, a town of Franklin county, in Vermont, having 494 inhabitants.

JOHNSTON, l. 3, *r.* 1516. *Dele* the laſt paragraph, and inſert—See Johnson.

IOLITE. See Mineralogy, *Addenda*.

JONES, l. 3, *r.* 4968 inhabitants, of whom 2375 were ſlaves in 1810.—Alſo, a county of Georgia, which, with its town Clinton, contains 8597 inhabitants; the number of ſlaves belonging to the county being 2574, and to the town 63, in 1810.

JONESBOROUGH. Add—a townſhip of Waſhington county, in Maine, having 553 inhabitants.

JOSEF, St., l. 16, *r.* Tucuman.

IPECACUANHA, l. 33, add—The plant is now known to be the Callicocca.

Ipecacuanha, *Chemical Properties of*. See Emetin.

IPSWICH, l. 6.—In the year 1811, by the parliamentary returns, it contained 2732 houſes, and 13,670 perſons.

IRA, a town of Rutland county, in Vermont, having 519 inhabitants.

IRAC, l. 17, after wine, add—This province is divided into five great diſtricts, and each of theſe into hallooks, or leſſer diſtricts. The five diſtricts are, Iſpahan, Tehraun, Naen, Mullagar, and Kermanſhaw. See each. At the cloſe, add—See Yezd, Kom, Tehraun, &c.

IRAVAT, l. 15, for *thunder, bearer* r. *thunder-bearer*.

IREBY. In 1811, the pariſh, comprehending High and Low Ireby, contained in the former townſhip 26 houſes, and 130 perſons, *viz.* 62 males, and 68 females; and in the latter, 41 houſes, and 269 perſons, *viz.* 137 males, and 132 females.

IRIDIUM. See Mineralogy, *Addenda*.

IRITIS, or *Inflammation of the Iris*. Profeſſor Schmidt, of Vienna, firſt accurately diſcriminated this diſeaſe from other kinds of ophthalmia, and applied to it the foregoing name. The iris often becomes inflamed in conſequence of artificial or accidental wounds of the eye-ball. Conſtitutional ſyphilis frequently affects the eye, producing a peculiar and characteriſtic iritis. The iris is the texture, which is the ſeat of inflammation in the diſtinct kind of ophthalmia ſo frequently met with in gouty conſtitutions. In the rheumatic ophthalmia, the inflammation, though never originating in the iris, frequently extends to it. And, laſtly, an inflammation of this membrane ſometimes accompanies cutaneous eruptions; particularly thoſe which, though not ſyphilitic, have ſucceeded ſores of the genitals, and are generally ſuppoſed to be connected with the abuſe of mercury.

1. In common inflammation of the iris, or *idiopathic iritis*, beſides the common ſymptoms of ophthalmia, there are changes which occur at the very commencement that indicate the ſeat of the inflammation. The pupil is contracted, the motions of the iris are leſs free, and the pupillary opening loſes the bright black colour which it naturally poſſeſſes. The colour of the iris is next obſerved to alter; this happens firſt in the leſſer circle, which gets of a darker hue; and afterwards in the greater, which grows green if it has been greyiſh or blue, and reddiſh if it has been brown or black. The iris afterwards ſwells and projects towards the cornea; and the margin of the pupil loſes its ſharply defined edge, and is turned back towards the poſterior chamber. The redneſs accompanying theſe changes is by no means conſiderable, and is at firſt confined to the ſclerotic coat, in which a number of very minute roſe-coloured veſſels are ſeen running in ſtraight lines towards the cornea. The pupil, at the ſame time, loſes its circular form, becomes ſomewhat irregular, and preſents a greyiſh appearance. Examined with a magnifying glaſs, this appearance is ſeen to be produced by a ſubſtance very like a cobweb, occupying the pupil, and which is ſoon afterwards diſtinguiſhed to conſiſt of a delicate flake of coagulable lymph. Into this, the proceſſes or dentations of the margin of the pupil ſeem to ſhoot, and it is afterwards found, that at theſe points adheſions are apt to be eſtabliſhed, in conſequence of which viſion is rendered more indiſtinct, and only one ſide or parts of objects can be diſcerned.

The effuſion of lymph into the pupil continues to increaſe; it is likewiſe poured into the poſterior chamber, and adheſions between the iris and capſule of the lens are formed. The quantity of lymph effuſed is ſometimes ſo great, as to fall in a curdled form from the pupil to the lower part of the anterior chamber. The pupil, the ſize of which is conſiderably diminiſhed, now derives a greyiſh-white colour from that of the lymph by which it is filled; the morbid ſenſibility to light, which prevailed at the commencement of the inflammation, is diminiſhed; the powers of viſion become gradually more and more limited; and, at length, merely the perception of light remains.

By this time, the redneſs of the eye has increaſed, and partly ariſes from veſſels which are now developed in the conjunctiva. The redneſs is deepeſt all around the cornea; towards the periphery of the eye-ball it fades. The cornea loſes ſomewhat of its peculiar brilliancy; and lymph now appears to be effuſed into the ſubſtance of the iris; for, while it projects more and more towards the cornea, its fibres are collected into bundles, and its ſurface exhibits a puckered or plaited appearance. A yellowiſh-red tubercle then forms on ſome part of its ſurface; it is at firſt ſmall, but enlarges and projects forwards, and, according to Schmidt, is diſtinctly ſeen to be an abſceſs, which finally burſts, and diſcharges its contents into the anterior chamber. At this period of the diſeaſe, a ſmall quantity of blood is ſometimes extravaſated into the anterior chamber. The inflammatory ſymptoms now abate, and, as the diſeaſe ſubſides, both the pus and blood in the anterior chamber are abſorbed. The ſhreds of the cyſt of the abſceſs, which were floating in the aqueous humour, in a few days diſappear. The anterior chamber regains its tranſparency; the iris remains permanently expanded; its puckered appearance continues, the pupil is cloſed, and the power of viſion is entirely loſt. When the termination is ſomewhat more favourable, the pupil is not entirely cloſed, and the iris retains ſome degree of motion. The piece of coagulable lymph which occupies the pupil is reduced to the ſtate of a thin membrane, which is opaque towards its centre, but ſomewhat tranſparent at the edges; the margin of the iris is only adherent at ſome points to this membrane; and viſion is impaired, but not deſtroyed.

Sometimes the inflammation of the iris extends to other textures of the eye. When the cornea is attacked, it becomes cloudy and thickened; and the iris projecting, the two inflamed textures come into contact, and adhere before any viſible effuſion of lymph takes place. Should the inflammation ſpread more deeply, and attack the membranes of the lens, and of the vitreous humour, the choroid coat, &c. then the violent ſymptoms of deep-ſeated inflammation of the eye take place. Even if the form of the organ is preſerved, viſion is totally deſtroyed; but often the eye ſuppurates, burſts, and almoſt entirely diſappears.

In the *Syphilitic Iritis*, a pale redneſs all round the cornea is the firſt ſymptom which is perceived. It is at firſt ſeated in the ſclerotic coat alone; but the conjunctiva very ſoon ſhares in it, and afterwards becomes even redder than the preceding membrane. However few the veſſels may be elſewhere, there is always a broad zone of them all round the cornea, a zone formed at this place, not only by the vaſcular net-work in the conjunctiva, but by the ciliary veſſels on the external ſurface of the ſclerotica. The redneſs has a peculiar tint; for inſtead of being bright red, it is browniſh, ſomething like the colour of cinnamon. The whole cornea becomes uniformly hazy. The pupil alſo becomes contracted, and the iris limited in its motions, as in common iritis; but the pupil does not preſerve its natural ſituation. It is removed in a direction upwards and inwards towards the root of the noſe, and is irregular. At the ſame time, the iris loſes its natural colour, and projects forwards.

Towards evening, there is always an aggravation of the ſymptoms; the intolerance of light and painful ſenſibility of the whole eye increaſing, and a guſh of tears following every change of light and temperature. At length, a regular nightly pain ſets in, of an extremely ſevere kind, but ſtrictly limited to that part of the cranium which is immediately above the eye-brow. It uſually begins between ſix and ſeven in the evening, gradually increaſes, reaches its utmoſt height about midnight, and then diminiſhes till about four or five in the morning, when it ceaſes. After every ſuch attack of pain, the pupil is found more contracted, drawn farther upwards and inwards, the iris more altered both in colour and form, the quantity of lymph increaſed, and conſequently viſion more impeded.

Peculiar appearances then take place in the iris; for, either on its pupillary or ciliary margin, or on both, one or more reddiſh-brown tubercles ariſe, which have a ſpongy look. Their growth is pretty rapid. Lardy-looking ulcers ſometimes appear on the cornea and white of the eye, or on the eye-lids. Even when ſyphilitic iritis terminates in the moſt favourable manner, the eye for a long time afterwards is peculiarly ſenſible to the influence of cold and moiſture. On every expoſure to theſe, the organ becomes morbidly ſenſible to light, of a reddiſh colour, and diſcharges tears. Indeed, frequently for more than a year afterwards, on every ſudden change of temperature, a pale violet-coloured zone appears around the cornea, but goes off when the eye has remained for ſome time expoſed to an equal temperature.

In the iritis which appears in conjunction with the eruptions ſuppoſed to be connected with the abuſe of mercury, the inflammation ſeems leſs active than in the other kinds. The pupil is not much contracted, and lymph is leſs apt to be effuſed. A veſicle full of yellow matter ſometimes riſes on the iris, without any other alteration on this membrane than that of colour, the pupil remaining almoſt unchanged. By the uſe of proper remedies, this veſicle, even when it ſeems quite ready to burſt, can generally be made to diſappear in a few days, without any rupture taking place. The blood-veſſels of the conjunctiva are large and diſtended, without being varicoſe; they have a more livid colour than in the iritis of arthritic perſons, and run quite to the edge of the cornea.

The treatment of iritis is conducted on the ſame principles as that of inflammation in general, with one difference, which is deduced from the important fact ſo well explained by Dr. Farre and Mr. Travers, *viz.* that in iritis, the free exhibition of mercury is the moſt effectual means of preventing the effuſion of coagulating lymph, and promoting its abſorption after it has taken place, from which effuſion the thickening and adheſions of the iris, the formation of opacities in the pupil, and other miſchievous and deſtructive effects upon viſion, are principally derived. According to Mr. Travers, indeed, whatever may be the cauſe of iritis, mercury is the grand remedy for reſiſting the progreſs and conſequences of the effuſion of lymph in the eye. According to profeſſor Schmidt, of Vienna, general bleeding is neceſſary only where there is a great degree of ſymptomatic inflammatory fever. Hence, it is principally in the idiopathic iritis that large bleedings from the arm are requiſite. In the ſyphilitic ſpecies, he ſays, it is never neceſſary to open a vein. In the arthritic, it is ſometimes attended with benefit; but in patients of this deſcription, a ſmall bleeding, repeated next day if neceſſary, is found to anſwer much better than a large bleeding at once, even though the conſtitutional diſturbance be conſiderable. In the *rheumatic iritis*, it is alſo ſometimes highly beneficial to bleed from the arm. Local bleeding, by means of leeches to the forehead, produces the moſt decided benefit in all the varieties of iritis.

Purgatives, given ſo as to act copiouſly, profeſſor Schmidt deſcribes as being uſeful only in the idiopathic iritis; and as for cold local application, he tells us that they are in all caſes quite uſeleſs.

In the idiopathic iritis, he recommends us to take ſixteen or twenty ounces of blood from the arm; and to repeat the bleeding if circumſtances ſhould require it. Six or eight leeches are to be applied to the eye-brow or temple. A ſmart purgative ſhould then be given. The application of leeches, but in ſmaller number, ſhould be continued every day, or every other day, until an abatement of the inflammation has evidently taken place. In the firſt ſtage of the proceſs, bliſters to the temple, or behind the ears, have little or no effect; though ſometimes a large one on the nape of the neck ſeems to be of ſervice. According to Schmidt, the only topical treatment which is admiſſible is the fomentation of the eye with water made as hot as the patient can bear it, which ſometimes procures a mitigation of the violence of the pain. Care, however, muſt be taken to dry the eye-lids and circumference of the orbit well after uſing this application.

When the diſeaſe paſſes into its ſecond ſtage, or that in which the effuſion of coagulating lymph commences, mercury is to be given with the views already mentioned. Two grains of the ſubmuriate of mercury, and half a grain of opium, made into a pill, are to be given every evening and morning; or common mercurial frictions may be employed. Externally, profeſſor Beer applies a ſolution of the oxymuriate of mercury in water, to which mucilage and a conſiderable quantity of the vinum opii have been added. When this collyrium loſes its effect, or the eye cannot bear any fluid application, which is ſometimes the caſe, then he inſerts daily between the eye-lids a ſmall quantity of a ſalve compoſed of two drachms of freſh butter, ſix grains of red precipitate, and eight grains of extract of opium. According to the ſame eminent oculiſt, frictions once a day over the eye-brow with mercurial ointment, opium being added to it, very much contribute to the abſorption of the lymph effuſed in the poſterior chamber.

It is ſeldom neceſſary to continue many days the exhibition of mercury; for ſuch is the efficacy of this mineral in producing a removal of the lymph, and clearing away all opacities about the pupil, that in leſs than eight or ten days theſe objects are generally effected, and the medicine then may be omitted.

The form of iritis, uſually named *ſyphilitic*, is unqueſtionably one of thoſe diſeaſes which does not require more mercury for its cure than the common idiopathic iritis; and although it was ſuppoſed by profeſſor Schmidt that it could not be radically cured without removing the conſtitutional diſeaſe, modern experience fully proves, that it may often be entirely and permanently relieved by freely exhibiting mercury for only a few days. This is another fact tending to confirm the opinions which have recently been examined and promulgated with ſo much ability by ſeveral of our army ſurgeons, in relation to the curability of all the forms of ſyphilis without mercury. For, even in the ſyphilitic iritis, we are not to imagine that the complaint is ſtopped and cured by a few grains of calomel, on the principle of eradicating a ſpecific diſeaſe: the thing is more rationally explained by the peculiar efficacy of the medicine in producing an abſorption of the lymph, which thickens the iris, obſtructs the pupil, and even ſerves for the formation of preternatural adheſions, and new opaque membranes deſtructive of viſion. Beſides the uſe of mercury, however, other means are adviſable. When there is ſevere pain in the eye with violent head-ache, three or four leeches ſhould be applied on the eye-brow, and a mild purgative adminiſtered. The nightly attacks of pain, which are ſo invariably followed by an aggravation of all the ſymptoms, are moſt effectually prevented by rubbing into the part juſt over the eye-brow a ſmall quantity of mercurial ointment with opium, a ſhort time before the pain is expected to begin, and then covering the eye with a folded piece of warm linen. Generally ſpeaking, calomel given in ſmall doſes two or three times a day, is the beſt preparation of mercury for internal exhibition.

The *iritis* which accompanies cutaneous eruptions was thought by Schmidt to be the moſt eaſy of cure; local bleedings are ſaid to be in this caſe ſtrikingly beneficial. According to ſome writers, when the eruptions have ariſen from the previous abuſe of mercury, calomel has not the leaſt effect on the accompanying iritis. But at the London Infirmary for diſeaſes of the eye, this form of the diſeaſe, though originally it may have been cauſed by the effects of a mercurial courſe, is ſaid to be benefited as much as the other varieties of iritis by the exhibition of mercury; a circumſtance which no mode of reaſoning would ever have led us to anticipate. If, however, it be an unequivocal fact, the voice of experience muſt direct us in practice, and we muſt be ſilent on things which we cannot explain.

The beſt account of iritis is contained in profeſſor Schmidt's valuable work, entitled "Ueber Nachſtaar und Iritis nach Staar-Operationen," 4to. Wien. 1801. Additional information is alſo publiſhed in Beer's "Lehre von den Augenkrankheiten," b. i. p. 450. Wien. 1813. Saunders on Diſeaſes of the Eye, edit. 3. by Dr. Farre; B. Travers, in "Surgical Eſſays," part i. Carmichael in "Obſervations on the Symptoms and Specific Diſtinctions of Venereal Diſeaſes," 8vo. 1818. The Quarterly Journal of Foreign Medicine, N° 1. contains a well-written analyſis of profeſſor Schmidt's work on Iritis; and at the ſame time that we acknowledge our obligations to that periodical publication for every thing which is valuable in this article, we cannot refrain from expreſſing our beſt wiſhes for the ſucceſs of a journal, the principal object of which is to make us acquainted with the contents of all the beſt modern books which appear on the ſubject of medical ſcience in different parts of the continent.

IRON, in *Chemiſtry*. According to the recent determination of Dr. Thomſon, the black or protoxyd of iron is a compound of

Iron - - -	100.
Oxygen - -	28.5

Hence the weight of the atom of iron will be 35. The red or peroxyd of iron, according to the ſame chemiſt, is a compound of

Iron - - -	100.
Oxygen - -	42.955

Or it is compoſed of 1 atom iron + 1½ atoms oxygen, or, to get rid of fractions, of 2 atoms iron + 3 atoms oxygen, on which latter ſuppoſition the weight of an atom of peroxyd will be 100.

IRON-CLAY. See MINERALOGY, *Addenda*.

IRON-FLINT. See MINERALOGY, *Addenda*.

IRON, *Meteoric*. See MINERALOGY, *Addenda*.

IRON-SAND. See MINERALOGY, *Addenda*.

IRON-STONE, *Iron-Ore*. See IRON-STONE, and MINERALOGY, *Addenda*.

IRON-STONE, *Magnetic*. See MINERALOGY, *Addenda*.

IRVINE, col. 2, l. 12, *r*. In 1811, the burgh and pariſh contained 694 houſes, and 5750 inhabitants.

IRWIN, a townſhip of Venango county, in Pennſylvania, having 357 inhabitants.

ISAURIA, l. 1, for town *r*. country.

ISCHNOCARPUS, in *Botany*, from ισχνος, *ſlender*, and καρπος, *fruit*.—Brown Tr. of Wern. Soc. v. 1. 61. Ait. Hort. Kew. v. 2. 69.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. Br.

Eſſ. Ch. Follicles two, thread-ſhaped, divaricated. Seeds hairy at the top. Corolla ſalver-ſhaped; throat naked. Anthers not attached to the ſtigma.

1. I. *fruteſcens*. Ait. n. 1. (APOCYNUM *fruteſcens*, ſee that article, n. 7. Burm. Zeyl. t. 12. f. 1.)—The only ſpecies.

ISLE OF WIGHT. At the end, add—By the parliamentary returns in 1811, the Iſle of Wight contained 4323 houſes, and 24,120 perſons; 11,955 being males, and 12,165 females.

ISLE *of Wight*, in America, l. 3, *r*. containing 9186 inhabitants, of whom 4041 were ſlaves in 1810.

ISLEBOROUGH, l. 5, *r*. 583.

ISLEWORTH, l. 20, add—By the parliamentary returns in 1811, the pariſh contained 775 houſes, and 4661 perſons.

ISLINGTON, col. 2, l. 15, *r*. 1811—15,065—2399.

ISOCHILUS, in *Botany*, ισος, *equal*, and χειλος, *a lip*, from the proportion of that part to the calyx and petals.—Brown in Ait. Hort. Kew. v. 5. 209.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Lip nearly ſimilar to the converging petals and calyx. Anther a moveable deciduous lid. Maſſes of pollen four, parallel.

1. I. *linearis*. Ait. n. 1. (Epidendrum lineare; Jacq. Amer. 221. t. 131. f. 1.)—Spike terminal. Leaves linear, emarginate. Stem ſimple.

2. I. *prolifer.* Ait. n. 2. (Cymbidium proliferum; Willd. Sp. Pl. v. 4. 95.)—Flowers axillary. Leaves lanceolate-oblong. Stem proliferous, with axillary two-leaved bulbs.—Both ſpecies grow in the Weſt Indies.

ISRAEL, in *Geography*, a townſhip of Prebble county, in Ohio, having 394 inhabitants.

JUBILEE, l. 13, for thirty-five *r.* thirty-three.

IVES, St. l. *penult.* *r.* 1811—712—3281 perſons, in the borough and pariſh.

Ives, *St.* l. 4 from the end, *r.* 1811—2426—474.

JULFA. See Zulpha.

JULIEN, St. l. 3, *r.* Saulnlic.

JUNGLE, denotes, particularly in India, a wood or thicket, in a country overrun with ſhrubs or long graſs.

JUNIATA, in *Geography*, a townſhip of Cumberland county, in Pennſylvania, having 1233 inhabitants.

IXODIA, in *Botany*, from ἰξώδης, *viſcid.*—Brown in Ait. Hort. Kew. v. 4. 517.—Claſs and order, *Syngeneſia Polyg.-æqualis.* Nat. Ord. *Compoſitæ.*

Eſſ. Ch. Recept. chaffy. Seed-down none. Calyx imbricated; inner ſcales radiating, coloured.

1. I. *achillæoides.* Ait. n. 1.—Native of the ſouth coaſt of New Holland. A green-houſe ſhrub, flowering moſt part of the year.

K.

KAMA, col. 2, l. 3 from bottom, for *magry* r. *mogry.*

KAMAL, *dele* l. 2, 3, and 4 from the bottom.

KAMAWKA, in *Geography*, a county of Virginia, containing 3366 perſons, of whom 352 were ſlaves in 1810.

KARLY, col. 2, l. 8, for ball *r.* baſe; l. 15 from bottom, for as *r.* or.

KARPOOT, a large and ancient town in the pachalic of Diarbekr, built on the ſummit of a hill, at the weſtern extremity of a fertile valley, about three or four miles broad, and from twenty to twenty-five miles long.

KASAWAGO, a townſhip of Crawford county, in Pennſylvania, having 384 inhabitants.

KASHEKA, for *Viſnavitra* r. *Viſwamitra.*

KASI, l. 4, for nari *r.* naſi.

KASKASKIAS, l. 5, *r.* 622, and 48.

KASYAPA, l. 7, for all *r.* uſe.

KAYKIYA, l. 4, for Lucins, his half brother *r.* twins, his half brothers.

KAZAMEEN, a town of Perſia, in the pachalic of Bagdad, three miles north of Bagdad, and on the weſtern bank of the Tigris, inhabited by about 8000 Perſians, who reſide here becauſe this town is the burying-place of Imam Mouſa Caſſim, and Imam Mahomet Tonky, holy men for whom they had great reſpect, and to whoſe memory a noble moſque is erected. About nine miles north-weſt of Kazameen, and at ſome diſtance from the river, a pyramidical ſtructure is erected, called by Europeans the Tower of Babel, Nimrood by the natives of Bagdad, and Agerkaf by the Arabians, and ſuppoſed by ſome to be coeval with the remains of ancient Babylon. It is 190 feet high, and 100 in diameter.

KAZARON, or Kazeroon, *r.* nearly ſeventy miles W.S.W. of Schiras, E. long. 51° 43′. This town is ſituated in a valley about thirty miles long, and ſeven or eight broad, bounded on the N. by a ſalt lake, and fertilized by many ſtreams of excellent water. From the depopulation it has ſuffered, its preſent inhabitants do not exceed 3000 or 4000.

KEARSARGE Gore, a townſhip of Hillſborough county, in New Hampſhire, having 125 inhabitants.

KEENE, l. 3, 1810; l. 4, *r.* 1646.

KEITH. In 1811 the pariſh contained 755 houſes, and 3352 perſons; 1391 being males, and 1961 females: 173 families employed in agriculture, and 295 in trade, manufactures, and handicraft.

KELAT, the capital of Balouchiſtan, &c.; add—It is immediately encompaſſed by a low mud wall, and contains 4000 houſes: the inhabitants are eſtimated at 7000, of whom 500 at leaſt are Hindoos. The palace of the Khan is ſeated on a very high hill, and commands a view of the whole place and neighbouring country. The bazaar is well ſupplied, and the town has the appearance of opulence, being frequented by merchants, and enjoying a conſiderable trade. N. lat. 29° 6′. E. long. 67° 57′.

KELLY Vale, a townſhip of Orleans county, in Vermont, having 40 inhabitants.

KELSO. In 1811 the pariſh of Kelſo contained 529 houſes, and 4408 perſons; 1979 being males, and 2429 females: and the diſtrict of Kelſo, comprehending twelve pariſhes, contained 2173 houſes, and 12,378 perſons; 5592 being males, and 6786 females: 1268 families employed in agriculture, and 797 in trade, manufactures, and handicraft.

KENDAL, l. *ult.* In the year 1811, Kendal ward contained 2719 houſes, and 13,674 perſons; and the town of Kirkby Kendal contained 1496 houſes, and 7508 perſons.

KENERA, l. 9, for there *r.* theſe.

KENFIG. In 1811, the pariſh contained 55 houſes, and 242 perſons; 119 being males, and 123 females: and Higher Kenfig, which is a hamlet in Mengan pariſh, contained 24 houſes, and 129 perſons; 69 being males, and 60 females.

KENILWORTH. In 1811 the pariſh contained 463 houſes, and 2279 perſons; 1145 being males, and 1134 females: 155 families employed in agriculture, and 264 in trade, manufactures, and handicraft.

KENNEBECK, l. *ult.* It contained, in 1810, 32,564 inhabitants.

KENNEDIA, in *Botany*, ſo named in honour of Mr. Kennedy, the well-known cultivator at Hammerſmith, whoſe ſkill and experience have ſo much enriched the works of his ſon-in-law, Mr. Andrews.—Venten. Malmaiſ. 104. Brown in Ait. Hort. Kew. v. 4. 299.—Claſs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Standard recurved, diſtant from the keel and wings. Legume of many ſingle-ſeeded cells. Seeds creſted.

1. K. *rubicunda.* Dingy Kennedia. Vent. t. 104. (Glycine rubicunda; Curt. Mag. t. 268. Willd. Sp. Pl. v. 3. 1065. Schneev. Ic. t. 28.)—Leaves ternate, ovate. Stalks moſtly three-flowered. Legume very hairy.—Found by ſir J. Banks, in New South Wales. An elegant greenhouſe *ſhrub*, with downy twining *ſtems*, and large *flowers*, party-coloured with red and purple.

2. K. *coccinea.* Tufted Scarlet Kennedia. Vent. t. 105, but not of Curtis.—Leaves ternate, obovate. Flowers capitate. Legume nearly ſmooth.—Gathered by Mr. Brown on the ſouth-weſt coaſt of New Holland.

3. K. *proſtrata.* Few-flowered Scarlet Kennedia. Br. in Ait. n. 3. (Glycine coccinea; Curt. Mag. t. 270. Willd. Sp. Pl. v. 3. 1065.)—Leaves ternate, obovate, hairy. Stalks one or two flowered. Stem proſtrate.—Native of New South Wales, from whence its ſeeds were brought about 1790.

4. K. *monophylla.* Simple-leaved Kennedia. Vent. t. 106. (Glycine bimaculata; Curt. Mag. t. 263. Willd. Sp. Pl. v. 3. 1067. G. violacea; Schneev. Ic. t. 29.)—Leaves ſimple, ſmooth, reticulated; ſomewhat heart-ſhaped at the baſe. Flowers racemoſe. Diſcovered by ſir J. Banks, in New South Wales. Introduced into England with the laſt. *Flowers* violet, with two green ſpots on the *keel.*

Mr. Brown appears to have ſome unpubliſhed ſpecies.

KENNET. Add—It contained, in 1810, 947 inhabitants.

KENSINGTON, l. 4, 1811—1379—10,886.

Kensington, in America, l. 4, *r.* 781.

KENT, l. 19, &c. *r.* In 1811, Kent contained 62,063 houſes, 373,095 perſons; 183,500 being males, and 189,595 females.

Kent, in America, l. 4, *r.* 11,450; l. 5, *r.* 4249; l. 13, *r.* 9834; l. 24, *r.* 1794.

Kent, *New.* See New *Kent.*

KENTUCKY. Add—See United States.

KERBALA. See Vologesia.

KERKUK, or Kerkook, the largeſt town in the lower Kurdiſtan, in N. lat. 35° 29′, 59 furſungs from Bagdad, and 41 from Moſul, on the road from one place to the other. It was formerly a military ſtation, called by Strabo, Demetrias; and by Ptolemy, Corcura. Its population is eſtimated at 18,000 ſouls, Turks, Armenians, Neſtorians, Kurds: this eſtimate, however, is ſuppoſed to exceed the truth by 5000. The city is defended by a mud wall, has two gates, ſeven moſques, fourteen coffee-houſes, one hummum, one caravanſera, one Armenian church, and twelve pieces of uſeleſs artillery mounted on the baſtions. In the ſuburbs, are five moſques, nine ſmall caravanſeras, thirteen coffee-houſes, three convents, and three Catholic churches. Near it is a number of naphtha pits, which afford an abundant ſupply of that commodity.

KERMANSHAW, one of the five diſtricts of the province of Irak in Perſia; the capital of this extenſive and fruitful diſtrict of the ſame name, and the reſidence of Mahomet Ali Meerza, the king's eldeſt ſon, and the moſt able and warlike of all the princes of Perſia. It is a flouriſhing town, containing about 12,000 houſes, at the extremity of a fine plain, through the centre of which runs the Karaſu. It is adorned with many gardens, and fourteen hummums or public halls, four moſques, and yields a revenue of 15,000 tomauns a year.

KERRIA, in *Botany*, ſo named after Mr. William Kerr, a gardener, who has introduced the ſhrub in queſtion, with many other Chineſe plants, into the Engliſh gardens.—De Candolle Tr. of Linn. Soc. v. 12. 156.—Claſs and order, *Icoſandria Polygynia.* Nat. Ord. *Senticoſæ*, Linn. *Roſaceæ*, Juſſ.

Eſſ. Ch. Calyx in five ſimple ſegments. Petals five. Capſules? ſuperior, diſtinct, ſingle-ſeeded.

1. K. *japonica.* Japan Kerria. De Cand. (Rubus japonicus; Linn. Mant. 245. Corchorus japonicus; Thunb. Jap. 227. Ait. Hort. Kew. v. 3. 314. Andr. Repoſ. t. 587. Curt. Mag. t. 1296.) See Rubus under n. 38, and Corchorus, n. 12.—A correct examination of the *germens* has authoriſed the learned profeſſor De Candolle to conſider this favourite plant as a new genus, though the preciſe nature of its ſeed-veſſels is not known.

KERSHAW, l. 3 and 4, *r.* 9867—4847.

KESWICK, l. 7, *r.* 352—1683.

KETTERING, l. 24, &c. *r.* 1811—713—3242—587—126.

KETU, l. 4, for Karyapa *r.* Kaſyapa. Col. 2, l. 4, for or *r.* a.

KEW, l. 4 and 5, *r.* 1811—73—560.

KEYNSHAM, l. 4 and 5, *r.* 1811; the pariſh conſiſted of 318 houſes, and contained 1748 inhabitants.

KHARASM, col. 2, l. 3, *r.* (See Khieva.)

KHOEE, a town of Perſia, in the province of Azerbijan, 22 furſungs from Tebreez. This town is the capital of a rich and extenſive diſtrict, and the emporium of a conſiderable trade carried on between Turkey and Perſia. It is ſaid to contain a population of 25,000 ſouls, and is ſituated on a plain, famous for a battle fought, in 1514, between Shah Iſmael and Selim I. in which 30,000 Perſians encountered 300,000 Turks. There is no town in Perſia better built or more beautiful than Khoee: the walls are in good repair; the ſtreets are regular, ſhaded with avenues of trees; and the ceilings of many of the houſes are painted with extraordinary taſte.

KHONSAR, a town of Perſia, in the province of Irak, ſituated at the baſe of two ranges of mountains, running parallel with each other, and ſo cloſe that the houſes occupy the bottom and alſo the declivity of the hills to ſome height. The town, placed in a beautiful and romantic ſituation, and formed of houſes and gardens, connected by means of its plantations, is about ſix miles in length, and about one-fourth of a mile in breadth. It contains 2500 families under a chief named Ali Shah, and yields an annual revenue of 5000 tomauns, excluſive of the ſadir, which generally conſiſts of dried fruits and a kind of cotton chintz. Although they have no corn in the valley, fruit is ſo abundant, that the inhabitants procure for it every article which they can want or deſire. Of their apples, they make a kind of cyder, but it will not keep above a month. The women are celebrated for their beauty and vivacity.

KHORASSAN. Add—Khoraſſan is a level country, interſperſed with ſandy deſerts, and irregular ridges of lofty mountains; the climate is accordingly various; in ſome parts temperate, but in others very cold; and the "had-e-ſemum," which blows in the deſerts for 40 days in the year, proves inſtantaneouſly fatal to all who are expoſed to it. This province was once populous and flouriſhing, and adorned with many princely cities. The ſoil is generally excellent, and produces wine, fruit, corn, rice, and ſilk in abundance, and of the beſt quality; but from the ſucceſſive depredations which it has ſuffered, its proſperity and commerce have declined; its cities have decayed; and its fertile regions have been changed into ſolitary deſerts. At preſent the authority of the king of Perſia extends only over the cities of Meſhed, Niſhapour, Turſhiſh and Tabas. The ſouthern parts, including Herat, are in poſſeſſion of the Afghans, and ſome wandering tribes of Patans and Ymucks; and thoſe to the E. and N. belong to the Uſbeck Tartars and Tarkomans. Khoraſſan is ſeparated from Cabul by the mountains of Bamian and Goor. Its rivers are, the Oxus, the Tedzen or ancient Ochus, the Herirood, the Murgah or ancient Margus, the Eſter or ancient Siderius, from which the province of Aſterabad derives its name, and which runs into the Caſpian ſea. The provinces of Irak and Khoraſſan are ſeparated by a deep ravine, which interſects the road leading from Tehraun to Meſhed, 22 furſungs E. of the former place. The diſtricts in this direction are, Sumnum, Damgan, and Biſtan. The preſent capital of the Perſian diviſion of Khoraſſan is Meſhed. That part of Khoraſſan which extends from N. lat. 32° 30′ to 34° 40′, from 56° to 62° E. long., comprehends the following towns and diſtricts, *viz.* Puſhing, Zuzan, Turſhiſh, Turbut, Jam, Kohiſtan, Niſhapour, and Sarukhs. M'Kinneir's Perſia.

KIBBAN, ſurnamed Madan from its mines, a town of the pachalic of Diarbekr, larger and more populous than Argunna Madan; ſituated at the baſe of a high mountain, and on the verge of a chaſm, through which a ſtream forces its way to the Euphrates, diſtant about 1½ mile from the town.

KIDDERMINSTER, l. 5 and 6, *r.* 1811—1348—8038.

KIDWELLY, l. 5, *r.* 1811—329—1441; l. 10, add—The vicinity is rich in coals and iron-ore, and ſome iron and tin manufactories have long been carried on here; l. 11, *r.* condition; l. 13, add—Its markets are held on Tueſday and Friday, and it has three fairs in the year.

KIGES, a town of Ohio, in Gallia county, having 387 inhabitants.

KILBARCHAN. Add—By the parliamentary returns of 1811, the pariſh contained 360 houſes, and 3563 inhabitants.

KILBIRNIE, for Renfrewſhire *r.* ſhire of Ayr. In 1811, the pariſh contained 180 houſes, and 1088 perſons; *viz.* 509 males, and 579 females.

KILBRIDE. Add—In 1811, the town and pariſh contained 517 houſes, and 2906 perſons.

KILBRIDE, *Weſt.* In 1811, the pariſh contained 183 houſes, and 1015 perſons; *viz.* 462 males, and 553 females: 76 families being employed in agriculture, and 108 in trade and manufactures.

KILKENNY, in America, l. 1, for Grafton *r.* Coos; l. 2, *r.* 28.

KILLBUSH, a townſhip of Stark county, in Ohio, having 332 inhabitants.

KILLEARN, for KILLEAM, l. 1, and l. 3, add—In 1811, the pariſh contained 157 houſes, and 997 perſons.

KILLINGLY, l. *ult.* *r.* 2512.

KILLINGWORTH, l. *ult.* *r.* 2244.

KILMARNOCK, l. *ult.* *r.* In 1811, the town and pariſh contained 912 houſes, and 10,148 inhabitants, of whom 1363 families were employed in trade and manufactures.

KILMAURS, a pariſh of Ayrſhire, which, in 1811, contained 248 houſes, and 1432 perſons; *viz.* 685 males, and 747 females: 61 families being employed in agriculture, and 142 in trade and manufactures.

VOL. XX.

KILPATRICK. The pariſh of New or Eaſt Kilpatrick contained, in 1811, 205 houſes, and 1643 perſons; *viz.* 746 males, and 897 females. The pariſh of Old or Weſt Kilpatrick contained 370 houſes, and 3428 perſons; *viz.* 1595 males, and 1833 females. In the former, 81 families were employed in agriculture, and 120 in trade and manufactures: in the latter, 95 families were engaged in agriculture, and 557 in trade, &c.

KILSYTH. In 1811, the pariſh of Kilſyth contained 626 houſes, and 3206 perſons; *viz.* 1488 males, and 1718 females.

KILWINNING. In 1811, the pariſh contained 506 houſes, and 3291 perſons; *viz.* 1607 males, and 1684 females.

KIMBOLTON, l. 4, *r.* 1811; l. 5, *r.* 260—1400.

KINCARDINE. By the parliamentary returns of 1811, the pariſh of Kincardine, in Monteith, with Thornhill, contained 479 houſes, and 2419 perſons.

KINCARDINESHIRE, col. 2, l. 8, after Bervie, add—which burgh and pariſh, in 1811, contained 193 houſes, and 927 perſons; l. 46, *r.* 1811; l. 47, *r.* 5718—27,439; add—12,580 being males, and 14,859 females.

KINETON, l. 12, *r.* In 1811, the hundred contained 4066 houſes, and 19,459 perſons; and the pariſh 166 houſes, and 801 inhabitants. Add—See KINGTON.

KING *and Queen*, l. 3, *r.* contains 10,989 inhabitants, of whom 6003 were ſlaves in 1810.

KING *George*, l. 3, *r.* 6456, of whom 3876 were ſlaves in 1810.

KINGHORN. Add—In 1811, the burgh and pariſh contained 329 houſes, and 2204 perſons.

KINGSBRIDGE, l. 9, *r.* 1811—156—1242.

KINGSCLERE, l. 9, *r.* 1811—398—1863—53 families; l. 15, *r.* 1137.

KINGSTON, in America, l. 12, *r.* 324. Col. 2, l. 3, *r.* 746. Add—Alſo, Eaſt Kingſton, a townſhip of the ſame county and ſtate, having 442 inhabitants; l. 12, *r.* 832.

KINGSTON-*upon-Thames*, l. *ult.* *r.* 1811—716—4144.

KINGTON, l. 2, *r.* Huntingdon; l. 11, *r.* 1811—1617—329. See KINETON.

KING WILLIAM, a county of Virginia, containing 9285 inhabitants, of whom 5788 were ſlaves in 1810.

KINGWOOD, l. 1, *r.* Hunterdon; l. 2, *r.* 2605—48.

KINROSS, l. 4, *r.* The number of inhabitants of this pariſh, in 1811, was 2214, of whom 287 families were employed in trade and manufactures, and 92 in agriculture: the number of houſes was 396.

KINROSS-SHIRE, col. 2, l. 9, *r.* 1811, as containing 1364 houſes, and 7245 perſons.

KINTORE, l. 11, *r.* 1811, the burgh and pariſh contained 218 houſes, and 863 perſons.

KINTYRE, l. 1, *r.* ſix for three; l. 2, ſix for three; l. 3, after *viz.* add—Argyll, Corrall, Iſlay, Kintyre, Lorn, and Mull. The firſt diſtrict contained, in 1811, 2702 houſes, and 15,637 perſons; Corrall, 1212 houſes, and 6887 perſons; Iſlay, 2636 houſes, and 14,161 perſons; Kintyre, 2959 houſes, and 18,286 perſons; Lorn, 2721 houſes, and 13,779 perſons; and Mull, 3010 houſes, and 16,834 perſons.

KIRCALDY, col. 2, l. 25, *r.* In 1811, the number of inhabitants in the burgh and pariſh was 3747, occupying 381 houſes, of whom 405 families were employed in trade and manufactures, and 36 in agriculture: the number of houſes in the whole diſtrict was 4899, and of inhabitants 31,958.

KIRKBY-LONSDALE, l. 5, *r.* In the year 1811, the town contained 271 houſes, and 1368 perſons.

KIRKBY-*Moorſide*, l. 6, *r.* 1811—319—1673.

KIRKBY-*Stephen.* Add—By the return of 1811, the townſhip contained 250 houſes, and 1235 perſons.

KIRKCUDBRIGHT, l. *ult.* *r.* In 1811, the number of houſes in the burgh and pariſh was 392, and of inhabitants 2763.

KIRKCUDBRIGHTSHIRE, col. 2, l. 8, *r.* 1811—33,684 perſons; 15,788 being males, and 17,894 females: the number of houſes being 6223.

KIRKHAM, l. 6, *r.* 1811—424—2214.

KIRKHAM, a townſhip of Amounderneſs hundred, in Lancaſhire, part of Kiſhen pariſh, containing, in 1811, 424 houſes, and 2214 perſons; *viz.* 1039 males, 1175 females.

KIRKINTULLOCH, l. *penult.* *r.* In 1811, the number of houſes was 605, and of perſons 3740; of whom 573 families were employed in trade and manufacture.

KIRK-OSWALD. At the end, add—In 1811, the number of houſes in this townſhip was 116, and of inhabitants 636.

KIRKWALL. Add—The burgh and pariſh of Kirkwall contained, in 1811, 287 houſes, and 1715 perſons.

KIRMANSHA. Add—See KERMANSHAW.

KIRRIEMUIR, l. 12 and 13—1811, the town and pariſh were returned as containing 955 houſes, and 4791 perſons.

KIRTON, l. 6, *r.* In 1811, it contained 307 houſes, and 1531 perſons.

KIRTON *Lindſay*, l. 5, 1811—258—1152.

KITTERY, l. 3, *r.* 2019.

KIZIL-OZAN. Add—This river, called the Golden Stream, is the natural boundary of Irak and Azerbijan, and, according to Rennell, the Gozan of ſcripture.

KNARESBOROUGH, col. 4, l. 15, *r.* The population of the borough and townſhip, as returned to parliament in 1811, was 4234, occupying 888 houſes.

KNEE, in the *Manege*, add—Broken knees very much depreciate the value of a horſe; and therefore various methods have been propoſed for repairing and correcting this injury. Mr. Teplin recommends, firſt of all, to waſh the injured parts well with a ſponge and warm water, ſo as thoroughly to cleanſe them from gravel or ſand; and then plentifully embrocating them with camphorated lead-water, and bandaging over them a pledgit of tow moiſtened with the ſame, repeating the operation once or twice, if neceſſary. This treatment ſhould be continued, that a cruſt or cicatrix may be formed, which will render unctuous or greaſy applications unneceſſary. But if the laceration be conſiderable, ſuppuration will enſue, and ſhould be encouraged by a common poultice, and the cure completed by digeſtive ointments. Mr. Lawrence propoſes to make the hair grow after ſuch accidents, by binding a piece of ſheet-lead on the part after the wound is healed; and he alſo mentions a contrivance by which the knees of a valuable horſe may be preſerved from this accident. (See HOSE.) He adviſes to waſh the wound clean with a linen rag and warm ſoap-ſuds, and having wiped the parts dry to apply brandy. Friar's balſam (compound tincture of benzoin) will, he ſays, heal broken knees very ſpeedily. A kind of hoſe, or boots, is uſed to defend the legs of race-horſes in travelling; and ſome kind of guard, faſtened above and below the knee, would be very uſeful to poſt-horſes. For broken knees, Mr. Ryding recommends a mixture of 1 dr. of cantharides in fine powder with 1 oz. of olive-oil, which ſhould be applied occaſionally with the hand to the wounded part. This, he ſays, by its gently ſtimulating power, will brace the parts, promote the ſore, and facilitate the growth of hair.

KNIGHTIA, in *Botany*, ſo named by ſir Joſeph Banks and Mr. Brown, in honour of Thomas Andrew Knight, eſq. the able preſident of the Horticultural Society, well known by his numerous writings on vegetable phyſiology.—Br. Tr. of Linn. Soc. v. 10. 193.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Proteaceæ*, Juſſ. Br.

Eſſ. Ch. Calyx none. Petals four, equal, revolute. Stamens inſerted above the middle of each petal. Nectary of four glands. Germen ſeſſile, four-ſeeded. Stigma vertical, club-ſhaped. Follicle coriaceous, tipped with the ſtyle. Seeds winged at the ſummit.

1. K. *excelſa.* Br. as above, t. 2.—Found by ſir J. Banks, in New Zealand. A large *tree*, often eighty feet high. *Leaves* ſcattered, ſtalked, elliptic-lanceolate, ſerrated, five or ſix inches long; downy beneath. *Flowers* red, in denſe lateral cluſters, with red *ſtalks.* This genus comes very near Aublet's and Schreber's RHOPALA, (ſee that article,) differing only in having four *ſeeds* winged at the apex, inſtead of two winged all round.

KNOWLTON, l. 2, *r.* 2064 inhabitants, including 17 ſlaves in 1810.

KNUTSFORD, l. 5 from the bottom, *r.* In 1811 there were in the townſhip of Nether Knutsford 448 houſes and 2114 perſons, and in Over Knutsford 49 houſes and 243 perſons, of whom in the former townſhip 276 and in the latter 37 were employed in trade, manufacture, and handicraft.

KOM, l. 4, add—It is ſaid to have been built in the year 203 of the Hegira, from the ruins of ſeven towns, which had compoſed a ſmall ſovereignty under Abdalrahman, an Arabian prince:—l. 19, after khan, add—It was taken by the Afghans, when they invaded Perſia in 1722, and completely deſtroyed. Part of it has been ſince rebuilt, but it ſtill appears like a vaſt ruin.

KORASAN, or KHORASSAN. Add—See KHORASSAN.

KORNA. See SHAT-UL-ARAB.

KOUMISS, an intoxicating drink, prepared by the Tartars from mare's milk. See MILK.

KRISHNA, l. 21 and 24 from the bottom, for Gapia *r.* Gopia; l. 18, for Taſuda *r.* Yaſuda.

KROOK. See REGAN.

KUFA, a kind of boat in uſe on the Euphrates and Tigris; it is perfectly round, made of wicker-work, covered with bitumen, and generally about ſeven feet in diameter.

KUFRI, in *Geography*, a town of Perſia, in the pachalic of Bagdad, between Bagdad and Kerkook, containing about 2000 inhabitants.

KUPRI-ALTUN. See ALTUN-*Kupri.*

KURMAVATARA, l. 18 from the bottom, for beautiful *r.* bountiful.

KYANITE. See MINERALOGY, *Addenda.*

KYDIA, in *Botany*, ſo called in memory of the late colonel Robert Kyd, firſt director of the Calcutta garden. —Roxb. Corom. v. 3. 11.—Claſs and order, *Monadelphia Dodecandria.* Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Eſſ. Ch. Calyx double; outer of four or ſix leaves. Petals five. Anthers in five tufts. Style three-cleft. Capſule of three cells, and three valves. Seeds ſolitary.

1. K. *calycina.*

1. K. *calycina.* Roxb. t. 215.—Outer calyx four-leaved, longer than the corolla.—Native of the banks of rivulets, in Coromandel and Hindooſtan, flowering in the cool ſeaſon. A *tree*, with long-ſtalked, roundiſh, mealy, ſlightly three-lobed *leaves*. *Flowers* ſmall, white, in terminal panicles.

2. K. *fraterna.* Roxb. t. 216.—Outer calyx ſix-leaved, ſhorter than the corolla.—Native of the Circar mountains, flowering in the rainy ſeaſon. A larger *tree* than the foregoing. *Flowers* more conſpicuous. *Leaves* whiter underneath.

L.

LABORATORY. *Woulfe's Apparatus, Plate* V. *Chemiſtry.*

LAC, in *Coinage.* See Lack and Rupee.

LACK, in *Geography*, l. 2, *r.* 1165.

LACKAWANACT, a townſhip of Mercer county, in Pennſylvania, having 379 inhabitants.

LACTATES, in *Chemiſtry.* See Lactic *Acid.*

LACTIC Acid. The deſcription of this acid has been omitted, we ſhall therefore introduce a brief account of it here.

The lactic acid was firſt obtained by Scheele from ſour whey. He conſidered it as analogous to the acetic acid. Bouillon Lagrange afterwards inſtituted a ſeries of experiments upon it, from which he drew the concluſion that it is merely acetic acid, contaminated with ſome ſaline and animal matter. Four years afterwards, Thenard advanced a ſimilar opinion. Both theſe chemiſts, however, had obtained the acid which they examined by diſtillation, though Scheele had expreſsly ſtated that lactic acid, when diſtilled, was converted into acetic acid. The exiſtence of lactic acid, therefore, was by no means diſproved by their experiments. Soon afterwards, Berzelius took up the ſubject, and in an elaborate ſet of experiments proved that Scheele's original opinion was correct, and thus fully eſtabliſhed the peculiar nature of lactic acid.

Berzelius obtained the lactic acid by the following complicated proceſs. The extract obtained by evaporating whey to dryneſs was diſſolved in alcohol, and mixed with alcohol holding $\frac{1}{76}$th of its weight of concentrated ſulphuric acid in ſolution, till there was an exceſs of ſulphuric acid preſent. Sulphate of potaſh was precipitated. To get rid of the other acids, it was digeſted over carbonate of lead till the liquid acquired a ſweetiſh taſte. By this means, the ſulphuric acid, the phoſphoric acid, and moſt of the muriatic acid, were ſeparated; but the lactic acid forming a ſoluble compound with lead remained in ſolution. A current of ſulphuretted hydrogen gas being paſſed through the liquid threw down the lead. The liquid was digeſted over quick-lime till all the animal matter was ſeparated. It now contained only lactic acid, muriatic acid, and lime. A portion of it was freed from lime by means of oxalic acid. This portion was then ſaturated with carbonate of ſilver; by means of this ſolution, the remainder of the liquid was freed from muriatic acid. Finally, the lime was thrown down by means of oxalic acid, ſo that nothing remained but lactic acid diſſolved in water. To get rid of a ſmall portion of oxalate of lime which it held in ſolution, it was evaporated to dryneſs, and rediſſolved in water.

Lactic acid thus obtained has a browniſh-yellow colour, and a ſharp ſour taſte, which is much weakened by diluting the acid with water. While cold it has no ſmell, but when heated it acquires a ſharp ſour odour, not unlike that of ſublimed oxalic acid. It does not cryſtallize, but when evaporated to dryneſs forms a ſmooth varniſh, which gradually attracts moiſture from the air. It diſſolves readily in alcohol. When heated it boils, emits a ſour ſmell, and leaves a bulky charcoal, not eaſily burnt. When diſtilled it gives out empyreumatic oil, water, acetic acid, carbonic acid, and inflammable gas.

Lactates.—All the lactates are more or leſs ſoluble in water, and hardly any of them can be made to cryſtallize. The *lactate of potaſh* and *lactate of ſoda* form a light yellow tranſparent gummy maſs, which cannot be eaſily made hard. The *lactate of ammonia* has ſome tendency to cryſtallize. It forms a gummy maſs, which acquires in the air an exceſs of acidity. When heated, moſt of the ammonia is driven off. The *lactates of barytes, lime,* and *magneſia*, are divided by alcohol into *ſuperlactates* of thoſe earths which are ſoluble in alcohol, and into *ſublactates* which are inſoluble. The metallic lactates do not poſſeſs remarkable properties. There are three *lactates of lead;* the *ſuperlactate* which does not cryſtallize, the *lactate* which exiſts in grey cryſtalline grains, and the *ſublactate* which is inſoluble. The *lactate of zinc* cryſtallizes.

Dr. Thomſon eſtimates the weight of the atom of lactic acid from Berzelius's experiments at 57.5.

Such are the chief properties of lactic acid and its compounds. We have entered further into the deſcription than we ſhould otherwiſe have done, on account of the importance of the ſubject,—the lactic acid exiſting both in a ſimple and combined ſtate in moſt of the animal fluids. See Blood, and Fluids, *Animal.*

LACTODORUM, in *Ancient Geography.* See Towcester.

LACTUCARIUM, a name given by Dr. Duncan to the inſpiſſated juice of the *lactuca ſativa*, or common lettuce, and which has been found beneficial in various diſorders, eſpecially conſumption, as an anodyne, where opium diſagreed and could not be taken.

LADY-BIRD. See Coccinella.

LAFOURCHE, in *Geography*, a county of the territory of Orleans, containing in its interior, and in the pariſh of Aſſumption, 4467 inhabitants.

LAGASCA, in *Botany*, after Don Mariano Lagaſca, the worthy pupil, and now ſucceſſor, of profeſſor Cavanilles at Madrid.—Cavan. in Ann. de Cienc. Nat. v. 6. 331. Sims in Curt. Mag. 1804. (Lagaſcea; Willd. Enum. 941.)—Claſs and order, *Syngeneſia Polygamia-ſegregata*. Nat. Ord. *Compoſitæ*.

Eſſ. Ch. Involucrum a ſimple row of leaves. Partial calyx five-toothed, ſingle-flowered. Florets tubular, all perfect. Receptacle cellular, very hairy. Seed-down none.

1. L. *mollis*. Soft-leaved Lagaſca. Curt. Mag. t. 1804. —Native of Cuba. A tender annual, of little beauty. *Herb* downy, very ſoft. *Leaves* ſtalked, ovate, toothed; the lower ones oppoſite. *Flowers* terminal, white.

LAHORE, l. 10, for Schauguive *r.* Shah Jehan.

LAKE, a town of Champaign county, in Ohio, containing 480 inhabitants.

LAKSHMI, col. 3, l. 4, for deities *r.* deity's wives.

LALESTON, *Higher* and *Lower*, in *Geography*, form a pariſh of Newcaſtle hundred in Glamorganſhire. The Higher in 1811 contained 34 houſes, and 157 perſons; 81 being males, and 76 females: and the Lower contained 62 houſes, and 271 perſons; 111 being males, and 160 females.

LAMBETH, l. 25, *r.* 1811—7201; l. 24, *r.* 41,644, and 4491; l. 27, *r.* 338.

LAMBOURN, l. 13 and 14, *r.* In the year 1811, the population of the pariſh, with its dependent hamlets, *viz.* Blagrave and Halley, Eaſtbury and Bockhampton and Upper Lambourn, was 2674 perſons, and the number of houſes 527.

LAMP, Aphlogistic. Sir Humphrey Davy, during his reſearches on flame with the view to the conſtruction of his ſafety-lamp for coal-mines (ſee Wire-Gauze), obſerved, that a fine platinum wire heated red hot and held in the vapour of ether would continue ignited. Soon after this curious fact was made known, Mr. Ellis of Bath thought of extending the principle, and found that a coil of fine platina wire, ſtuck into the wick of a common ſpirit-lamp (being previouſly heated), might be kept red hot for any length of time. The lamp ſo conſtructed received the appellations of *aphlogiſtic lamp*, *lamp without flame*, &c.

The platinum wire for this experiment ſhould not exceed $\frac{1}{100}$th part of an inch in diameter. About twelve coils of this (the coil being about $\frac{3}{20}$ths of an inch in diameter, and as cloſe together as poſſible without touching) are to be placed upon the wick of a common ſpirit-lamp, in ſuch a manner that half be on the wick and half above it; the lamp is then to be lighted, and when the wire has become red hot the flame is to be blown out; the wire will then remain red hot for any length of time required, and in a dark room, if properly conſtructed, will emit a conſiderable light. Inſtead of alcohol, ether may be employed, or a ſimilar effect may be produced by ſticking the ignited wire into a piece of camphor.

LAMP, *Safety*, for coal mines. See Wire-Gauze.

LAMPETER, l. 2, *r.* 2501.

LAMPIC Acid, in *Chemiſtry*. The name recently given by Mr. Daniell to an acid generated by the combuſtion of alcohol, &c. by the aphlogiſtic lamp.

Sir Humphrey Davy obſerved, during the combuſtion of ether in the manner above deſcribed, the formation of a peculiar acid pungent vapour, which he conſidered as a new product. Mr. Faraday ſoon afterwards deſcribed ſome of the properties of this acid, and more recently Mr. Daniell has given us a more full deſcription. Mr. Daniell prepared it for his experiments by burning the aphlogiſtic lamp under an alembic head, and collecting the products; but we underſtand it may be formed much more readily by paſſing the vapour of ether through a tube containing platinum wire. The lampic acid, when as pure as poſſible, is a colourleſs fluid, of an intenſely ſour taſte and pungent odour. Its vapour when heated is extremely irritating and diſagreeable, and produces an oppreſſion on the cheſt, ſomething like that produced by chlorine. It reddens vegetable blues, and decompoſes all the earthy and alkaline carbonates. Its ſp. gr. when rectified as highly as poſſible, according to Mr. Daniell, is 1015.

The *Lampates of Potaſh and Soda* are deliqueſcent ſalts, and do no not readily cryſtallize. The *lampate of ammonia* is volatile, and eaſily decompoſed. The *lampate of barytes* readily cryſtallizes in colourleſs tranſparent needles. The *lampates of lime* and *magneſia* are deliqueſcent.

The lampic acid has the property, according to Mr. Daniell, of reducing many of the metallic oxyds; this is particularly the caſe with the oxyds of gold and mercury. When warm nitrate of mercury, according to Mr. Daniell, is mixed with lampic acid, a metallic ſhower takes place, and brilliant globules of mercury ſoon accumulate at the bottom of the veſſel.

Mr. Daniell eſtimates, from his experiments, the weight of the atom of lampic acid at about 64, and conſiders it as compoſed of 1 atom hydrogen + 1 atom carbon + 1 atom water. How far theſe determinations are to be depended upon we cannot ſay, though we think it probable that they are incorrect.

LANARK, l. *ult.* *r.* 1811—5677—658.

LANARKSHIRE, l. 13, *r.* according to the parliamentary returns in 1811, the population of the county conſiſts of 191,752 perſons, occupying 32,040 houſes; the males are 88,688, and the females 103,064: the families employed in trade, manufactures, and handicraft, are 27,672, and thoſe employed in agriculture 5387.

LANCASHIRE, l. 21, *r.* 1811—144,283—828,309; l. 22, *r.* 114,522; l. 23, *r.* 23,305. The number of males was 394,104, and that of the females was 434,205.

Lancashire. This county contains ſeveral villages and pariſhes, which, by the prevalence of its manufactures, are become populous, but which our limits will not allow us to mention.

Aſhton-under-Lime (omitted in its proper place) deſerves a particular notice as a pariſh in the hundred of Salford, which in 1811 contained 3042 houſes, and 19,052 perſons, *viz.* 9146 males, and 9906 females; 213 families being employed in agriculture, and 2737 in trade, manufactures, or handicraft.

Aſhton-in-Mankerfield is alſo a townſhip in the hundred of Weſt Darby and pariſh of Winwick, which contains 864 houſes, and 4747 perſons; *viz.* 2342 males, and 2405 females: 163 families being employed in agriculture, and 726 in trade, manufactures, &c.

LANCASTER, col. 4, l. 26 from bottom, *r.* 1811; l. 25, *r.* 1694 and 9247.

Lancaster, in America, l. 5, *r.* 3927—44. Col. 2, l. 5, *r.* 5592 inhabitants, of whom 3112 were ſlaves in 1810; l. 7, *r.* 6318; l. 8, *r.* 1646; l. 18, add—and by the cenſus of 1810, 5405 inhabitants, including 700 ſlaves; l. 31, add—Alſo, a townſhip of the ſame county, containing 592 inhabitants:—l. 43, *r.* 1694; l. 44, for Grafton *r.* Coos; l. 47, *r.* 1810, and 717.

LANDAFF, l. 2, *r.* 650.

LANDGROVE, a town of Bennington county, in Vermont, having 299 inhabitants.

LANDSCAPE, l. *penult.* *r.* wherein. Col. 2, l. 6 from bottom, *r.* aims.

LANESBOROUGH, l. 3, *r.* 1302.

LANGAYA, a genus of ſerpents, the characters of which are, that it has abdominal plates, caudal rings, and terminal ſcales. Of this genus there is only one ſpecies, differing from all the reſt of the ſerpent tribe in having the upper part or beginning of the tail marked into complete rings, or circular diviſions, reſembling thoſe on the body of the amphis bæna, while the extreme or terminal part is covered with ſmall ſcales, as in the genus anguis. This ſpecies is called Langaya naſuta, or large-ſnouted Langaya, has 184 abdominal ſcales, and 42 caudal rings : it is a native of Madagaſcar, and was firſt deſcribed by M. Bruguiere of the Royal Society of Montpellier. The natives of Madagaſcar are much afraid of this ſerpent, as they conceive it to be very poiſonous.

LANGDON, l. 3, *r.* 632.

LANGHOLM, l. 5, *r.* 1811, 2636 perſons, occupying 522 houſes.

LANGPORT, col. 2, l. 3, *r.* 1811—112 ; l. 4, *r.* 861.

LANTWIT, Major, a pariſh of Cowbridge hundred, in the county of Glamorgan, containing, in 1811, 179 houſes, and 786 perſons ; *viz.* 357 males, and 429 females.

Lantwit, *Lower*, a pariſh near Neath, which, in 1811, contained 116 houſes, and 564 perſons ; *viz.* 265 males, and 299 females.

LAR, l. 6, add—It ſtill contains about 12,000 inhabitants, celebrated for the manufacture of muſkets and cotton cloth. It has very handſome buildings, and particularly a bazaar, that is reckoned the nobleſt ſtructure in Perſia. N. lat. 37° 30′. E. long. 52° 45′. See Tarem.

LARISTAN, l. 1, after Perſia, add—extending along the Northern ſhore of the gulf from E. long. 55° to 58°.

LARUS, col. 3, *r.* Ridibundus.

LASCAR, a term in India, denoting a camp-follower, but applied to native ſailors and artillerymen.

LASCO, John. Add—A brief account has already been given of this famous reformer under Alasco.

LASSUS. See Orlando.

LATIMORE, in *Geography*, a townſhip of Adams' county, in Pennſylvania, having 666 inhabitants.

LAUD, l. 10 from bottom, *r.* Stanford.

LAVENHAM, at the cloſe, *r.* 1811—308, and 1711.

LAUGHTER, l. 15, add—See Lungs.

LAVINGTON, *Eaſt*, l. 11, *r.* 1811 ; l. 12, *r.* 899—184; l. 16, for Whorlſdon *r.* Pottern and Cannings ; l. 17, *r.* 1811—127 ; l. 18, *r.* 582.

LAUNCESTON, col. 2, l. 4 and 3 from the end, *r.* 1811—1758, and 262.

LAUREAT, Poet, l. 5, add—In anciently conferring degrees in grammar, which included rhetoric and verſification, at our univerſities, particularly at Oxford, a wreath of laurel was preſented to the new graduate, who was afterwards uſually ſtyled " Poeta Laureatus." Theſe ſcholaſtic laureations ſeem to have given riſe to the appellation :—l. 19, after Edw. IV. inſert—who appointed John Kay poet laureat, and who, according to Warton, was the king's firſt poet under this appellation. The only compoſition he has tranſmitted to poſterity is a proſe Engliſh tranſlation of a Latin hiſtory of the ſiege of Rhodes. In the dedication, addreſſed to king Edward, or rather in the title, he ſtyles himſelf *hys humble poete laureate.* The ſame appellation occurs under, &c. At the cloſe, add—Warton's Hiſt. of Engliſh Poetry, vol. i. p. 128.

LAUROPHYLLUS, in *Botany*, an exceptionable compound name.—Thunb. Prodr. præf. n. 16. Willd. Sp. Pl. v. 4. 1115. Ait. Hort. Kew. v. 5. 481.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. . . . .

Eſſ. Ch. Calyx four-cleft, inferior. Corolla none. Some male flowers.

1. L. *capenſis.* Thunb. Prodr. 31. Willd. n. 1. Ait. n. 1.—Found at the Cape of Good Hope. A *tree*, with round, brown, ſhining *branches ;* alternate, oblong, ſerrated, ſmooth, coriaceous *leaves ;* and minute *flowers*, in terminal *panicles.*

LAUSANNE, in *Geography*, a townſhip of Northampton county, in Pennſylvania, having 157 inhabitants.

LAWSVILLE, a townſhip of Luzerne county, in Pennſylvania, having 169 inhabitants.

LEAD, in *Chemiſtry.* According to the moſt recent determinations, *maſſicot*, or the *protoxyd* of lead, is a compound of 100 lead + 7.692 oxygen ; and the *brown* or *peroxyd*, of 100 lead + 15.384 oxygen. Hence the weight of the atom of lead will be 130, oxygen being 10. From theſe data, the compoſition of all the other compounds of lead can be eaſily eſtimated. See Atomic *Theory.*

What is uſually called *minium*, or *red-lead*, is a combination of theſe two oxyds, or of 2 atoms lead + 3 atoms oxygen. *Red-lead* does not appear capable of combining with acids, at leaſt no ſalt of which it forms a conſtituent is at preſent known.

Lead, page 10, c. 2, l. 3, after gallic, read acid.

LEAD-ORES. See Lead, and Mineralogy, *Addenda.*

LEATHERHEAD. In 1811 the pariſh contained 312 houſes, and 1209 perſons ; *viz.* 580 males, and 629 females : 75 families being employed in agriculture, and 103 in trade, manufactures, and handicraft.

LEBANON, in America, l. 3, *r.* 1810 ; l. 4, *r.* 1938 ; l. 8, *r.* 2580 ; l. 11, 1810 ; l. 12, *r.* 1808. Col. 2, l. 3, add—containing 1434 inhabitants.—Alſo, a townſhip in the ſame county, containing 2473 inhabitants.—Alſo, a town of Hunterdon county, in New Jerſey, containing 2409 inhabitants.

LEBECKIA, in *Botany*, Thunb. Prodr. præf. n. 47. Willd. Sp. Pl. v. 3. 946. Ait. Hort. Kew. v. 4. 261.—Claſs and order, *Diadelphia Decandria.* Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx in five deep acute ſegments, with rounded ſinuſes. Stamens all connected. Legume cylindrical, with many ſeeds.

Thunberg and Willdenow deſcribe three ſpecies with ſimple, and five with ternate, *leaves*, all ſhrubs, found at the Cape of Good Hope. Three are in Hort. Kew. *L. contaminata*, *ſericea*, and *cytiſoides*, all previouſly referred to Spartium ; ſee that article.

LECANORA, Ach. Syn. 146. " Lichenogr. 77. t. 7. f. 3—7 ;" a new genus, conſiſting of 139 ſpecies, of the *Lichen* tribe, being the cruſtaceous ſpecies of Parmelia ; ſee that article.

LECHLADE, l. 16 from bottom, *r.* 1811 ; l. 15, *r.* 993 ; l. *ult.* *r.* 195.

LECIDEA, in *Botany*, Ach. Syn. 11. " Lichenogr. 32. t. 2. f. 1—7." A genus of *Lichenes*, chiefly the *tuberculati* of Linnæus, whoſe ſhields have no border from the ſubſtance of the *frond* or *cruſt*, 153 ſpecies are now deſcribed, whoſe *fronds* are various.

LEDBURY, col. 2, l. 17, *r.* 1811—3136 ; l. 18, *r.* 604.

LEDYARD, col. 2. l. 39, *r.* Ochotoſk.

LEE, in Virginia, l. 6, *r.* 4694 inhabitans, of whom 336 were ſlaves in 1810 ; l. 10, *r.* 1329 ; l. 12, *r.* 1305.

Lee, a long meaſure in China, rather more than one-third of a mile.

LEEDS, col. 2, l. 25, *r.* 1811, the town and liberty contained, &c.; l. 26, *r.* 12,249 and 62,534; l. 27, *r.* 11,739 families were ſtated, &c.

Leeds, in America, l. *ult.* *r.* Kennebeck for Cumberland; after county, add—containing 1273 inhabitants.

LEEKE, l. 7, *r.* 1811—832; l. 8, *r.* 3703.

LEELITE. See Mineralogy, *Addenda.*

LEGEND, col. 2, l. 34, *r.* Sybaris. Col. 3, l. 36, for found *r.* ſecret; l. 8 from bottom, *r.* Coningham.

LEHI, in *Geography*, add—Alſo, a townſhip containing 1188 inhabitants.

LEICESTER. At the cloſe, *r.* 1811, 4609 houſes, 23,146 inhabitants.

Leicester, in America, l. 3, *r.* 609; l. 6, *r.* 1181.

LEICESTERSHIRE, col. 3, l. 24, *r.* 1811—150—419; add—of whom 10,801 were males, and 12,345 females; 17,027 families were employed in trade and manufactures, and 11,700 in agriculture. The number of houſes was 30,019.

LEIGH, West. In 1811, this townſhip contained 341 houſes, and 1960 perſons; *viz.* 927 males, and 1033 females.

LEIGHTON-Buzzard, l. 5, *r.* 1811—408 houſes, 2114 inhabitants; of whom 187 families were employed in trade and manufacture, and 283 in agriculture.

LEITH. At the end, add—By the parliamentary return of 1811, North Leith had 1085 houſes, and 4875 inhabitants; and South Leith had 838 houſes, (if not a miſtake in the number,) and 15,488 inhabitants.

LEMINGTON, or Limington, l. 2, add—containing 1774 inhabitants.

Lemington-Priors, a pariſh of Warwickſhire, in the hundred of Knightlow and Kenilworth diviſion, contained, in 1811, 125 houſes, and 543 perſons; *viz.* 275 males, and 268 females. But ſince that period, it has been much reſorted to as a watering-place reſembling Cheltenham; and the number of private houſes, baths, hotels, and public buildings, for the accommodation and amuſement of its viſitors, has been very much augmented, and is every year increaſing.

LEMNIAN Earth. See Phragide.

LEMON, a townſhip of Ohio, in Butler county, having 1308 inhabitants.

LEMPSTER, l. 3, *r.* 1810 and 854.

LEMUR, col. 3, l. 17 from bottom, *r.* Macaco.

LENIOR, or Lenoire, l. 3, *r.* 5572, of whom 2449 were ſlaves in 1810.

LENOX, l. *ult.* *r.* 1310.

LENS, *Cryſtalline of the Eye, Chemical Properties of.* See Eye.

LEOMINSTER, col. 3, l. 19, *r.* the population of the borough and pariſh, &c.; *r.* 1811—3238; l. 20, *r.* 730.

Leominster, in America, l. 5, *r.* 1584.

LEONINE, l. 12, after Leonius, add—A French monk of St. Victor, at Marſeilles, about the year 1135; l. 14, after III.—But rhymes in Latin verſes were in uſe much earlier. See Warton's Hiſt. of Poetry, vol. i. diſſ. ii. At the cloſe, add—See Rhyme.

LEPANTHES, in *Botany*, from λεπος, *bark*, and ανθος, *a flower*, becauſe theſe plants grow on the barks of trees.—Swartz Nov. Act. Upſ. v. 6. 85. t. 5. f. 6. Ind. Occ. 1555. Schrad. Journ. v. 2. 240. t. 2. f. 3. Schrad. N. Journ. v. 1. 100.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Calyx ringent; leaves ovate, pointed. Petals linear; elongated at the baſe. Lip none. Style winged. Anther a deciduous lid.

Four Weſt Indian ſpecies are deſcribed, ſmall plants, each with a thick, ſolitary, roundiſh *leaf*, and one or two *cluſters* of minute *flowers.*

LEPIDAGATHIS, from λεπις, *a ſcale*, and αγαθις, *a ball*, or *round aggregation of any kind.*—Willd. Sp. Pl. v. 3. 400. Brown Prodr. Nov. Holl. v. 1. 478.—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Acanthaceæ*, Br.

Eſſ. Ch. Calyx in five deep unequal ſegments. Corolla two-lipped. Capſule ſeſſile, of two cells, with a fixed partition. Seeds two in each cell. *Br.*

L. *criſtata*, Willdenow's only ſpecies, from the Eaſt Indies, bears aggregate, ſeſſile, ſcaly balls of *flowers*, chiefly about the crown of the *root.* The numerous *ſtems* are decumbent, eighteen or twenty inches long, leafy, ſquare. *Leaves* ſimple, oblong, rough-edged. Mr. Brown has corrected the character, as above, from various Chineſe and tropical ſpecies, in ſir J. Banks's herbarium.

LEPIDOLITE. See Lepidolite, and Mineralogy, *Addenda.*

LEPSIA. Add—It is now called Lipſo.

LERIA, l. 2, after Strabo, add—This little iſland has three harbours, and is ſaid to produce abundance of the wood of aloes, ſo much eſteemed in Turkey as a perfume; though others have doubted this fact, on account of the high price of this wood at Conſtantinople. In this iſland is a monaſtery, and it has a town called Lera.

LERWICK. At the cloſe, *r.* 1811—1049; add—the number of houſes was 252.

LESGESTAN, one of the ſmall ſtates of Dagheſtan, conſiſting of a ſtupendous range of mountains, very long but narrow, and forming the whole N.E. frontier of Georgia. The Leſgi or Leſghans, who inhabit this country, are a wild and ſavage banditti, divided into different tribes and ſpeaking a different dialect. Their houſes are ſituated on the loftieſt mountains, and on the moſt tremendous precipices: they are connected by ſtone or wooden bridges, and roads carried through rocks; and they are ſupplied with water by pipes or canals cut out of the rocks. The ſoil is ſcanty, and in order to furniſh themſelves with the means of ſubſiſtence, the ſurface is increaſed to the ſummits of the elevated ground by graduated terraces, the intermediate ſpace being filled up with rubbiſh, and covered with earth. Theſe people are the braveſt, as well as the moſt turbulent, of all the nations of mount Caucaſus, exciting terror in their neighbours, laying waſte their cottages, and carrying away the inhabitants into ſervitude. They have long preſerved their liberty and independence, and rendered their country inacceſſible to any foreign invaders. Moſt of them are Mahometans; and the few tribes that continue in ignorance, never change the object of their veneration, which is either the ſun, moon, or ſtars; or indeed any thing that has made an impreſſion on their minds. They hire themſelves to fight the battles of their neighbours, at the price of twelve roubles the campaign, which is to ceaſe at the end of three months from the appointed day. They often take different ſides, not caring againſt whom they fight; and thus it often happens, that the Leſghan falls by the ſword of his brother or moſt intimate friend. They are lightly dreſſed, after the manner of the Tartars, and armed with a gun, piſtols, dagger, and ſabre. Their women ſurpaſs in ſymmetry and beauty all the females of mount Caucaſus, and fetch the largeſt prices in the markets of Conſtantinople. M'Kinneir's Perſia.

LESSERTIA, in *Botany*, named in honour of the late Mr. Stephen Deleſſert, to whoſe mother Rouſſeau's celebrated Letters on Botany were addreſſed, and who, like all his family, was no leſs endeared, to thoſe who knew him, by perſonal worth than by talents.—"De Cand. Aſtragal. 37."

37." Brown in Ait. Hort. Kew. v. 4. 327.—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Eſſ. Ch. Calyx five-cleft. Standard flat. Keel obtuſe. Stigma capitate. Style bearded in front. Legume membranous, without valves.

L. annua, (Colutea herbacea; Linn. Sp. Pl. 1045.), and *L. perennans*, (C. perennans; Jacq. H. Vind. v. 3. t. 3.), ſee Colutea, n. 11 and 12; with *L. diffuſa*, (Galega dubia; Jacq. Ic. Rar. t. 576; are the only ſpecies in Hort. Kew. all natives of the Cape of Good Hope, compoſing a very natural genus.

LETERT, in *Geography*, a townſhip of Gallia county, in Ohio, having 501 inhabitants.

LETTERKENNY, l. 2, *r.* 1549.

LEVER, col. 2, l. 3, *dele* (See *Plate Surgery*.)

LEVERETT, l. 4, *r.* 769.

LEWES. At the cloſe, *r.* The population of the rape of Lewes was ſtated, in the parliamentary return of 1811, to be 18,659 perſons, occupying 2932 houſes.

LEWIS XVI. col. 10, l. 44, *r.* the ſon, Lewis XVII., died very miſerably June 8th, 1795, and his ſiſter, Maria Thereſa Charlotte, was delivered up in exchange for deputies, December 26th, 1795. The queen was brought to the ſcaffold on October 16th, 1793, and Elizabeth, the king's ſiſter, May 12, 1794. Col. 11, l. 2, add—Lewis XVIII., on whom the crown devolved after the death of Lewis XVI. and his ſon Lewis XVII., retired, during the ſubſequent period of the *Revolution*, (which ſee,) firſt to Peterſburg, and was allowed a proceſſion by the emperor of Ruſſia, April 3d, 1798; he afterwards ſought an aſylum in this country, and landed at Yarmouth, under the title of the Count de Lille, October 6th, 1807; and being recalled to the throne of France, made his public entry into London from Hartwell, where he had reſided, April 21ſt, 1814; and having ſailed from Dover April 23d, made his entry into Paris May 3d, 1814; but quitted this city again in conſequence of the landing of Buonaparte in France, March 21ſt, 1815. After the battle of Waterloo, he returned to Paris, and reſumed the government, July 8th, 1815.

Lewis, in *Geography*, a county of New York, containing 6433 inhabitants, of whom 4 were ſlaves in 1810.—Alſo, a townſhip of Ohio, in Clermont county, having 903 inhabitants.—Alſo, a county of Kentucky, containing 2357 perſons.

LEWISBURG, a town of Kentucky, in Maſon county, having 19 inhabitants.

LEWISHAM. In 1811, the pariſh contained 1105 houſes, and 6625 perſons; 2923 being males, and 3702 females.

LEWISIA, in *Botany*, in memory of Meriwether Lewis, eſq. late governor of Upper Louiſiana, the diſcoverer of ſeveral new American plants.—Purſh 368.—Claſs and order, *Polyandria Monogynia*. Nat. Ord......

Eſſ. Ch. Calyx of many membranous leaves. Petals twice as many. Style three-cleft. Capſule ſuperior, of three cells. Seeds two in each cell, lenticular, poliſhed.

1. L. *rediviva*. Purſh n. 1.—On the banks of Clarck's river, perennial, flowering in July. *Leaves* radical, linear, rather ſucculent. *Stalk* radical, bearing one or two handſome white *flowers*, whoſe *calyx* is elegantly veined with red. *Purſh*.

LEWISTOWN, l. 3, *r.* 1038; l. *penult. r.* 474.

LEXAWASCEIN, a townſhip of Wayne county, in Pennſylvania, containing 165 inhabitants.

LEXINGTON, l. 2, add—containing 6641 inhabitants, of whom 1911 were ſlaves in 1810; l. 19, after univerſity, add—or college, a Lancaſterian ſchool, and other well-regulated ſeminaries; l. 22, *r.* in 1810, was 4326, of whom 1509 were ſlaves. In 1817, it amounted to 6000, though in 1773 it was merely a hunting camp; l. 28, after Georgia, add—in Oglethorp county, having 113 inhabitants; l. 34, add—In 1810, the inhabitants were 1052.

LEYDEN, l. *ult. r.* 1009.

LEYLAND, a townſhip of Leyland hundred, in Lancaſhire, which, in 1811, contained 459 houſes, and 2646 perſons; 1263 being males, and 1383 females: 97 families employed in agriculture, and 391 in trade, manufactures, and handicraft.

LIBEL, col. 4, l. 30, *dele* pillory.

LIBERTY, l. 12, *r.* 6228 inhabitants, of whom 4808 were ſlaves in 1810. At the cloſe—Alſo, a townſhip of Butler county, in Ohio, containing 1790 inhabitants.—Alſo, a townſhip of Ohio, in Delaware county, containing 206 inhabitants.—Alſo, a townſhip of Highland county, in Ohio, having 1120 inhabitants.—Alſo, a townſhip of Ohio, in Trumbull county, having 473 inhabitants.

LICHEN Islandicus, *Chemical Compoſition of*. This has been ſubmitted to a rigorous and curious analyſis by Berzelius. Our limits will not permit us to enter into the details, but the following are the reſults:

Syrup	3·6
Bitartrate of potaſh, with ſome tartrate of lime and phoſphate of lime	1·9
Bitter principle	3·0
Green wax	1·6
Gum	3·7
Extractive colouring matter	7·0
Starch	44·6
Starchy inſoluble matter	36·6
	102.0

We preſume in the above analyſis the exceſs of weight (if not an error) was owing to water.

This indefatigable chemiſt afterwards examined other ſpecies of *lichens*, ſuch as the *L. barbatus*, *L. faſtigatus*, and the *L. fraxineus*. He found them all characteriſed by the preſence of a ſpecies of ſtarch which poſſeſſes ſeveral peculiar properties.

LICHFIELD, l. 4, *r.* 1811—1010 houſes, 5022 inhabitants, 509 families employed, &c.

LICK, a townſhip of Ohio, in Roſs county, having 334 inhabitants.

LICKING. Add—Alſo, a county of Ohio, containing 7 townſhips, and 3852 inhabitants.—Alſo, a townſhip of the ſaid county, having 632 inhabitants.—Alſo, a townſhip of Ohio, in Muſkingum county, containing 796 inhabitants.

LIEOU-KIEOU, or Loo-choo, or *Great Loo-Choo*, l. 2, after number, add—or rather innumerable. At the cloſe, add—The beſt maps are wrong in the ſituation of Loo-choo. They place its town between 25° 45′ and 27° 53′ N. lat. and between 128°,5 and 129° E. long. The iſland is alſo made to extend about 130 miles from N. to S. with an uniform breadth of about 30 miles. Its true direction is nearly N.E. by N. and S.W. by S.; its length is only 56 miles, and its breadth about 11. The longitude of the weſtern extremity is 120° 34′ E., and of its eaſtern 128° 19′. The latitude of the S. point is 26° 4½′ N. and of the N. point 26° 52½′. See an intereſting account of theſe iſlands in Capt. Hall's Voyage to Loo-choo, or Edinburgh Rev. N° 58. p. 460, &c.

Vol. XXI.

LIME, in *Chemiſtry*. Lime, according to the recent determination of Dr. Thomſon, is a compound of 100 calcium + 38.09 oxygen: hence the weight of the atom of calcium will be 26.25, and of lime 36.25. We expect that the weight of the atom of lime will be hereafter proved to be 37.5 See Atomic *Theory*.

The ſalt of lime, commonly known by the name of *oxymuriate of lime*, and employed for bleaching, has been recently demonſtrated by Dr. Thomſon to be a real *chloride of lime*, and not a *chloride of calcium;* that is to ſay, it is a compound of *chlorine* and *lime*. (See Bleaching, Chlorine, and Oxymuriatic *Acid*.) Dr. Thomſon has alſo rendered it probable, that barytes, ſtrontian, potaſh, and ſoda, as well as many of the metallic oxyds, likewiſe unite with chlorine, and form *chlorides* of theſe reſpective baſes.

LIMERICK, in America, l. 4, *r.* 1177; l. 5, *r.* 1282.

LIMINGTON. Add—with 1774 inhabitants.

LINCOLN, col. 6, l. 4 and 3 from bottom, *r.* 1811—1813—8861.

Lincoln, in America, l. 16, after Warren, add—The number of inhabitants, in 1810, was 42,992; l. 22, *r.* 16,359—2489. Col. 2, l. 3, *r.* 4555; l. 4, 2212; l. 5, *r.* 8676—2341; l. 11, *r.* 109; l. 13, *r.* 221; l. 15, *r.* 713. Add—Alſo, a county of Weſt Tenneſſee, containing 6104 inhabitants, of whom 720 are ſlaves.

LINCOLNSHIRE, l. 8, *r.* 1811—46,368—237,891; l. 9, *r.* 117,022 males, 120,869 females, 13,184 families; l. 11, *r.* 29,881.

LINCOLNTOWN. Add—Alſo, a town of Georgia, in Lincoln county.

LINCOLNVILLE. Add—It contains 1013 inhabitants.

LINE, in *Fortification*. Add—See Field-*Fortification*.

LINGA, col. 2, l. 2, for fire *r.* fine.

LINLITHGOW, l. *ult.* *r.* 1811—4022—535; the country part having 229 houſes, and 1465 perſons; and the town part having 306 houſes, and 2557 perſons.

LINLITHGOWSHIRE, col. 2, l. 15, *r.* 1811—19,451, occupying 3098 houſes: the number of males is 8874, and that of females 10,577; of theſe 1506 families are employed in trade and manufactures, and 1132 in agriculture. Col. 4, l. 18, after town, add—The number of houſes in the pariſh is 352, and of perſons 2704.

LINNÆUS, col. 5, l. 24, *r.* journal. Col. 8, l. 19, *r.* Caper. Col. 11, l. 12, *r.* Oeland. Col. 15, l. 7, *r.* Hammaſley.

LINOZOSTIS. Add—See Mercurialis.

LIQUIDS, *Expanſion of*. See Expansion and Heat.

LISBON, in America, l. 3, *r.* 1128. Add—Alſo, a town of Maine, in the county of Lincoln, having 1614 inhabitants.

LISKEARD, l. 32, *r.* in the year 1811, the borough and pariſh were returned to parliament as containing 523 houſes, and 2884 perſons; the borough having 361 houſes, and 1975 perſons.

LISMORE. At the cloſe, add—By the returns of 1811, the pariſh of Liſmore, in the diſtrict of Lorn, contains 252 houſes, and 1323 perſons.

LISTERA, in *Botany*, dedicated by Mr. Brown to the memory of the famous Engliſh conchologiſt, Dr. Martin Liſter, who wrote ſeveral papers on vegetable phyſiology, in the Philoſophical Tranſactions.—Brown in Ait. Hort. Kew. v. 5. 201. Sm. Compend. 130.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Calyx and petals ſpreading. Lip without a ſpur, cloven, not embraced by the calyx. Column without wings. Anther parallel to the ſtigma.

L. ovata, and *L. cordata;* ſee Epipactis, n. 10 and 11.

LITCHFIELD, l. 2, *r.* 1847; l. 6, *r.* 1810—382; l. 9, *r.* 22; l. 10, *r.* 41,375; l. 20, *r.* 4639.

LITHION, Lithia, or rather Lithina, in *Chemiſtry*, the name of a fixed alkali recently diſcovered in Sweden, and ſo called from λίθος, *a ſtone*, becauſe obtained only from mineral ſubſtances. This alkali was firſt detected by Mr. Arvedſon, a young Swediſh chemiſt, and pupil of Berzelius. He obtained it from a mineral found at Uten, in Sweden, and which had been ſome time before deſcribed, and named *petalite* (ſee Petalite) by M. D'Andrada. He found it likewiſe ſoon after in *triphane* (or *ſpodumene*) and in cryſtallized *lepidolite*, all minerals from the ſame place.

Lithina is principally diſtinguiſhed from the other alkalies by its great capacity for ſaturating acids. Sir H. Davy has ſucceeded in reducing it to the metallic ſtate. *Lithinum*, as this metallic baſe may be called, bears a ſtrong reſemblance to the other alkaline metals, eſpecially to ſodium, to which it ſeems moſt nearly allied.

With reſpect to the ſalts of lithina, they have not yet been rigorouſly examined. The *ſulphate* cryſtallizes with ſufficient facility, and the cryſtals contain no water of cryſtallization. Their ſolution is not precipitated by the muriate of platinum, nor by the tartaric acid. The *muriate* deliqueſces like the muriate of lime, and melts below a red heat. The *nitrate* cryſtallizes in rhomboids, but readily attracts moiſture. The *carbonate* cryſtallizes in priſms, and the cryſtals which are commonly very minute are not very ſoluble in water. The *ſulphuret* of lithina is very ſoluble, and of a yellow colour.

According to Vauquelin, 100 parts of lithina contain 43.5 of oxygen; hence the weight of the atom of lithinum will be very nearly 13, and of lithina 23, from which data the compoſition of all its ſalts can be eaſily aſcertained.

LITHOMARGE. See Mineralogy, *Addenda*.

LITHONTRIPTICS. See Lithotomy, and Urinary *Calculi*.

LITTLE Britain, l. 14, *r.* 1700.

Little *Beaver*, a townſhip of Beaver county, in Pennſylvania, having 1379 inhabitants.

Little *Compton*, l. 2, *r.* 1553.

Little *Creek*, l. 2, *r.* 2039; l. 3, *r.* 3840.

LITTLESTOWN, a townſhip in Adams' county, in Pennſylvania, having 287 inhabitants.

LITTLETON, l. 3, *r.* 773; l. 5, *r.* 873.

LIVERMORE, l. 2, *r.* Oxford for Cumberland; l. 4, *r.* 1560.

LIVERPOOL, l. 6, *r.* 1811—94,376—15,589.

LIVINGSTON, l. 4, *r.* 3575—685.

LLANBADARN Vawr, col. 2, l. 17, excluſive of Aberyſtwith; l. 18, *r.* 1811—525—2998. Aberyſtwith contains 477 houſes, and 2264 perſons.

LLANBEDER, l. 2, *r.* Moyddyn; l. 10, for Tueſday *r.* Saturday; and add—it has nine fairs in the year; l. 21, *r.* 1811—128; l. 22, *r.* 692.

LLANDAFF, near the cloſe, *r.* 1811—199 houſes, and 963 inhabitants.

LLANDEILO Vawr, l. 2, inſert—Cayo, and *r.* Perfedd. Col. 2, l. 46, *r.* The inhabitants of Llandeilo, excluſive of the hamlet of Llandeilo-villa in the hundred of Perfedd, which contains 184 houſes, and 776 inhabitants, according to the parliamentary returns of 1811, are eſtimated at 1103, and the houſes at 222.

LLANDOVERY, l. 6. By the returns of 1811, the townſhip contained 266 houſes, and 1442 inhabitants. Col. 2, l. 5, for Friday *r.* Saturday. Add—It has ſix fairs in the year.

LLANDRINDOD. Add—In 1811, the pariſh was returned as containing 32 houſes, and 171 inhabitants.

LLAN-ELLY, l. 3, *r.* 1811; l. 4, *r.* 862, and 3891; l. 16, add—This is one of the moſt thriving places in South Wales. It abounds with excellent coals and iron-ore, extenſive iron-works, and alſo lead and copper works.

LLAN-GADOG Vawr, l. *ult. r.* 1811—1964; and add—378 houſes.

LLANGOLLEN, l. 4, *r.* 1811; l. 5, add—thoſe of the pariſh, comprehending three townſhips, amounted to 612, and the inhabitants to 2897.

LLANNERCH Y MEDD, l. 3, add—the pariſh of Amlwch contains, by the returns of 1811, 920 houſes, and 4210 inhabitants.

LLAN RHAIADAR, col. 2, l. 6 and 7, *r.* 1811—1974; add—414 houſes.

LLANRWST, near the cloſe, *r.* 1811—2502, and 452 houſes.

LLANSTEPHAN, col. 2, l. *ult. r.* 1811—997—221.

LLANTRISSENT, l. *ult. r.* 1811—246—2122.

LLANVYLLING, or Llanfyllin, l. *ult. r.* 1811; the pariſh of Llanvylling contained 291 houſes, and 1508 inhabitants.

LLANYDLOES. Add—By the return of 1811, the pariſh contained 470 houſes, and 2386 inhabitants.

LLAUGHARNE, l. *ult. r.* 1561; and add—the number of houſes was 283.

LOCHE. See Cobitis.

LOCKERBIE. In 1811, the whole pariſh of Dryſdale contained 369 houſes, and 1893 perſons; 904 being males, and 992 females.

LOGAN, l. 2, *r.* 11,591, including 2285 ſlaves in 1810.

LOGWOOD, *Chemical Properties of.* See Hematin.

LONCHURUS for Lonchiurus.

LONDON, in *Geography*, a town of Rockingham county, in New Hampſhire, having 1492 inhabitants.

London *Britain*, a townſhip of Cheſter county, in Pennſylvania, having 404 inhabitants.

LONDONDERRY, in America, l. 5, *r.* 2766; l. 16, add—containing, in 1810, 637 inhabitants.—Alſo, three townſhips in Pennſylvania, one in Dauphin county, having 2411 inhabitants; *dele* the reſt of the article, and add—the ſecond in Cheſter county, having 1164 inhabitants; and another in Bedford county, having 486 inhabitants.

LONDONGROVE, l. 2, *r.* 983.

LONG Meadow, l. *ult. r.* 1036.

Long *Sweep*, a townſhip of Mercer county, in Pennſylvania, having 998 inhabitants.

LONGTOWN. In 1811 this townſhip contained 173 houſes, and 1579 perſons; *viz.* 744 males, and 835 females: 169 families being employed in agriculture, and 147 in trade, manufactures, and handicraft.

Longtown, a townſhip of Ewaſlacy hundred, in the pariſh of Clodock, and county of Hereford, which, by the returns of 1811, contained 164 houſes, and 844 perſons; *viz.* 423 males, and 421 females: 124 families being employed in agriculture, and 40 in trade, &c.

LOO-CHOO. See Lieou-Kieou.

LOOE, East, l. 14, *r.* 1811—128—608.

Looe, *Weſt*, l. 13 and 14, *r.* 1811—92—433.

LOSTWITHIEL, col. 2, l. 17 and 18, *r.* 1811; for town *r.* borough and pariſh—132 houſes, 825 inhabitants.

LOTTERLOCH, a town of Orleans county, in Vermont, having 101 inhabitants.

LOUDON, l. 3 and 4, *r.* containing 21,338 inhabitants, of whom 5157 are ſlaves.

LOVELL, l. 1, for York *r.* Oxford, add—containing 365 inhabitants.

LOUGHBOROUGH. In 1811 this pariſh contained 1128 houſes, and 5400 perſons; *viz.* 2612 males, and 2788 females: 186 families being employed in agriculture, and 847 in trade, manufactures, or handicraft.

LOUGHOR, a borough of Wales, in the county of Glamorgan and hundred of Swanſea, which in 1811 contained 112 houſes, and 473 inhabitants.

LOUIS, St., l. 23, add—St. Louis forms a diſtrict of Louiſiana, and in 1810 contained 5647 inhabitants, of whom 740 were ſlaves.

LOUISA, in Virginia, l. 3 and 4, inſert—11,900 inhabitants, of whom 6430 were ſlaves.

LOUISIANA. At the cloſe, add—According to the cenſus of 1810, Louiſiana comprehends the diſtricts of St. Charles, of St. Louis, of St. Genevieve, of Cape Girardeau, of New Madrid, and alſo the ſettlements of Hope Field and St. Francis, and alſo ſettlements on the Arkanſas; and the number of inhabitants is ſtated at 20,845, of whom 3011 are ſlaves. See United States.

LOUREIRA, in *Botany*, in memory of the venerable Father John de Loureiro, author of the *Flora Cochinchinenſis*, who died about the year 1797, at Liſbon.—Cavan. Ic. v. 5. 17. Willd. Sp. Pl. v. 4. 866. Ait. Hort. Kew. v. 5. 418.—Claſs and order, *Dioecia Monadelphia.* Nat. Ord. *Tricoccæ*, Linn. *Euphorbiæ*, Juſſ.

Eſſ. Ch. Male, Calyx in five deep ſegments. Corolla bell-ſhaped, five-cleft. Stamens 8—13, connected at the baſe.

Female, Cal. and Cor. like the male. Capſule ſuperior, two-lobed, two-celled. Seeds ſolitary.

1. L. *cuneifolia.* Cav. t. 429. Willd. n. 1.—Leaves obovate-lanceolate, partly three-lobed.—Native of Mexico. A *ſhrub*, with ſtalked aggregate *leaves*, and pale red *flowers*, from lateral buds.

2. L. *glanduloſa.* Cav. t. 430. Ait. n. 1.—Leaves heart-ſhaped, fringed with glands. From the ſame country. *Stem* ſhrubby, forked, with forked axillary *panicles* of male *flowers;* the ſtalks of the female ones ſimple.

LOUTH, col. 3, l. 1, *r.* 1811; l. 3, *r.* 4728—976.

LOWER *Alloway's Creek.* Add—It contains 1184 inhabitants.

Lower *Chanceford*, a townſhip of York county, in Pennſylvania, having 818 inhabitants.

Lower *Dublin*, l. 2, *r.* 2194.

Lower *Townſhip*, a townſhip of Capeway county, in New Jerſey, having 862 inhabitants.

Lower *Penn's Neck.* Add—containing 1163 inhabitants.

Lower *Merion*, a townſhip of Montgomery county, in Pennſylvania, having 1835 inhabitants.

Lower, for other articles under the denomination of, ſee Mahontogo, Mohaus, Mount Bethel, Nazareth, Chichester, Darby, Providence, Oxford, Salford, Smithfield, and Wakefield.

LOWHILL, l. 2, *r.* 632.

LOYALSOCK, a townſhip of Lycoming county, in Pennſylvania, having 850 inhabitants.

LUÇON, col. 3, l. 5, *r.* Columba; l. 12, ditto.

LUDGERSHALL, l. 3, 1811—this borough and pariſh—114—487.

LUDLOW, l. 29 and 30, *r.* 1811—851—4150.

Ludlow, in America, l. 3, *r.* 730; l. 4, *r.* 877.

LULWORTH, East, l. 4, *r.* 81—382.

LUNENBURG, in Virginia, l. 3, *r.* 12,261 inhabitants, of whom 7155 were ſlaves in 1810; l. 6, *r.* 744. Do. *r.* 1371.

LURGAN, l. 2, *r.* 874.

LUTON. In 1811 the pariſh contained 726 houſes, and 3716 perſons; *viz.* 1695 males, and 2021 females: 418 families being employed in agriculture, and 219 in trade and manufactures.

LUTTERWORTH, l. 16 from the bottom, *r.* 1811—410—1845.

LUZERNE, l. 5, *r.* 29; l. 8, *r.* 18,109; add—Alſo, a townſhip of Fayette county, in Pennſylvania, having 1538 inhabitants.

LYCOMING, l. 5 and 6, *r.* 18—11,006; add—Alſo, a townſhip in the ſaid county, having 795 inhabitants.

LYCOPERDON. Add—See TULOSTOMA.

LYMAN, l. 5, *r.* 948; l. 7, add—with 1248 inhabitants.

LYME, l. 1, *r.* containing 670 inhabitants; l. 6, *r.* 4321.

LYME-*Regis*, col. 2, l. 8 and 7 from the bottom, *r.* 1811—1925—342.

LYMINGTON, l. 18 and 17 from the bottom, *r.* 1811—2641—534.

LYNDEBOROUGH, l. 4, *r.* 1074.

LYNDHURST, l. 24 and 25, *r.* 1811—192—1015.

LYNDON, l. *ult.* *r.* 1090.

LYNN, l. 5, *r.* 4087; add—Alſo, a townſhip of Northampton county, in Pennſylvania, having 1497 inhabitants.

LYNN-*Field*, l. *ult.* *r.* 509

LYNN-*Regis*, l. *ult.* *r.* 1811—2199—10,259.

LYONS, l. 38, after branches, add—The preſent manufactures of Lyons conſiſt chiefly of cloths, of gold, ſilver, and ſilk, galloons, ribbons, and lace, and the produce of furriers, hatters, and bookſellers, beſides thoſe of the working of gold-thread, ſilk-weavers, dyers, &c. Col. 2, l. 26, add—ſome reckon the whole population at 150,000.

LYTHIODES. See MINERALOGY, *Addenda*

M.

MACCLESFIELD, l. 6 from bottom, *r.* 1811—2518—12,299; of whom 2458 families were employed, &c.; l. 3 from the bottom, for that period *r.* the return in 1800.

MACHIAS, l. 14, *r.* 1810—1570.

VOL. XXII.

MAC-INTOSH, in *Geography*, a county of Georgia, which, with its town Darien, contains 3739 perſons, including in the county 2850, and in the town 107 ſlaves.

MACKEAN, a county of Pennſylvania, containing Ceres townſhip, and 142 inhabitants.

MACPHERSON, col. 2, l. 29, for Lairy *r.* Laing.

MACROMETER, an inſtrument invented by Dr. Wollaſton, for meaſuring directly the diſtance of inacceſſible objects, by means of two reflectors, mounted as in a common ſextant, but at a greater diſtance from each other.

MACROPODIUM, in *Botany*, from the *long foot*, or ſtalk, of its ſeed-veſſel.—Brown in Ait. Hort. Kew. v. 4. 108.—Claſs and order, *Tetradynamia Siliquoſa.* Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pod linear, ſtalked. Cotyledons accumbent. Calyx erect.

1. M. *nivale.* Siberian Macropodium. Ait. n. 1. (Cardamine nivalis; " Pallas It. v. 2. Append. n. 113. t. U. Willd. Sp. Pl. v. 3. 482.)—Native of Siberia, from whence it was procured for Kew garden, in 1796, by ſir J. Banks. A hardy perennial, flowering in ſummer. *Herb* ſmooth, pale green, with oblong, toothed *leaves;* the radical ones ſtalked. *Flowers* ſmall, white. *Pods* reflexed. *Willd.*

MACUACO, FLYING, of Pennant, in *Zoology*, the Lemur volans of Linnæus; for an account of which, ſee GALEOPITHECUS *volans.*

MACUNGY, l. 2, *r.* 2420.

MADBURY, l. 4, *r.* 684.

MADDERING, an operation performed in *Calico*-PRINTING; which ſee.

MADDOX, l. 32, *dele* to that of St. Aſaph; and for and from thence to *r.* that of Worceſter.

MADELEY, l. 9.—In 1811, the pariſh contained 1026 houſes, and 5076 perſons; *viz.* 2502 males, and 2574 females: 18 families being employed in agriculture, and 747 in trade, manufactures, or handicraft.

MADISON, l. 4, *r.* 8381 inhabitants, of whom 3970 were ſlaves in 1810; l. 7, *r.* 11,587—3000. At the end, add—Alſo, a townſhip of Maine, in Somerſet county, having 686 inhabitants.—Alſo, a county of New York, containing 25,144 inhabitants, of whom 35 were ſlaves in 1810.—Alſo, a townſhip of Ohio, in Guernſey county, having 249 inhabitants.—Another in Highland county, with 430 perſons.—Another in Knox county, with 138 perſons.—Alſo, a county of Ohio, containing ſix townſhips, and 1603 inhabitants.—Alſo, a townſhip of Montgomery county, with 426 perſons.—Another of Muſkingum county, with 426 perſons.—Another of Pickaway county, with 406 perſons.—Another of Butler county, with 1228 perſons.—Another of Columbiana county, with 539 perſons.—Another of Gallia county, having 170 inhabitants.—Another of Scioto county, with 307 perſons.—Alſo, a town of Georgia, in Morgan county, having 124 inhabitants.—Alſo, a county of the Miſſiſſippi territory, having 4699 inhabitants, of whom 948 were ſlaves in 1810.—Alſo, a townſhip of Clarke county, in the Indiana territory.

MADRID, in America. At the cloſe, add—The diſtrict, by the cenſus of 1810, contains 2103 inhabitants, of whom 287 were ſlaves.

MAD-RIVER, a townſhip of Champaign county, in Ohio, having 1008 inhabitants.

MAGIC, Superstitious, inſert—has been ſuppoſed to conſiſt; in l. 2, inſert after its—ſuppoſed; l. 7, *dele* half.

MAGIC Square, col. 5, l. 18 from bottom, *dele* and.

MAGNESIA, in *Chemiſtry*. According to the lateſt determinations, the weight of the atom of magneſia is 25, that of oxygen being 10; from this, the compoſition of its ſalts can be eaſily aſcertained. See Atomic *Theory*.

Separation of Magneſia from Lime.—We may take the opportunity of mentioning here an ingenious method of effecting this difficult chemical problem lately propoſed by Mr. R. Phillips, and originally ſuggeſted, we believe, by Mr. T. Cooper. The two earths are to be reduced to the ſtate of ſulphate, and then well waſhed with a ſaturated ſolution of ſulphate of lime, which readily diſſolves, and thus ſeparates the ſulphate of magneſia, but which, from its being already ſaturated, can take up no more ſulphate of lime.

MAGNESIAN Lime-stone. See Mineralogy, *Addenda*.

MAGNESITE. See Mineralogy, *Addenda*.

MAGNESIUM, in *Chemiſtry*, the metallic baſis of magneſia. See Magnesia.

MAGNOTS. At the end, add—See Maina.

MAHBNING, a townſhip of Northumberland county, in Pennſylvania, with 829 inhabitants.

MAHIM, for 17 miles N. of Bombay *r.* 7 miles N. of Bombay fort.

MAHONING. Add—In Indiana county, having 552 inhabitants.—Alſo, a townſhip of Mercer county, in the ſame ſtate, having 1316 inhabitants.

MAHONTOGO, *Lower* and *Upper*, two townſhips of Berks county, in Pennſylvania; the former having 637, and the latter 489 perſons.—Alſo, a townſhip of Northumberland county, having 1608 inhabitants.

MAID, or Maiden. See Virgin.

Maid, in *Ichthyology*. See Skate.

MAIDEN Creek, in *Geography*, a townſhip of Berks county, in Pennſylvania, having 918 inhabitants.

MAIDENHEAD, col. 2, l. 8, *r.* 1811—792—161.

Maidenhead, in America, l. 4, *r.* 1810—1086.

MAIDSTONE, col. 3, l. 21, &c. *r.* 1811—9443; *viz.* 4412 males, and 5031 females: of whom 942 families are employed in trade and manufactures, and 437 in agriculture. The number of houſes is 1706.

Maidstone, in America, l. 2, *r.* 177.

MAINA, a diſtrict of the Morea, including that part of the country anciently called Laconia, that lies between the gulf of Meſſene and Gythium, bounded on the N. by the higheſt range of Taygetus, from which a chain of rugged mountains deſcends to Cape Matapan, the ſouthern termination of the country. It is watered by Pamiſus, now the Pirnetza, the broadeſt river of the Peloponneſus. The plains round Calamata, a town towards the N.W., are fertile and well cultivated, abounding with the cactus, a prickly pear, the white mulberry affording food for great numbers of ſilk-worms, and various fruit-trees. The town is built on a plan that is well adapted for defending the inhabitants againſt the attacks of the pirates that infeſt the coaſt. The government of the Maina, in 1795, reſembled that of the Scottiſh iſlands in former time. Over each diſtrict preſided a capitane, whoſe reſidence was a fortified tower. Each chief, beſides his own domain, received a tithe from the produce of the land of his retainers; and the different chiefs were independent of each other. Becauſe the Mainots were reluctant to ſubmit to the charatch, or poll-tax, they had been repeatedly attacked by the Turks, but without ſucceſs; when an enemy appeared, the coaſt was immediately deſerted, and the inhabitants retired to the ſtrong holds of Taygetus. Expert alſo in the uſe of the rifle, beſides the advantages of their ſituation, they have been able to defy the Turkiſh forces. Some of the chiefs were found by Mr. Morritt to be tolerably verſed in Roman literature, and ſome capable of reading Herodotus and Xenophon. The laws of hoſpitality were obſerved amongſt them with the ſtricteſt punctiliouſneſs, and letters of recommendation ſecured to travellers a friendly reception. The religion of the Mainots is that of the Greek church, with all its mummery. Their women were never ſecluded nor enſlaved, and therefore neither corrupted nor ignorant. They diſtinguiſhed themſelves by attention to domeſtic management, and the education of their children. Inſtances of conjugal infidelity were rare. In caſe of neceſſity, it is ſaid that the Mainots can bring 12,000 men into the field. See Walpole's Memoirs on Turkey, &c. 1817.

MAINE, at the cloſe, add—See United States.

MAINOTS. See Maina.

MAKEFIELD *dele*: add—See Wakefield.

MAKONGO, one of the ſtates of Loango in Africa, of which Malemba is the port. The king of Makongo, or Malemba, reſides inland at a town called Chingalé, the Kinkalé of the charts.

MALABAR, l. 11, add—The Malabar language prevails on the weſtern coaſt of Cape Comorin, extending over Travancore and Malabar, formerly named Kêrala, as far N. as Nilifuran. See Toolava.

MALCOMIA, in *Botany*, named in honour of Mr. William Malcolm, a celebrated cultivator, to whom the Engliſh gardens are much indebted.—Brown in Ait. Hort. Kew. v. 4. 121.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pod nearly cylindrical, of two valves. Stigma ſimple, acute. Cotyledons incumbent, flat. Calyx cloſed.

This appears to us a very natural and well-defined genus, though hitherto confounded with *Cheiranthus*. The three ſpecies in Hort. Kew. are,

1. M. *maritima*. See Cheiranthus, n. 14; a pretty annual, frequently and eaſily cultivated.

2. M. *africana*. (Heſperis africana; Willd. Sp. Pl. v. 3. 532. Leucojum gallicum, folio halimi; Bocc. Sic. 77. t. 42. f. 1.)

3. M. *littorea*. See Cheiranthus, n. 21. (Leucojum marinum minus; Cluſ. Hiſt. v. 1. 298. f. 2.)

MALDEN, col. 2, l. 12, *r.* 1811; l. 13, *r.* 505—2659.

Malden, l. 4, *r.* 1384.

MALEMBO, or Malemba. Add—See Makongo.

MALIC Acid, in *Chemiſtry*. See Sorbic *Acid*.

MALKOHA. See Phœnicophæus.

MALLENDERS, a cutaneous diſeaſe, commonly confined to draught-horſes: it is an inflammation of the ſkin below the hock, producing cracks which diſcharge a fœtid matter. For the cure of this diſorder, owing to want of cleanlineſs and friction, the hair ſhould be clipped, and the parts well waſhed with ſoft-ſoap and water; and Mr. White recommends the following ointment: *viz.* a compoſition of 2 oz. of wax ointment, 1 oz. of olive-oil, oil of turpentine and camphor, of each 1 dr., and 2 drs. of acetated water of litharge. Mr. Ryding recommends a mixture of 1 oz. of ſtrong quickſilver ointment, and 10 grs. of muriated quickſilver in fine powder. When this diſeaſe occurs above the knee, it is called *ſallanders*.

MALLING, West, l. 6 and 7 from the bottom, *r.* 1811—1154—223. Add—In 1811, the number of houſes in Eaſt Malling was 217, and of inhabitants 1256.

MALMESBURY, col. 2, l. 34, *r.* 1811; l. 35, 237—1152.

MALPAS. In 1811, the townſhip contained 193 houſes, and 938 perſons; *viz.* 478 males, and 460 females.

MALTA, a town of the diſtrict of Maine, in the county of Kennebeck, having 468 inhabitants.

MALVERN, Great, l. 22 from the bottom, *r.* 1811—1205 inhabitants, occupying 204 houſes.

MAMAT, St. *r.* *St.* Mamot.

MAMMALIA. *Dele* the account of the plates.

MAMMOTH, or Mammont, in *Natural Hiſtory*. The name of mammoth has been given to two very different animals, whoſe remains are found in a foſſil ſtate; the firſt, which has been for ages called ſo by the Ruſſians and Siberians, occurs abundantly on the north part of the ancient continent. It is a ſpecies of elephant, the ivory of which is ſo well preſerved as to become an article of commerce. This animal, according to the reſearches of Cuvier, is a different ſpecies of elephant from that of India or Africa, reſembling the former the moſt. The American mammoth, as it has been called, belongs not only to a ſpecies diſtinct from the European mammoth, but from the Indian or African elephant, and from the form of its teeth muſt be even claſſed as a diſtinct genus; he has given it the name of maſtodon. See Mastodon, *Addenda*.

Of the Ruſſian maſtodon very erroneous accounts have been publiſhed, particularly reſpecting its ſize. An animal of this kind having been diſcovered preſerved entire in the ice, by a Tunguſſian fiſherman in Siberia, was afterwards deſcribed by Mr. Adams; but, according to Cuvier, the great ſize attributed to it by that gentleman does not accord with the actual admeaſurement of the bones, the head weighing, according to this account, four hundred pounds, which brings it nearly to the known ſize of the foſſil elephant. The moſt remarkable fact ſtated by Mr. Adams is, that the animal was covered with two kinds of hair; the one red, which was both of a finer and coarſer ſort; the other was long, black, and briſtly. This hair was very abundant. The fact proves two things of importance in the natural hiſtory of the mammoth, namely, that it was a different ſpecies from living elephants, and that it was ſufficiently covered to enable it to live in cold climates. It is a commonly received tradition in Siberia, that theſe animals are frequently found entire in the ground, from whence the name of mammoth is derived, which ſignifies an animal that lives in the earth. According to Cuvier, theſe facts prove that the foſſil elephant periſhed by a ſudden revolution of the globe that deſtroyed the whole ſpecies, and which froze the individuals that were then in the northern regions: nor can any reaſon be advanced why theſe remains ſhould not continue preſerved in the eternal ice of thoſe countries, till diſcovered by accident, or the hands of man. Thoſe which were overtaken and buried in more ſouthern climates are more decompoſed, and their bones have become more or leſs friable; but this decompoſition is the only change which they have undergone; they are neither broken nor rolled, and it may be clearly perceived that they periſhed where their bones are now found. Many bones of the ſame ſpecies of mammoth, or foſſil elephant, have been diſcovered in different parts of England. We have ſeen a tooth, one of the molares of theſe animals, found near Whitby in Yorkſhire, which meaſured ſeventeen inches round.

The greateſt number of the teeth of the mammoth that have been examined reſemble at firſt ſight thoſe of the Indian elephant; but, according to Cuvier, the ſtructure, on more attentive obſervation, will be found ſomewhat different. In the living ſpecies of elephants, the ſize of the tuſks varies with the ſpecies, the ſex, and the varieties; and as they continue to grow during the life of the animal, age determines their dimenſions more than any other cauſe. The tuſks of the African elephant are larger than thoſe of the Indian; they are harder, and preſerve their whiteneſs better. According to Pennant, Moſambique furniſhes tuſks of living elephants ten feet in length, which are the largeſt that are known. The degree of curvature in the tuſks differs as much as the ſize; ſome occaſionally occur in a ſpiral form, and ſome in that of the letter S. We are unacquainted with the differences that might exiſt in the curvature of the tuſks of the mammoth occaſioned by difference of ſex or other cauſes. Many of the tuſks have the common degree of curvature, but others have much more curvature than occurs in any living elephants, approaching to a ſemicircle or half an ellipſe divided through its tranſverſe axis. Some tuſks of the mammoth are formed ſpiral, like what ſometimes occur among living elephants. The height of the mammoth did not greatly exceed that which the Indian elephants can attain. It is however certain from its remains, that the mammoth differed as much from the Indian elephant as the aſs differs from the horſe.

The bones of the mammoth, or foſſil elephant, are generally found in alluvial ſoil, near the ſurface of the ground. They are ſeldom iſolated, but generally mixed with bones of other quadrupeds of known genera; as the rhinoceros, the ox, the horſe, and the antelope; and are often accompanied with the remains of marine animals, ſuch as ſhells, parts of which are attached to the bones. Cuvier ſtates that he has in his poſſeſſion a jaw-bone covered with millepores and oyſters.

The beds which cover the bones of the foſſil elephant have ſeldom any great depth, and are ſcarcely ever compoſed of ſtone. They are rarely petrified, and only one or two inſtances are quoted where they were incruſted with a ſhelly ſtone. Often they are only accompanied with freſh-water ſhells. Every thing appears, ſays Cuvier, to announce that the cauſe by which they were buried is one of the moſt recent that has contributed to change the ſurface of the globe. It was nevertheleſs a cauſe general in its operation, for theſe foſſil bones of elephants are too numerous, and occur in countries too remote and uninhabited to allow us to ſuppoſe that they have ever been brought there by man.

The beds which contain and cover theſe remains ſhew, that the cauſe by which the animals were deſtroyed was water, and in many inſtances the waters were the ſame as thoſe of the preſent day, ſince they contained the ſame ſpecies of ſhell-fiſh. Theſe bones are not waterworn, and therefore have not been tranſplanted from a diſtance.

The ſhells and millepores which adhere to them prove that they remained ſome time covered only with water. The different ſpecies of maſtodon, the gigantic tapir, and the foſſil rhinoceros, lived in the ſame countries as the foſſil elephant, ſince their bones are found in the ſame beds and preſerved in the ſame ſtate. Every thing therefore leads us to conclude that the mammoth, or foſſil elephant, is an extinct ſpecies, though it differs leſs from exiſting ſpecies than the other remains of quadrupeds that are found in the ſame ſituations. In a former part of this work, under the article Megatherium, the diſcovery of the foſſil elephant deſcribed by Mr. Adams is more particularly given; but the animal is erroneouſly ſuppoſed to belong to another ſpecies than the elephant, and the tuſks are called horns. (See Mastodon, Megalonix, and Megatherium, *Addenda.*) According to Pallas, there is ſcarcely a river from the Don or the Tanais to Tchutſkoinoſs in the banks of which the bones of the mammoth are not abundant, and two iſlands of great ſize near the mouth of the Indigerſka ſeem entirely compoſed of theſe bones mingled with ice, ſand, and the bones of the elk, rhinoceros, and other large quadrupeds.

Similar bones are found in Poland, Germany, France, Holland, and Hungary. We have before mentioned that they are found in various parts of England, and no where more abundantly than in the vale of Thames, particularly near Brentford. The teeth and bones have been generally found in alluvial ſoil over the chalk formation; but in Mr. Bakewell's Introduction to Geology, an inſtance is given of an entire ſkeleton having been found in a cavern in the mountain lime-ſtone near Wirkſworth, in Derbyſhire, in 1663. Its ſkull was ſo large that it is ſtated to have held four buſhels of corn.

MANCHA, La, l. 1 and 2, *r.* bounded on the N. by New Caſtile; *dele* north of.

MANCHESTER, l. 10, add—In 1811, the number of houſes in Mancheſter and Salford was 16,353, and that of the inhabitants 98,573; 44,332 being males, and 54,241 females: of whom 19,639 families were employed in trade and manufactures, and 47 in agriculture:—l. 15, *r.* the whole population of which, including Mancheſter, was 138,349.

Manchester, in America, l. 4, *r.* 1137; l. 7, *r.* 1502; l. 9, *r.* 1579; l. 10, *r.* 978; add—Alſo, a town of Hillſborough, in New Hampſhire, containing 615 inhabitants.

MANEGE, or Menage, denotes an academy, riding-ſchool, or other place for learning to ride, and for breaking horſes to their various motions and actions. Alſo, the exerciſe itſelf, or the art of riding, which teaches at the ſame time to form the horſeman and the horſe.

MANE-SHEET, in the *Manege*, a covering for the upper part of a horſe's head, extending round his neck, with holes for the ears to paſs through, and joining to the halter upon the fore-part of the head, and likewiſe to the ſurcingle, or long girth, upon the horſe's back.

MANGANESE, in *Chemiſtry*. The ſpecific gravity of mangaueſe, according to Dr. John, is 8.013. A good deal of confuſion ſtill exiſts reſpecting the oxyds of this metal. According to Dr. John, there are three oxyds; the *green*, the *brown*, and the *black*. According to Berzelius, there are no leſs than five. Sir H. Davy could only obtain two, and Dr. Thomſon agrees with him in concluding there are but two; namely, the *olive* or *protoxyd*, which combines with acids, and forms the common ſalts of mangaueſe; and the *black* or *peroxyd*, which is found native. From the experiments of Dr. John and Berzelius, Dr. Thomſon fixes the weight of the atom of manganeſe at 35, and of courſe that of its protoxyd at 45; from which data, if correct, the compoſition of its ſalts may be eſtimated. The following *erratum* exiſts in this article in the Cyclopædia. Col. 3, l. 16, for malats *r.* metals; alſo in the ſame col. paragraph 9, at the end of the ſentence reſpecting iron, add—Berzelius has lately ſhewn, that manganeſe is a conſtituent of *caſt iron*.

MANGE, a cutaneous diſeaſe, incident to many domeſtic quadrupeds, and attended with an eruption and loſs of hair. Its cauſes, according to Mr. Ryding, are, ſudden changes of temperature, hot ſtables, bad diet, and want of cleanlineſs. It is alſo communicated by infection, as when a ſound horſe rubs himſelf againſt a ſtall, in which a mangy horſe had been kept. Its ſymptoms are, loſs of fleſh, without any apparent cauſe, a ſtaring of the coat, and afterwards eruptions, diſcharging a thick yellowiſh matter, which forms a kind of ſcurf that peels off, and a falling off of the hair. The diſorder, though partial at firſt, ſoon ſpreads all over the body, and is attended with an itching, which cauſes the horſe to rub againſt every thing that comes in his way. It is ſaid, that with attention to cleanlineſs, an ointment compoſed of 1 lb. of prepared hog's-lard, $\frac{1}{2}$ lb. of ſulphur, 3 oz. of white hellebore in fine powder, and olive-oil in ſufficient quantity, rubbed over the affected parts, and repeated after an interval of three days, will after two or three applications complete a cure. Some ſay, that if the animal's ſtrength will allow it, the cure ſhould be commenced with bleedings, and a ball formed of powdered nitre, powdered roſin, and caſtile ſoap, of each $\frac{1}{2}$ oz., 1 drachm of camphor in powder, and honey *q. s.* ſhould be given in the evening. Attention ſhould be paid to diet, exerciſe, and good grooming; the bowels ſhould be kept in a proper ſtate with maſhes, in which 1 oz. of nitre is diſſolved; the affected part ſhould be well waſhed with a ſtrong ſolution of ſoft-ſoap, and afterwards rubbed morning and evening with an ointment compoſed of 4 oz. of flowers of ſulphur, 3 oz. of hog's-lard, and 2 oz. of quickſilver ointment. The ointment may be continued every other day, until the diſeaſe is removed. Two or three doſes of mild phyſic are recommended, and then a ball made of Æthiops' mineral, crude antimony in powder, and cream of tartar, of each $\frac{1}{2}$ oz., and honey *q. s.* ſhould be given every night for a month.

In a ſlight caſe, ſtrong tobacco infuſion with one-third part of ſtale urine, uſed for waſhing the affected parts, will be ſufficient; but as an efficacious unguent, the following is recommended; *viz* $\frac{1}{2}$ lb. of quickſilver ointment, 4 oz. of finely powdered brimſtone, 2 oz. of black ſoap, 1$\frac{1}{2}$ oz. of crude ſal ammoniac, and oil of bays and turpentine *q. s.*; or tar, gun-powder finely pulverized, black ſoap, and oil of turpentine, of each about equal quantities; the ſores may be waſhed twice a day with a lotion compoſed of $\frac{1}{2}$ oz. of muriated mercury (ſublimate) in powder, diluted in 1$\frac{1}{2}$ pint of boiling water; or muriated mercury, muriated ammonia (crude ſal ammoniac), of each from two to three drachms, and three half pints of boiling water.

MANHEIM, l. 3, *r.* 1282; l. 5, *r.* 2207; add—Alſo, a townſhip in Berks county, having 1354 inhabitants.

MANINGTREE, l. 18, *r.* 1811; l. 19, *r.* 1075—217.

MANNA, *Chemical Properties of.* Manna differs from ſugar in ſeveral remarkable particulars. It diſſolves very readily and abundantly in alcohol, and cryſtallizes on cooling. Nitric acid converts it partly into oxalic, and partly into ſaclactic acid. It does not ferment like ſugar, and of courſe yields no alcohol. The common manna of the ſhops, according to Fourcroy and Vauquelin, conſiſts of four different ingredients. Pure manna conſtituting about three-fourths of the whole—a little common ſugar—a yellow matter with a nauſeous odour, to which the purgative qualities of manna are chiefly owing—and a little mucilage, convertible into ſaclactic acid. Manna ſeems to be formed during the fermentation of many juices, ſuch as the juices of the onion, melon, &c.

MANNINGTON. Add—containing, in 1810, 1664 inhabitants.

MANOR, l. 2, *r.* 2642.

MANSFIELD, l. 23, *r.* 1811—1427; l. 24, *r.* 6816.

Mansfield, in America, l. 3, *r.* 1810—2058; l. 6, *r.* 1030; l. 10, *r.* 38; l. 14, *r.*—In 1810 the number was 1810; l. 16, 2570.

MANTUA, a townſhip of Ohio, in Portage county, containing 243 inhabitants.

MARAZION, l. 15 and 13 from bottom, *r.* 1811—184—1022.

MARBLEHEAD, l. 4, *r.* 5900.

MARECHAUSSES, denoted, under the French monarchy, ſeveral ſmall bodies of troops, compoſed of officers and ſoldiers who had been in ſervice, that continued ſtationary in the principal towns, for the purpoſe of aiding the civil magiſtrate. That in Paris conſiſted of three companies; *viz.* the company belonging to the "Lieutenant criminel de "Robe au Courte," or to that particular court of judicature which was ſuperintended by the provoſt de la Marechauſſée, and which Charles IX. attached to the gendarmerie; the independent company of mounted police, called "Guet à Cheval;" and the company of the police or foot patrole, called "Guet à Pied," which was again ſubdivided into two companies, in order that one might do the duty of the quays. Theſe companies were under the immediate direction of the ſecretary of ſtate for the interior department of Paris.

MARGARIC Acid, in *Chemiſtry.* This acid exiſts in the form of pearly ſcales; hence the name. It was firſt deſcribed by Chevreul, who obtained it by digeſting a ſoap made of hog's-lard and potaſh in water. Part of the margarate of potaſh was diſſolved, while another part was depoſited in the form of pearl-coloured ſcales. The potaſh was afterwards removed by muriatic acid, and thus the margaric acid obtained in a ſtate of purity. Margaric acid is pearl-white. It is taſteleſs, and emits a ſmell ſomething like white wax. It melts at a temperature of 134°, and cryſtallizes on cooling into beautiful brilliant white needles. It is inſoluble in water, but very ſoluble in alcohol. It reddens vegetable blues very readily, and combines with all the baſes, eſpecially with the alkalies and alkaline earths, forming *ſalts*, or rather *ſoaps*. Dr. Thomſon, from the experiments of Chevreul, fixes the weight of the atom of this acid at 330.

MARGATE, col. 3, l. 9, *r.* 1811; l. 10, *r.* 6126—1229.

MARION, l. 2, *r.* 8884—2771.

MARK Island, a townſhip of Hancock county, in the diſtrict of Maine, with few inhabitants.

MARLBOROUGH, col. 2, l. 8 from the bottom, *r.* 1811—2579; l. 7, *r.* 445. Col. 3, l. 24, after lady Jane, *dele* unhappily for herſelf; l. 27, after favourite, *r.* who died in child-birth of Edward VI.; *dele* who was deſtined to ſuffer the fate of her predeceſſor.

Marlborough, in America, l. 4, add—containing 4996 inhabitants, of whom 1709 were ſlaves in 1810; l. 7, *r.* 1674; l. 12, *r.* 1810—1245; l. 14, *r.* 1112. Col. 2, l. 1, *r.* three; l. 2, after Pennſylvania, *r.* one in Montgomery county, having 672 inhabitants; and E. and W. Marlborough, in Cheſter county; the former having 1046, and the latter 917 inhabitants.—Alſo, a town of Hartford county, in Connecticut, having 720 inhabitants.—Alſo, a townſhip of Delaware county, in Ohio, containing 177 inhabitants:—l. 5, *r.* 1832.

MARLOW, Great, col. 2, l. 16 and 17, *r.* 1811—225—1166 perſons; add—and its borough to contain 468 houſes, and 2799 inhabitants; l. 20, add—in a pariſh of the ſame name, which contains 140 houſes, and 730 inhabitants.

Marlow, in America, l. 2, *r.* 564.

MARPLE, a townſhip of Delaware county, in Pennſylvania, having 649 inhabitants.

MARSELLOIS, *The*, or *Marſeilles Hymn*, a national march, adopted by the French during the courſe of the Revolution, and regularly played in their armies when they went to battle. It was frequently accompanied, or rather ſucceeded by the "ça ira," a lively tune; the former being calculated for ſlow or ordinary time, and the latter for quick movements. Both are now proſcribed.

MARSHFIELD, l. 25, *r.* 1811—272; l. 26, *r.* 1415.

Marshfield, in America, l. 4, *r.* 1364; l. 6, *r.* 513.

MARSHPEE, l. 3, *r.* 139.

MARTELLO, or Mortello, *Towers*, denoting ſmall caſtles erected for the defence of a coaſt; ſuch are thoſe of Romnay Marſh, of the iſland of Jerſey, Halifax in Nova Scotia, &c. Groſe derives the term mortello, from morta, whence mota or moat, which formerly ſignified a caſtle. Others derive it from the Italian "ſonare in campana a martello," to ſound the *alarm* bell, which, in ſome parts of Italy, is ſtruck by hammers. In old French, the word ſignifying the ſame thing, (now *marteau*,) was *martel*, and *martel en tête* was the adage for the rumour of annoyance or alarm.

MARTOCK, l. 2, *r.* 1623.

MARU. Add—This was the ancient capital of the province of Margiana, founded by Alexander the Great, and afterwards embelliſhed by Antiochus Nicator, who called it Antiochia. It was one of the four imperial cities of Khoraſſan; its fruits were finer than thoſe of any other place, and the walls were on all ſides ſurrounded with ſtately palaces, groves, and gardens. It was taken and pillaged by the Uſbecks about 25 years ago; ſince which time, it has gradually declined, and the population is now reduced to 3000 ſouls, under the government of Hyder Shah of Bokhara. The revenues of the khan are 20 maunds of grain, and 60,000 rupees annually. It is 88 furſungs from hence to Herat. *Dele* the next article.

MARY, queen of Scotland, l. 2, inſert (or 7th). Col. 2, l. 29, after their own, add—This article, ſays Mr. Chalmers, (*ubi infra*) denuded the Scottiſh queen, who was heir-preſumptive to the crown of England, of all future pretenſions to the crown. The ſtipulation, he ſays, ought to have been, not *in all times coming*, as expreſſed in the article, but *during the life of Elizabeth*. Conſidering, moreover, the defective powers of the French negociators to treat of a matter of that importance, in addition to the wording of the clauſe, theſe circumſtances created an inſuperable objection to the ratification of ſuch a treaty; which treaty was never ratified by the Scottiſh queen, or by any perſon under her authority. Col. 4, l. 8, for He *r.* Darnley; l. 20.—We know for certain, ſays Mr. Chalmers, that the king was murdered by Murray's faction, and that Morton, Bothwell, and Maitland, were the eminent characters who were attainted by parliament for the deed, though many inferior perſons, and ſome of the innocent, were tried and puniſhed for the ſame crime. But the queen, he ſays, as ſhe was not one of that faction, was not guilty; and every attempt of Robertſon and Laing to eſtabliſh her privity to this tranſgreſſion has failed. Col. 6, l. 28, after employers, add—Queen Elizabeth, it has been ſaid, wiſhed to have had Mary put to death privately by poiſon or by aſſaſſination, and actually ſuggeſted and expreſſed her wiſhes to this purpoſe, and ſhe thus acted ſuitably to the declaration made by her on Palm-ſunday 1572; *viz.* "that the queen of Scots' head ſhould never be quiet." At length, when her dark hints or more explicit inſtructions, communicated to Paulet and Drury her keepers, had failed of producing effect, preparations, &c.; l. 29, after publicly, add—but the privy-counſellors differed in their opinion concerning the law by which ſhe ſhould be tried, whether it ſhould be the ſtatute of treaſons, (25 Edw. III.) or a late act of the 27th of Elizabeth, which had been made for this ſpecial occaſion. However, the laſt opinion prevailed. At the cloſe, add—Chalmers's Life of Mary, Queen of Scots, vol. i. 4to. 1818.

MARY, *St.* col. 2, l. 8, *r.* 12,794; l. 9, 6000; l. 13, add—in the county of Camden, which ſee.

MARYLAND. Add—See UNITED STATES.

MARYPORT, col. 2, l. 5 and 6, *r.* 1811—322—3134.

MASHAM, l. 7, *r.* 1811—213—1014.

MASOLES, the name of a militia in Croatia, which is bound to march to the frontiers whenever there appears the leaſt ſymptom of hoſtile diſpoſition on the part of the Turks. The private ſoldiers have lands allotted to them, which they cultivate for their own uſe, but receive no pay from the public. The officers are paid.

MASON, l. 7, *r.* 1077.

MASSACHUSETTS. Add—See UNITED STATES.

MASTODON, in *Natural Hiſtory*, a large quadruped, whoſe bones are found in a foſſil ſtate. It was for a long time confounded by naturaliſts with the mammoth or foſſil elephant. (See MAMMOTH, *Addenda.*) Cuvier has aſcertained, that the maſtodon is not only a diſtinct animal from the mammoth and the living ſpecies of elephants, but that it muſt be claſſed as a new genus. Five ſpecies of this genus have been at preſent diſcovered.

The *great maſtodon*, or the *animal of the Ohio*, the bones of which have been found in the greateſt abundance near the Ohio river, in the province of Kentucky, in North America, bears a conſiderable degree of reſemblance to the elephant in its tuſks and general oſteology, the form of the grinders excepted. It had probably a trunk, but this part being more periſhable than the bones has not been diſcovered. Cuvier concludes from its general ſtructure, that it could not have fed itſelf without the aid of a trunk. Its height did not ſurpaſs that of the largeſt elephant, but its body was longer, and its members were ſomewhat thicker; its belly was leſs extended than that of the elephant. Notwithſtanding the general reſemblance, the ſtructure of the grinders is ſo different, as to entitle us to claſs it as a different genus. It fed itſelf nearly in the ſame way as the hippopotamus and the wild boar, on the roots and pulpy parts of vegetables; and this kind of food would naturally lead it to moiſt and marſhy ground; but it was not made for ſwimming, or living under water, like the hippopotamus, but was really a land animal. Its bones are more common in North America than elſewhere, and are more freſh and better preſerved than any other known foſſil bones. Yet there is not the leaſt reaſon to believe, according to Cuvier, that there are any living maſtodons either in America or elſewhere. The moſt celebrated place where the remains of the maſtodon occur is called *Big-bone Lick*, on the ſouth-eaſt of the Ohio, five miles from the river, and thirty-ſix miles below the entrance of the Kentucky river, and nearly oppoſite the great Miami. The place where they occur is a ſalt marſh ſurrounded by hills. The bottom of the marſh is a black and fœtid mud. The bones are found in the mud and on the borders of the marſh at about four feet below the ſurface, but they occur alſo in various parts of North America in marſhy ſituations. In 1805, many bones of theſe animals were found in the county of Wythe, in Virginia, about five feet under the earth, upon a bed of lime-ſtone. One of the teeth weighed ſeventeen pounds. But what renders this diſcovery the more remarkable is, that a maſs of half-ground branches, roots, and leaves, incloſed in a kind of ſack, ſuppoſed to be the ſtomach, was found in the midſt of theſe bones, ſo as to leave no doubt that theſe were ſubſtances that the animal had devoured. Among the vegetable matter in this ſack were diſtinguiſhed the remains of ſome plants known in Virginia. The bones of the great maſtodon may be ſaid to be common in North America; two nearly entire ſkeletons were collected by Mr. Peale; one of the largeſt is preſerved in the Muſeum of Natural Hiſtory at Philadelphia, the ſmaller was exhibited in London a few years ſince. Theſe bones are ſcarce in other parts of the world; but wherever they have been found, it is at no great depth under the ſoil, and yet they are but little decompoſed. They are not rounded by attrition, and offer proofs that they have not been removed from the places where the animals died. The ſkeletons found near the river called the great Oſages were nearly in a vertical poſition, as if the animals had ſimply ſunk into the mud and been buried there. According to a letter from Mr. Smith Barton, profeſſor at the univerſity of Pennſylvania, to M. Cuvier, "An intelligent traveller had ſeen near that river thouſands of theſe bones, and had collected ſeventeen tuſks, ſome of which were ſix feet in length, and a foot in diameter; but the greater part of theſe bones was much decompoſed." Mr. Barton ſent a grinder to M. Cuvier, ſo that no doubt can be entertained that the bones belonged to the maſtodon. No remains of marine ſhells have been diſcovered with the bones of the maſtodon, as is the caſe with thoſe of the mammoth. Mr. Barton thinks, that the ſalt water of the marſhes where they are found has contributed to the preſervation of the bones. He ſtates alſo two inſtances which appear to prove that from time to time the ſoft part or fleſh of theſe animals has been dug up; a circumſtance which, from the heat of the climate, is much more aſtoniſhing than what is ſtated of the fleſh of the mammoth and rhinoceros being found in Siberia. (See MAMMOTH.) The Indians, who diſcovered five ſkeletons in 1762, relate, that one of the heads had a long noſe above the mouth; Mr. Barton ſuppoſes that this was in fact the trunk. Kalm, in ſpeaking of a great ſkeleton diſcovered by the ſavages in a marſh in the Illinois country, ſays, that the form of its *beak* was ſtill diſcoverable, though half decompoſed; it is probable that this was the root of the trunk.

Some doubts exiſt whether the maſtodon be really an extinct genus, and whether it may not be found living weſt of the Miſſouri. The Indians of Virginia, according to Mr. Jefferſon, ſay, that a troop of theſe formidable beaſts deſtroyed the deer, buffaloes, and other animals created for their uſe; when the great man above deſtroyed them all with his thunder, except the largeſt male, which preſenting its head to the thunder-bolts threw them off as they fell, but being at laſt wounded in the ſide, it fled towards the lakes, where it lives to this day.

The ſkeleton of the great maſtodon exhibited in England was near eleven feet high. From the ſize of detached bones, Cuvier conjectures that the animal never exceeded twelve French feet, but its body was much longer in proportion than that of the elephant.

The form of the crown of the molares or grinders is nearly rectangular. The ſubſtance of the teeth is of two kinds only, the inner or oſſeous part, and the outer or enamel, which is very thick, and has no kind of cement or cortical. This very important difference joined with the form brings this animal nearer to the hippopotamus and the pig, than to the purely herbaceous animals like the elephant.

The crown of the grinders is divided by deep open furrows into a certain number of tranſverſal ridges, and theſe ridges are again divided into two large irregular pyramidal obtuſe points, a little rounded. The crown therefore is ſtudded with theſe pyramidal points diſpoſed in pairs; it is however very different from the teeth of carnivorous animals, which have only one principal longitudinal furrow divided into leſſer indentations, like a ſaw. The teeth of the elephant have on the crown ſeveral little tranſverſe walls, divided into a number of ſmall tubercles, and theſe grow flat early, whereas the tubercles or cones on the tooth of the maſtodon being much larger, the crown remains long mamillated. It was this circumſtance of the grinders being ſtudded with points that gave riſe to the opinion of the maſtodon being carnivorous.

The number of grinders, according to Cuvier, are ſix on each ſide, three above and three below.

The ſtructure of the jaws indicates that the maſtodon had tuſks like the elephant or morſe. The number of tuſks which occur with the teeth further confirms this opinion. A ſkull was found by Mr. Peale which proves this fact, being furniſhed with alveoles. The curvature of the different tuſks varies as much as in thoſe of the elephant; but M. Cuvier thinks there is no ground for believing with Mr. Peale, that the tuſks turned downwards.

The head of the maſtodon being of vaſt ſize, and rendered exceedingly heavy by the teeth and tuſks, which carried the centre of gravity far from the point of ſupport, the neck was therefore neceſſarily ſhort, like that of the elephant; ſo that without a trunk it could not have reached the ground with its mouth. Its tuſks would alſo have deprived it of the power of eating on the ground; it is therefore certain that it muſt have had a trunk like that of an elephant.

From the remains of the maſtodon, it appears there were five ſpecies, all of which are believed to be extinct.

1. The *great maſtodon* that we have been deſcribing.
2. The *maſtodon with narrow grinders.* The remains of this ſpecies have been dug up at Semorre, and many other places in Europe, and alſo in America.
3. The *little maſtodon with ſmall grinders.* This ſpecies is much leſs than the preceding, and was found in Saxony.
4. *Maſtodon of the Cordilleras.* This ſpecies was diſcovered in South America by Humboldt. Its grinders are ſquare, and it appears to have been equal in ſize to the great maſtodon.
5. *Humboldean maſtodon.* This, which is the ſmalleſt ſpecies of the genus, was found in America by Humboldt. Theſe five ſpecies may be conſidered as forming a diſtinct and hitherto unknown genus.

The following are the dimenſions of the ſkeleton of the great maſtodon found by Mr. Peale, and placed in the Muſeum of Natural Hiſtory in Philadelphia.

	Feet	Inches
Height over the ſhoulders - - - -	11	0
Do. over the hips - - - - -	9	0
Length from the chin to the rump -	15	0
From the point of the tuſks to the end of the tail, following the direction of the curve	31	0
In a ſtraight line - - -	17	6
Width of the hips and body - -	5	8
Length of the largeſt vertebra -	2	3
Of the longeſt rib - - -	4	7
Of the tuſks - - - -	10	7
Circumference of one tooth - - -	1	6½

The weight of the whole ſkeleton is 1000 lbs.

MATHEWS, in *Geography*, a county of Virginia, containing 4227 inhabitants, of whom 2098 were ſlaves in 1810.

MATHIOLA, or rather MATTHIOLA, in *Botany*, Brown in Ait. Hort. Kew. v. 4. 119. See our former article. Mr. Brown has reſtored this meritorious name, to deſignate a new genus of his own, extracted from the more hoary kinds of CHEIRANTHUS, (ſee that article,) n. 16, 17, 20, 24, 31, 28, and 15. We allow a difference of habit, but ſcarcely perceive a ſufficient character.

MATLOCK, l. 14, *r.* 1811—523—2496.

VOL. XXIII.

MAURICE, l. 4, add—The town contains 2085 inhabitants.

MAURY, a county of Weſt Tenneſſee, containing 10,359 inhabitants, of whom 2626 were ſlaves in 1810.

MAWS, ST. In 1811, the pariſh of St. Juſt contained 272 houſes, and 1639 perſons; *viz.* 751 males, and 888 females: 72 families being employed in agriculture, and 99 in trade, manufactures, and handicraft.

MAYOMBA, or MAJUMBA, *Cape*, a cape on the coaſt of Africa, in S. lat. 3° 34′. E. long. 11° 13′ 36″.

MEAD, a townſhip of Crawford county, in Pennſylvania, containing 786 inhabitants.

MEADVILLE, l. 5, after houſes, add—457 inhabitants.

MECKLENBURG, l. 2, *r.* 18,453 inhabitants, of whom 16,264 were ſlaves in 1810; l. 6 and 7, *r.* 14,272—3494.

MECONIC ACID, in *Chemiſtry*. See MORPHIA, and OPIUM.

MECRAN, or MEKRAN. At the end, Kidge or Kej, add—The population of Mekran is formed of many different tribes and independent chiefs, of which the Balouches are the moſt numerous; a middle-ſized race of men, ſpare, muſcular, and active, and armed with a match-lock, ſword, ſhield, and dagger. The common language of the country is a corrupt Perſian, mixed with Scindi, and the Balouches in general are of the Soonee perſuaſion. Thoſe of the central territories reſide moſtly in towns; thoſe of the lower countries are ſcattered over the plains, in hamlets of eight or ten huts, built of branches of palm, and covered with mats. The Balouches take, in general, but one wife, and their chiefs four; they are ſaid to have great influence in the diſputes of their tribes. The women of Mekran are allowed to appear indiſcriminately in public. Mekran was formerly under the dominion of Naſſer Khan, the chief of Kelat; but ſince his death, in 1795, the authority of his ſon has ceaſed, and of the dominions of his father he only retains poſſeſſion of the fort of Kej. The whole force of the country, it is thought, may amount to about 25,000 men, whom it would be impoſſible to collect or to induce to concur in action. The revenues of this country are trifling.

MEDFIELD, l. 3, *r.* 786.

MEDFORD, l. 6, *r.* 1443.

MEDICAL ELECTRICITY. Since our remarks on *medical electricity* (ſee *Medical* ELECTRICITY) were written, a method has been announced, in ſome degree new, of exhibiting this remedy, which we ſhall very briefly notice here. This conſiſts in employing a jar coated on the outſide with paper tinſel, and inſtead of a coating on the inſide, having only a ſpiral coil of wire in contact with its ſurface. On making the experiment, we find the ſhock is modified and ſoftened by this contrivance. It appears, therefore, much better adapted for adminiſtering what is commonly called *vibratory* ſhocks, (that is to ſay, ſmall ſhocks in very quick ſucceſſion,) than the jar commonly uſed for the purpoſe. We omitted to mention that this method of exhibiting electricity (called *vibratory*) is commonly practiſed by electricians, chiefly from its requiring a very ſmall apparatus, and from its being at the ſame time equal, or nearly ſo, in effect to a large current of fluid produced from a very powerful machine.

MEDOMAN, in *Geography*, a town of America, in Maine, and county of Lincoln, having 121 inhabitants.

MEDULLIN, in *Chemiſtry*, a name given by Dr. John to the pith of the *ſunflower*, the *ſyrynga vulgaris*, &c. and which, according to him, is diſtinguiſhed by the following properties. It is inſoluble in water, alcohol, ether, and oils. It has neither taſte nor ſmell. It is ſoluble in nitric acid; but inſtead of forming ſuberic acid, furniſhes a quantity of oxalic acid. Its ſtructure is peculiar, and when burnt it leaves a charcoal having a metallic bronze-like appearance.

MEDWAY, in America, l. 4, *r.* 1213.

MEERSCHAUM. See Meerschaum, and Mineralogy, *Addenda.*

MEGALONIX, in *Natural Hiſtory*, an extinct ſpecies of quadruped, about the ſize of an ox, whoſe remains were firſt diſcovered in Virginia. It was ſuppoſed by Mr. Jefferſon to be allied to the lion, and hence received its name. According to Cuvier, however, the megalonix and megatherium are nearly allied, and may be conſidered as belonging to the ſame genus, which may be placed between the ſloth and the ant-eaters, but nearer to the former than the latter. The remains of theſe animals have hitherto been found only in America, where ſloths and ant-eaters at preſent exiſt. See Megatherium, *Addenda.*

MEGATHERIUM. (See Megatherium.) The animal deſcribed in the former part of that article, whoſe remains were found in Siberia, and noticed by Mr. Adams, was not the megatherium of Cuvier, but the foſſil or extinct elephant. (See Mammoth, *Addenda.*) The megatherium was of the ſize of the rhinoceros; its foſſil remains have hitherto been found only in South America. The firſt and moſt complete ſkeleton was ſent from Buenos Ayres in the year 1789. It was found in digging in alluvial ſoil, on the banks of the river Luxten, a league S.E. of the village of that name, and three leagues W.S.W of Buenos Ayres. A ſecond ſkeleton was ſent from Lima to Madrid in the year 1795; and a third was found in Paraguay. This animal differs from the megalonix chiefly in magnitude, being much larger. See Cuvier's deſcription in the latter part of the article Megatherium.

MEGIDDO, or Megedo, in *Scripture Geography*, a city of Manaſſeh (Joſh. xvii. 11. Judg. i. 27.), famous for the defeat of king Joſiah. (1 Kings, xxiii. 29, 30.) Herodotus, ſpeaking of this victory, ſays, Necho obtained it at Magdolor, lib. ii. cap. 159.

MEIGS, in *Geography*, a townſhip of Adams' county, in Ohio, having 835 inhabitants.

MEKRAN. See Mecran.

MELDRUM. In 1811, the pariſh of Old Meldrum contained 411 houſes, and 1635 perſons; *viz.* 736 males, and 919 females: 345 families being employed in agriculture, and 86 in trade, manufactures, and handicraft.

MELFORD, Long, l. 5 and 6, *r.* 1811—415—2068—951—1117.

MELLIT, in *Farriery*, a dry ſcab growing upon the heels of the forefoot of a horſe, which is cured by a mixture of half a pound of common honey, and a quarter of a pound of black ſoap, with four or five ſpoonſful of vinegar, half an ounce of finely powdered alum, and two ſpoonſful of fine flour, applied to the affected part, after removing the hair, like a plaſter, and ſuffered to remain five days. If the cure be not completed, the leg, foot, and ſore, ſhould be waſhed, and the ſame application repeated.

MELMOTH, col. 2, l. 20 and 21, *r.* thus—The author of 'The Purſuits of Literature' ſays, "Mr. Melmoth is a happy, &c.

MELROSE, l. 12. In 1811, this pariſh contained 538 houſes, and 3132 perſons; *viz.* 1531 males, and 1601 females: 239 families employed in agriculture, and 251 in trade, &c.

MELTON-MOWBRAY, l. 24 and 25, *r.* 1811—451—2115.

MENALLEN, a townſhip of Fayette county, in Pennſylvania, having 1228 inhabitants.

MENANGEEBOW, for Menangeabow.

MENDHAM. Add—containing 1277 inhabitants.

MERA, l. 14 from bottom, after Linga, add a comma.

MERCER, after acres, add—16 townſhips, 8277 inhabitants; l. 6, 11,587 inhabitants, of whom 3000 were ſlaves in 1810.—Alſo, a townſhip of Mercer county, having 262 inhabitants.—Alſo, a townſhip of Butler county, in Pennſylvania, having 588 inhabitants.—Alſo, a townſhip of Maine, in Somerſet county, having 562 inhabitants.

MERCURY, p. 12, col. 2, l. 12 from bottom, for Todd *r.* Thomſon.

Mercury. This metal boils, according to Crichton, at 656°; according to Heinrich at 658¼°. Theſe differences reſpecting the boiling point of this metal, as well as thoſe mentioned in the original article, probably ariſe in part from the mode in which the thermometers employed were graduated. See further on this ſubject under Heat.

There are but two oxyds of mercury known, and not three, as ſtated in the Cyclopædia, the *black* or *protoxyd*, and the *red* or *peroxyd;* the firſt of which, according to Dr. Thomſon's recent determinations, is a compound of 100 mercury + 4 oxygen; and the ſecond, 100 mercury + 8 oxygen. Hence the weight of an atom of this metal will be 250, and from this the compoſition of its ſalts may be deduced. (See Atomic *Theory.*) What has been ſaid in our original article reſpecting *calomel* and *corroſive ſublimate*, formerly termed *ſubmuriate* and *oxymuriate* of mercury, is now to be underſtood, according to the preſent views of their compoſition, as applicable to the *protochloride* and *perchloride* of mercury. See further on this part of the ſubject under Chlorine.

MERDIN, l. 7. Its inhabitants amount to nearly 11,000 ſouls; l. 9, add—their number is ſuppoſed to be 1500, having ſeveral churches, and a patriarch, and beſides here are 200 Jews, and alſo Turks, Arabs, and Kurds. At the end, add—it is 46 furſungs from Diarbekr. It is the frontier of the pachalic of Bagdad, towards Conſtantinople, and under the government of a Muſſaleem, appointed by the pacha.

MEREDITH, l. 4, *r.* containing 1940 inhabitants.

MERIDEN, a town of New Haven county, in Connecticut, having 1249 inhabitants.

MERION, l. 3, *r.* 1156—1835.

MERIONETHSHIRE, col. 5, l. 37 and 38, *r.* 1811—6022—30,924—14,308—16,616—3619—1270.

MERRIMACK, l. 3, *r.* 1048.

MERTHYR-TYDVIL, col. 2, l. 30, add—in its five hamlets, by the parliamentary returns of 1811, is ſtated to amount to 11,104 perſons, occupying 2264 houſes.

MERTON, l. 4, *r.* 1811; l. 5, *r.* 135—905.

MERU-Shah-Jehan. See Maru.

MESCHID, Maschid, or *Meſhed*, l. 1, inſert—the capital of the Perſian diviſion of the province of Khoraſſan, ſituated about two furſungs from the ruins of the ancient city of Tous, and celebrated for a very ſuperb ſepulchre, containing the relics of Imam Reza, and thoſe of the caliph Haroun ul Ruſchid. This city, though a great part of it is in ruins, has a population of 50,000 ſouls. The bazaar is well ſupplied with fruits and proviſions, from the fertile plain on which the city ſtands. It is ſurrounded with a ſtrong wall, three furſungs in circumference, and the great bazaar is three miles in length. The city is governed by one of the king's ſons, and with the diſtricts belonging to it yields a revenue of 90,000 tomauns. It carries on a conſiderable trade with Bokhara, Bulkh, Candahar, Yezd, and Herat. Velvets of the fineſt quality are manufactured here; and its fur peliſſes are much eſteemed.

MESHED. See MESCHID.

MESHED *Ali*. See NEJIFF.

METAL, in *Geography*, a townſhip of Franklin county, in Pennſylvania, having 1236 inhabitants.

METALS, in the *Materia Medica*, col. 2, l. 24, for Todd *r.* Thomſon.

METEORIC IRON. See MINERALOGY, *Addenda*.

METHERVAN, in *Geography*, a town of Eſſex county, in Maſſachuſetts, containing 1181 inhabitants.

METHWOLD, col. 2, l. 4, *r.* 1811—942—174.

METROXYLON, in *Botany*, a name given by Rottboll, in the Copenhagen Tranſactions, to the true Sago Palm, deſcribed from Dr. Kœnig's manuſcripts, by Mr. Charles Konig, in Ann. of Bot. v. 1. 195. t. 4. This genus appears to differ from Gærtner's SAGUS, (ſee that article,) in having a *corolla;* which is monopetalous and three-cleft. See SAGO.

MEXICO, col. 15, l. 21 from bottom, add—The induſtrious reſearches of the ingenious and philoſophical traveller M. Humboldt have eſtabliſhed the remarkable fact, that in the whole of the New Continent, there is nothing which indicates the exiſtence of alphabetical writing, nor any very near approach to it. Although the uſe of hieroglyphic paintings was common among the Toltecks, Aztecks, and other tribes, which, ſince the ſeventh century, have appeared ſucceſſively on the elevated plain of Anchuac, Humboldt ſuggeſts, that the progreſſive perfection of ſymbolical writing, and the facility with which objects were painted, prevented the introduction of letters. It is alleged, that they have done ſo for a much longer time with the Chineſe.

MIAMI, a townſhip of Clermont county, in Ohio, containing 1670 inhabitants.—Alſo, a townſhip of Greene county, in Ohio, having 794 inhabitants.—Alſo, a townſhip of Hamilton county, in Ohio, having 495 inhabitants.—Alſo, a county of Ohio, containing 6 townſhips, and 3941 inhabitants.

MICHIGAN. Add—The territory of Michigan includes four diſtricts, *viz.* Detroit, Erie, Huron, and Michilimaclik, and by the cenſus of 1810, 4702 inhabitants, of whom 24 were ſlaves.

MICKLEHAM, col. 2, l. 1, *r.* 1811; l. 2, 416 perſons, occupying 54 houſes; l. 3, 190—226.

MICROPETALUM, in *Botany*, from the *ſmallneſs* of the *petals*.—"Perſ. Syn. v. 1. 509." Purſh 319. (Spergulaſtrum; Michaux Bor.-Amer. v. 1. 275.)—Claſs and order, *Decandria Tetragynia*. Nat. Ord. *Caryophyllei*, Linn. Juſſ.

Eſſ. Ch. Calyx of five ſpreading leaves. Petals five, minute, undivided; or wanting. Stigmas four, ſeſſile. Capſule ovate, longer than the calyx, of four valves.

1. M. *lanuginoſum*. Mich. n. 1.—Denſely downy. Flower-ſtalks ſolitary. Petals none.—On the mountains of Virginia and Carolina, perennial, flowering in June and July. *Leaves* lanceolate, tapering down into a footſtalk.

2. M. *lanceolatum*. Mich. n. 2.—Smooth. Leaves lanceolate, tapering at each end. Flowers panicled. Petals ovate, very ſhort.—On moiſt rocks, from Canada to Pennſylvania, perennial, flowering in July. *Stigmas* ſometimes only three. *Michaux*.

3. M. *gramineum*. Mich. n. 3.—Very ſmooth. Leaves linear. Panicle terminal, lax, ſlender. Petals lanceolate, as long as the calyx.—About ſprings and ſhady rocks, from New York to Virginia, perennial, flowering in June and July. *Purſh*. Reſembles *Stellaria graminea*. *Michaux*.

Mr. Purſh ſpeaks of *Arenaria faſciculata* as probably belonging to this genus, but we know not whether he intends the plant of Linnæus, or of Jacq. Auſtr. t. 182; ſee Engl. Bot. t. 1744.

MIDDLEBOROUGH, l. 3, *r.* 4400.

MIDDLEBURY, l. 6, *r.* 2188; add—Alſo, a town of New Haven, in Connecticut, having 847 inhabitants.

MIDDLEFIELD, l. 3, *r.* 822.

MIDDLE HERO, a townſhip of Grand Iſle county, in Vermont, having 623 inhabitants.

MIDDLESEX, col. 2, l. 4, *r.* 1811—130,613 houſes, 953,276 inhabitants; *viz.* 434,633 males, and 518,643 females: of whom 135,398 families are employed in trade and manufactures, and 9088 in agriculture.

MIDDLESEX, in America, l. 5, *r.* 44; l. 6, *r.* 52,789. Col. 2, l. 9, *r.* 8—20,723; l. 10, *r.* 57 were ſlaves in 1810; l. 14, *r.* 20,383; add—Alſo, a townſhip of Chittenden county, in Vermont, having 401 inhabitants.—Alſo, a townſhip of Butler county, in Pennſylvania, containing 568 perſons.

MIDDLETON, l. 3, *r.* 541; l. 8, after houſes, add—2014 inhabitants.

MIDDLETON, except the city, a townſhip, containing 3368 inhabitants.—Alſo, a townſhip of Columbiana, in Ohio, having 579 inhabitants.

MIDDLETON, col. 2, l. 23, *r.* 1811; l. 24, *r.* 4422 perſons, occupying 805 houſes.

MIDDLETOWN, l. 3, add—containing 439 inhabitants; l. 4, add—having 1207 inhabitants; l. 7, *r.* 976; l. 17, *r.* 3849; l. 33, after county, add—containing 948 inhabitants; l. 34, after Cumberland, add—having 2351, and the third in Bucks county, having 1462 inhabitants.

MIDDLEWICH, col. 2, l. 10, *r.* 1811; l. 11, 279—1232.

MIDHURST, l. 8, *r.* In 1811, the borough and pariſh contained 1256 perſons, occupying 196 houſes; 60 families being employed in agriculture, 127 in trade and manufactures.

MIEMITE. See MINERALOGY, *Addenda*.

MIFFLIN, l. 4, *r.* nine; l. 9, *r.* this county contains 12,132. Add—Alſo, a townſhip in Allegany county, in Pennſylvania, containing 637 inhabitants.—Alſo, a townſhip of Roſs county, in Ohio, with 445 inhabitants.

MILBORNE PORT, col. 2, l. 7, *r.* 1811, l. 8, *r.* population of this borough and pariſh amounted to 1000 perſons, occupying 224 houſes; 474 being males, and 526 females: of whom 132 families were employed in trade, and 78 in agriculture.

MILDENHALL, l. 25, *r.* 1811; l. 26, *r.* 2493, occupying 351 houſes; 1187 being males, and 1306 females:—278—112.

MILFORD, col. 3, l. 39, 40, *r.* 1811—1961, the number of houſes being 352.

MILFORD, in America, l. 2, containing 2095 inhabitants; l. 3, 973; l. 11, containing 2033 inhabitants; l. 18, and 2674 inhabitants.—Alſo, a town of Hillſborough county, in New Hampſhire, containing 1117 inhabitants.—Alſo, a townſhip of Wayne, in Pennſylvania, having 87 perſons.—Alſo, a townſhip of Somerſet county, in the ſame ſtate, with 1180 inhabitants.—Alſo, a townſhip of Butler county, in Ohio, having 1037 inhabitants.

Milford, *New*, a town of Litchfield county, in Connecticut, having 3537 perſons.—Alſo, a townſhip of Luzerne county, in Pennſylvania, having 178 inhabitants.

MILK, col. 5, l. 29 from bottom, for oxifying *r.* oſſifying.

Milk, *Chemical Properties of.* According to Berzelius, 1000 parts of milk deprived of its cream conſiſt of

Water	928.75
Curd with a little cream	28.00
Sugar of milk	35.00
Muriate of potaſh	1.70
Phoſphate of potaſh	.25
Lactic acid, acetate of potaſh, with a trace of lactate of iron	6.00
Earthy phoſphates	.30
	1000

In the paragraph deſcribing the fermentation of mares' milk by the Tartars, l. 2, after brandy, add—called *Koumiſs.*

After the paragraph upon cream, add—Cream of the ſp. gr. 1.0244 was found by Berzelius to conſiſt of

Butter	4.5
Cheeſe	3.5
Whey	92.0
	100

After the obſervations on curd, add—*Curd* has many of the properties of coagulated albumen. It is white and ſolid, and when all the moiſture is ſqueezed out, it has a good deal of brittleneſs. It is precipitated by acids, and the precipitate conſiſts of the curd combined with the acid employed. If this precipitate be digeſted with carbonate of lime or barytes in water, the acid combines with the earth, remains undiſſolved, (ſuppoſing the ſulphuric acid employed,) and leaves the curd in ſolution. The aqueous ſolution of curd thus obtained is yellowiſh, and reſembles a ſolution of gum. When the ſolution is boiled in an open veſſel, it becomes covered with a white pellicle, preciſely as milk does, and acquires the ſmell of boiled milk. The membrane is almoſt inſoluble in water, and appears to be produced by the action of the air on the diſſolved curd. With the mineral acids, curd forms the ſame compounds as albumen and fibrin do; but the neutral compounds are leſs ſoluble. A great exceſs of acetic acid is required to diſſolve curd, and the neutral compound of curd and this acid appear inſoluble. According to the analyſis of Gay Luſſac and Thenard, curd is compoſed of

Hydrogen	7.429
Carbon	59.781
Oxygen	11.409
Azote	21.381
	100

MILL Creek, in *Geography*, a townſhip of Hamilton county, in Ohio, having 1334 inhabitants.

MILLEDGVILLE, a town of Georgia, in the county of *Baldwin;* which ſee.

MILLVILLE. Add—containing 1032 inhabitants

MILNTHORP, l. 2, *r.* Haverſham; l. 14, after population, add—of the townſhips of Milthorpe and Haverſham; l. 15, *r.* 1811—1138—242 houſes; l. 16, 546—592—129—111.

MILTON, l. 8 and 7 from bottom, *r.* 1811—307—1746.

Milton, in America, l. 9, *r.* 1264; add—Alſo, a town of Strafford county, in New Hampſhire, having 1005 inhabitants.—Alſo, a town of Chittenden county, in Vermont, containing 1546 inhabitants.

MILVERTON, l. *ult. r.* 1811—1637; add—and number of houſes 322.

MINCHIN-HAMPTON, l. 27, *r.* 1811—town and pariſh; l. 28, *r.* 3246, and occupying 710 houſes; l. 29, 1523 males, and 1723 females.

MINEHEAD, l. 3, *r.* 144.

Minehead, l. 3, after England, add—By the returns in 1811, the borough and pariſh were ſtated to contain 255 houſes, and 1037 inhabitants; 443 being males, and 594 females.

MINERAL Caoutchouc. See Mineralogy, *Addenda.*

MINERALOGY, according to the moſt eminent mineralogiſts of the French ſchool, compriſes the ſtudy of all inorganic ſubſtances that exiſt naturally in the earth, or on its ſurface. According to this comprehenſive definition, water, air, and all ponderable elementary matter, may be claſſed with minerals. The German mineralogiſts uſe the term *mineral* in a more reſtricted ſenſe. See Mineralogy, where is given a hiſtory of the progreſs of this ſcience, and an outline of the ſyſtems of Werner and Haüy. For a more full account of the external characters of minerals, and of the ſyſtem of claſſification introduced by Werner, ſee Oryctognosy: and for the leading principles of cryſtallography, on which the ſyſtem of Haüy is formed, ſee Crystallography, *Addenda.* Under the article Systems of Mineralogy, we have given a ſummary view of the chemical ſyſtem of mineralogy recently attempted to be introduced by the diſtinguiſhed Swediſh philoſopher Berzelius.

Mineralogy has ſcarcely been cultivated as a regular ſcience in Europe longer than fifty years, and in England it has not excited much attention until the preſent century; ſince which time our acquaintance with the mineral kingdom has been rapidly extending. We propoſe in the preſent article to deſcribe thoſe minerals which have been recently diſcovered, or whoſe characters have been more accurately known ſince the articles were written in which they were deſcribed. Many minerals having received ſeveral different names, we have alſo deemed it expedient to give an alphabetical liſt of all the known ſpecies of minerals, with references to the particular name under which each is deſcribed. This will, we truſt, in a conſiderable degree, remedy the inconvenience reſulting from the uſeleſs multiplication of names; an evil which, in this department of ſcience, tends greatly to retard the progreſs of uſeful knowledge. To Werner, we are indebted for the firſt preciſe definition of the external characters of minerals; but unfortunately both he and the mineralogiſts of the Freyberg ſchool have introduced ſuch a multiplicity of diviſions, ſubdiviſions, and minute diſtinctions into the ſcience, with ſo many quaint terms to expreſs what was before perfectly definite in the language of common life, that the deſcription of the moſt intelligible properties is often rendered harſh and obſcure to the ſtudent. This is greatly to be regretted, as it prevents many from cultivating mineralogy, deterred by a parade of frivolous diſtinctions which aſſail them in limine.

The characters of minerals, arranged according to the Wernerian method, are enumerated under the article ORYCTOGNOSY; but a ſelection of the moſt important ones, with a further definition of ſome of them, appears neceſſary to render more complete this department of our work, and to enable the general reader to underſtand the deſcriptive language uſed by mineralogiſts. The characters of minerals are either *phyſical* or *chemical.* Phyſical characters are thoſe properties which can be diſcovered without decompoſing or changing the nature of minerals: under this term we compriſe the external characters of Werner, and alſo ſome of thoſe properties which are elicited by the action of other bodies on the mineral examined, ſuch as magnetiſm and electricity.

Chemical characters in mineralogy are thoſe properties which are moſt eaſily diſcovered by the action of heat, of acids, and of various re-agents. It is in this limited ſenſe that theſe characters are underſtood by the mineralogiſt. A complete analyſis of minerals belongs to chemiſtry.

In our enumeration of phyſical characters, we ſhall commence with thoſe which depend on the action of light; namely, colour, tranſparence, luſtre, and refraction.

Colour is regarded by the German mineralogiſts as an important character, and it is that which firſt arreſts the attention of the obſerver; but in earthy minerals, the colours of the ſame ſpecies are often ſo various, that this character loſes much of its value as applied to them. The colours of minerals, as far as they have been chemically examined, are principally owing to metallic oxyds and inflammable matter: the earths, the acids, and the alkalies, in a ſtate of purity, are white or colourleſs. The colour of earthy minerals may, therefore, be regarded for the moſt part as ariſing from accidental admixtures with unimportant ingredients. But in the inflammable minerals and metallic ores, and in a few of the earthy minerals, the colouring matter is as important as the other parts, and generally more ſo; hence in the latter, the colour varies but little in each ſpecies, and is a character of importance preciſely in proportion to its ſimplicity. For an enumeration of the different varieties of each colour, and the minerals in which they are moſt characteriſtic, and for change of colour, ſee ORYCTOGNOSY.

Tranſparence, in its different degrees, from perfect tranſparence, ſemi-tranſparence, tranſlucence, and opacity, are terms perfectly intelligible to every reader. When the cloudineſs in ſemi-tranſparent minerals increaſes, ſo that the outline of objects can ſcarcely be ſeen, tranſlucency commences, as in common chalcedony.

Double Refraction, or *Duplicating,* is the property which ſome tranſparent minerals poſſeſs of preſenting a double image of an object when ſeen through them in particular directions, of which calcareous ſpar, an Iceland cryſtal, offers a remarkable example. See CRYSTAL OF ICELAND.

Opaleſcence, a term not unfrequently applied to ſome minerals, is thus defined by Mr. Jameſon: "Some minerals, when held in a particular direction, reflect from ſome ſingle ſpots in their interior a coloured ſhining luſtre; this is what is underſtood by opaleſcence: it is diſtinguiſhed into *ſimple* and *ſtellular;* in the latter, the luſtre diverges in ſix rays in the form of a ſtar, as in the *ſtar-ſapphire.*"

Luſtre.—The luſtre of a mineral produced by the reflection of light is of different kinds, and is called metallic, ſemi-metallic, adamantine, pearly, reſinous, and vitreous. Perfectly opaque minerals, as the metals, and moſt of the metallic ſulphurets, reflect the light wholly from the ſurface without undergoing any refraction, and exhibit the metallic luſtre of various degrees of intenſity; and the luſtre is increaſed, and the colour is unchanged, when a ſcratch is made in them with a knife or file. Minerals having a ſemi-metallic luſtre yield a lighter colour, or have their luſtre deſtroyed when ſcratched. The adamantine luſtre is exhibited by minerals which are tranſlucent, and poſſeſs great refractive power; the luſtre is reflected from the interior of the maſs with great vivacity, and is produced both by reflected and refracted light. Examples, the diamond, ſulphur, and the native ſalts of lead. In theſe minerals, though the luſtre is increaſed by poliſhing, yet its particular character is leſs diſtinct, owing to the increaſed reflection of unrefracted light from the ſurface.

The pearly or nacry luſtre is well exhibited in ſome kinds of zeolite, and in kyanite. When it proceeds from fibrous minerals, as in ſatin ſpar and fibrous gypſum, it is ſometimes called a ſilky or ſatiny luſtre.

The reſinous luſtre is well repreſented by that of pitch: it exiſts in pitch-ſtone and reſinous flints.

The vitreous luſtre is perfectly repreſented in rock-cryſtal.

Each of theſe kinds of luſtre may vary in degree from the moſt ſplendent, which can be ſeen at a great diſtance, to ſhining, gliſtening, or glimmering. When entirely deſtitute of luſtre, a mineral is called dull.

The *ſtreak* implies the colour or luſtre which a mineral exhibits when ſcratched with a knife or file: the colour is the ſame as that of the mineral when pulverized.

Soiling is a character that occurs in ſome ſoft minerals, which leave a mark when drawn on the ſurface of other bodies, or on the fingers, as plumbago, chalk, and reddle.

The above are the principal characters depending on the action of light.

Phoſphoreſcence.—Certain minerals give out light when rubbed againſt each other, as quartz; or when ſcratched with a knife, as dolomite. Other minerals give out light when thrown on hot coals, or heated iron, as fluor ſpar; and certain minerals emit light when expoſed to the action of the blow-pipe.

Hardneſs and Solidity.—Solids are the only bodies to which the terms hard or ſoft can properly be applied. In common language, hardneſs and frangibility are often confounded. A ſtone that endures many heavy blows before it breaks, is conſidered as harder than another which requires fewer blows for its fracture; but the property which different minerals have of reſiſting the point of a knife or file of hardened ſteel, or the effect produced when a mineral is rubbed on other minerals, or ſcratched by them, is the moſt unexceptionable teſt of their hardneſs. Thus ſome minerals ſcratch cryſtallized quartz, a ſtone eaſily recognized, and whoſe hardneſs in that ſtate is always the ſame; other minerals ſcratch ſteel, glaſs, fluor ſpar, &c. This method is preciſe, and gives the real hardneſs of the parts; whereas ſtriking fire with ſteel, which is often mentioned as a character, is a vague teſt, ſubject to variation from the form of the mineral, the ſharpneſs of its edges, &c.; and ſoft minerals not unfrequently contain minute grains of harder ones, which will give ſparks with ſteel.

As a knife is the moſt convenient and portable inſtrument for determining the hardneſs of moſt minerals, except gems, the following judicious obſervations on the uſe of it, by Mr. Aikin, are deſerving the attention of the ſtudent. In fibrous minerals, a ſcratch directed acroſs the fibres will always indicate a lower degree of hardneſs than the true one; for the fibrous ſtructure preſenting an alternation of ridges and furrows, the knife glances acroſs the intervals, thus interrupting the uniformity of the ſtroke, and producing a ſucceſſion of ſmall blows, which rather break down than divide the ſummits of the ridges. The hardneſs ſhould, therefore, be tried by a ſcratch parallel to the direction of the fibres, or, ſtill better, on the ſurface of the tranſverſe fracture. Another precaution is always to ſelect a ſecond undecompoſed ſpecimen to make a trial of the hardneſs, this character being affected ſooner than any other by the ſpontaneous alteration of a mineral. In examining the relative degree of hardneſs of two minerals, by trying which will ſcratch the other, it is neceſſary to be aware that the ſolid angles and edges of the primitive forms are very ſenſibly harder than thoſe of the derivative forms, or than the angles or edges produced by caſual fracture, either of cryſtals or maſſive varieties of the ſame ſpecies. This fact has been long known to diamond-cutters, who always diſtinguiſh between the hard and ſoft points of the gem, that is, between the ſolid angles belonging to the primitive octahedron, and thoſe belonging to any of its modifications, the latter being eaſily worn down by cutting or rubbing them with the former.

The whole range of hardneſs obtained by the uſe of the knife may be thus claſſed. When a mineral does not yield to the point of a knife, it may be called *very hard*, as quartz and flint. When it yields with great difficulty, it may be called hard, as felſpar. When a mineral yields more readily than the former, it may be called *ſemi-hard*, as hornblende and fluor ſpar. When it is eaſily ſcratched with a knife, it is called *ſoft*, as calcareous ſpar and barytes. And when it yields to the nail, *very ſoft*, as gypſum and chalk.

Tenacity.—By this property is underſtood the relative mobility of the particles of minerals, and the different degrees of coherence. In ſome metallic minerals, particularly native gold and ſilver, the particles, though they cohere with great force, are capable of a conſiderable degree of motion, and may be cut with a knife or extended with a hammer. Such minerals are called *malleable*. When a mineral may be cut into fragile ſhavings, or coarſe grains, adhering to the knife, it is called *ſectile*, as in plumbago and ſoap-ſtone. When on cutting a mineral with a knife, the particles dart off with a grating noiſe, it is ſaid to be *brittle*. All hard minerals, and the greater number of ſemi-hard minerals, are brittle, as quartz and fluor ſpar.

Frangibility.—By this property is underſtood the reſiſtance which minerals oppoſe to the ſtroke of a hammer before they are broken into fragments. The degrees of frangibility depend partly on the coheſion of the particles, and partly on the ſtructure of the mineral. Frangibility muſt not be confounded with hardneſs; many ſoft minerals are more infrangible than hard ones. Quartz is much harder than hornblende, but may be broken with greater facility. The brittle minerals are the moſt frangible, whilſt thoſe which yield to the knife and are ſectile are generally very tough; and the malleable minerals, ſuch as native gold, can ſcarcely be ſaid to be frangible.

A mineral is more eaſily frangible by a ſharp blow from a ſmall hammer, than by a heavier blow from a large hammer; hence this property appears to depend much on elaſticity. Some earthy minerals, as beryl, flint, and topaz, are more frangible when firſt obtained from their native beds, than when they have been expoſed for ſome time to the atmoſphere, owing to their containing a portion of moiſture which is afterwards evaporated. The degrees of frangibility, from very difficultly frangible to very eaſily frangible, are enumerated under ORYCTOGNOSY.

Some earthy minerals, and all malleable minerals, bend without breaking, or are flexible; and ſome minerals are both flexible and elaſtic, as mica.

Structure of Minerals.—This is the internal arrangement of the particles of a mineral. The three great diviſions of ſtructure are, the *perfectly cryſtalline, imperfectly cryſtalline,* and the *promiſcuous ſtructure.* The perfectly cryſtalline ſtructure is deſcribed under the article CRYSTAL; and the Wernerian deſcription of cryſtalline forms will be treated of in the following ſection. For the imperfectly cryſtalline and promiſcuous ſtructure, ſee STRUCTURE *of Minerals*, where theſe important characters are deſcribed. The ſtructure of minerals is aſcertained by the number of joints, or determinate directions in which a mineral can be ſplit, or exhibits diſtinct laminæ. This is called the cleavage by the German mineralogiſts.

When a mineral ſplits in one direction, it is ſaid to have a ſingle cleavage, as in mica. The cleavage may be double, as in felſpar; triple, as in calcareous ſpar; quadruple, as in fluor ſpar; or ſix-fold, as in blende and rock-cryſtal.

The Wernerian ſyſtem takes no meaſure of the angles under which the planes or laminæ of a mineral meet, except as being rectangular, equiangular, or oblique. But the angular meaſurement of the inclination of the planes forms the baſis of Haüy's ſyſtem of cryſtallography. (See CRYSTAL and GONIOMETER.) According to Werner, the two-fold cleavage is deſcribed either as rectangular, (examples, felſpar and hyacinth,) or oblique, as in hornblende.

In the triple cleavage, the laminæ may interſect each other rectangularly, as in lead-glance or galena; or the cleavage may be oblique, but equiangular, as in calcareous ſpar; or oblique and at unequal angles, as in heavy ſpar; or may be partly rectangular and partly oblique, as in ſelenite.

The four-fold cleavage may either be equiangular and oblique, as in fluor ſpar and the diamond, or three cleavages may be equiangular and oblique in the common axis of the cryſtal, and interſected by a fourth, which is at right angles with the axis, as in beryl.

In the ſix-fold cleavage, all the laminæ may meet under equal oblique angles, as in rock-cryſtal, or three of the cleavages may form equal and oblique angles in a common axis, and be obliquely interſected by three others, which alſo interſect the axis in an oblique direction.

Fracture.—This property is carefully diſtinguiſhed from the ſtructure by Haüy. The fracture is the caſual diviſion of the whole into fragments, and depends much on the kind of ſtroke by which it is produced, whereas the ſtructure exiſts in the mineral before it is broken. Fracture is either *conchoidal*, which is compoſed of convex or concave elevations or depreſſions more or leſs regular. When regular they have ſmooth concentric ridges, as in many ſhells; hence the name is derived. The conchoidal fracture is diſtinguiſhed according to the magnitude of the elevations and depreſſions, into large conchoidal, as in obſidian or flint, and ſmall conchoidal, as in pitch-ſtone. It is further diſtinguiſhed into deep or flat conchoidal, and into perfect conchoidal and imperfect conchoidal. The conchoidal fracture is characteriſtic of brittle minerals, which have ſome degree of luſtre and tranſparency. The *uneven fracture* preſents elevations which are commonly irregular and angular. This fracture is moſt frequent in metallic minerals, and in opaque minerals which have ſome luſtre; it paſſes into ſmall and imperfect conchoidal, and alſo into earthy.

The *even fracture* is that kind of ſurface which ſhews the feweſt inequalities, and theſe inequalities are flat and never ſharply defined. It paſſes into large conchoidal and ſplintery.

The *ſplintery fracture*, improperly ſo called, denotes a nearly flat ſurface, on which are numerous ſmall wedge-ſhaped ſcales, adhering by their thick end.

The *earthy fracture* is peculiar to opaque earthy minerals, as chalk. The ſurface has a number of minute elevations and depreſſions, which makes it appear rough.

The *hackly fracture* is peculiar to the malleable metals, and conſiſts of ſhort ſharp-pointed protruding fibres, which are ſometimes only diſcoverable by the feel.

Theſe different kinds of fracture often paſs into each other, and occur together: the moſt prevalent one muſt be taken as the characteriſtic fracture. In minerals which have a cryſtalline ſtructure, the true or proper fracture is that which is acroſs the direction of the planes. When cryſtalline minerals are broken, the diviſion taking place more readily in the direction of the planes, the fragments have generally a tendency to a regular form, as cubic, rhomboidal, &c. according to the ſtructure of the mineral from which they are broken.

Imperfectly cryſtalline minerals break into fragments, which are more or leſs regular, and contain the following varieties: the wedge-ſhaped, ſplintery, ſpecular, and tabular.

Indeterminate fragments, from hard and brittle minerals, which poſſeſs no cryſtalline ſtructure, have ſharp edges and angles. In other minerals, the angles and edges are more or leſs blunt in proportion to their ſoftneſs and toughneſs.

External form or ſhape of minerals is either *indefinite*, *definite*, or *cryſtalline.*

The *indefinite* or *amorphous*, called by Mr. Jameſon the common external ſhape of a mineral. This character is applied when a mineral exhibits no appearance of regular planes or laminæ, nor any reſemblance to well-known natural or artificial bodies. When the mineral forms a thin coat or cruſt on other minerals, it is called *ſuperficial* or inveſting, which is common to friable or pulverulent minerals. Another variety is called plated or membranaceous, where the mineral forms thin membranes or flakes not exceeding in thickneſs common paper. When the three dimenſions are not very different from each other, if the bulk is not conſiderable, the mineral is ſaid to be in pieces, which may be either angular or rounded. If the bulk of an amorphous mineral be conſiderable, it is called *maſſive*. An enumeration of Werner's common external forms is given under Oryctognosy; which ſee.

The *definite* form, or particular external ſhape, appears in many inſtances to be derived from cryſtallization modified or diſturbed by other cauſes. According to Mr. Aikin, many of the definite forms have evidently been occaſioned by matter in a ſemi-fluid ſtate having been expoſed to the ſimultaneous action of cryſtallization, concentric attraction, and gravitation. To cryſtallization is owing the minute ſtructure in ſhort priſms or fibres laterally aggregated; to the concentric attraction it is owing that each of theſe fibres converges towards a real or imaginary centre, forming a curved thick plate of the whole, or ſeveral plates in ſucceſſive coats, like the ſtructure of the onion; and laſtly, it is owing to gravitation that theſe concretions do not form perfect ſpheres, but are more or leſs elongated into the mamillary, the reniform, the botryoidal, and the ſtalactitic varieties. Of particular external forms, a great variety are enumerated. (See Oryctognosy.) The definite form that approaches neareſt to the regular cryſtalline, is the *arboreſcent* or *dendritic:* it bears a near reſemblance to a vegetable ſpray; hence its name. On minute examination, it will, however, be found to conſiſt of cryſtals occaſionally very perfect, implanted one into another, and branching in different directions. Certain varieties have obtained particular names, as *reticulated* or reniform, when the branches interſect like the meſhes of a net; and *pectinated*, when a number of ſhort branches riſe parallel to each other, at nearly equal diſtances, on the ſame ſide or on oppoſite ſides of a main branch, as in a comb.

The *cryſtalline* form of minerals is called by Mr. Jameſon the regular external ſhape. When a mineral occurs cryſtallized in a ſimple form which has received a name in geometry, as the cube, the rhomboid, the octahedron, &c. it is eaſy to give an idea of it by referring it to that form; but when a cryſtal preſents a great number of unequal planes, or is very complicated, the deſcription becomes difficult without a drawing or model. Mr. Werner has, however, conſiderably facilitated the mode of deſcribing cryſtals by conſidering them as modifications of certain ſimple forms; and this mode, though not ſtrictly ſcientific, is found moſt convenient in practice.

The ſimple forms, or what he calls the fundamental forms, are, the *cube* (*fig.* 1.); the *rhomboid* (*fig.* 2.); the *priſm*, which may have three, four, or a greater number of ſides (*figs.* 3, 4, 5, &c.); the *pyramid*, which may have three, four, ſix, or eight triangular planes (*fig.* 6.); the table, which has two equal and parallel planes, which are very large compared with the thickneſs of the table, and is bounded by an indeterminate number of ſides (*figs.* 7 and 8.) The three following forms are very rare. The *icoſahedron*, having twenty equilateral planes (*fig.* 9.); the *dodecahedron*, having twelve pentagonal faces (*fig.* 10.); and the *lens*, which has two curved faces (*fig.* 11.)

Mr. Aikin is of opinion, that the number of ſimple forms, or models, to which almoſt all cryſtals can be referred, may be reduced to four. The priſm, the rhomboidal dodecahedron (*fig.* 12.), the regular tetrahedron (*fig.* 13.), and the double pyramid formed by two equal and ſimilar pyramids joined together by a common baſe. The pyramid, like the priſm, may have a greater or ſmaller number of ſides, and the edges of the baſe of each pyramid may be in the ſame plane, as in *fig.* 14, or ſet on obliquely, as in *fig.* 31.

Theſe forms, or models, it muſt be carefully noticed, have no connection with the true primitive forms of cryſtals (ſee (Crystallography, *Addenda*), but are merely adopted as convenient types for the deſcription of cryſtals. The changes which theſe forms are ſuppoſed to undergo by truncation and bevelment may take place either on the edges or ſolid angles of the cryſtal. As the priſm and the cube are the moſt common forms of cryſtals, we ſhall proceed to deſcribe them modified by theſe changes. The priſm, as we have before obſerved, may have ſeveral ſides, and may be triangular, or rectangular, as in *fig.* 3; oblique, as in *fig.* 4; or polygonal and equiangular, as in *fig.* 5. The ſides are technically called the lateral planes, they are parallel to and ſurrounding an imaginary axis. The baſes at each extremity of the priſm are called the terminal planes. The lateral edges are formed by the junction of two contiguous ſides or planes, and the terminal edges are formed by the junction of the lateral planes with the baſe or terminal planes, and the ſolid angles are formed at the point of junction of the terminal planes with the lateral planes. The cube may alſo be deſcribed as a ſhort rectangular four-ſided priſm. When a ſolid angle is removed and one plane is formed in its place, as in *Plate* VII. *fig.* 16, the cryſtal is ſaid to be truncated on the angles. When planes are formed on the edges of a cryſtal, as in *fig.* 17, it is deſcribed as truncated on the edges: and when two planes are formed on an edge of the cryſtal, as in *fig.* 18, it is ſaid to be bevelled on the edges. *Fig.* 19. is a three-ſided priſm bevelled on its lateral edges. When the ſolid angles of a cryſtal, or the terminal planes, appear cut off by three or more planes converging to a point, the cryſtal is ſaid to be acuminated: in *fig.* 20. each angle of the cube is acuminated by three ſmall planes ſet on the lateral planes; and in *fig.* 21. each angle is acuminated by planes ſet on the lateral edges. *Fig.* 22, according to the Wernerian method, is a four-ſided priſm, acuminated at each extremity by four planes ſet on the lateral planes. *Fig.* 23. is a four-ſided priſm acuminated by four planes ſet on the lateral edges. In the ſecond inſtance, the acuminating planes are rhomboidal; in the firſt inſtance, triangular. *Fig.* 24. is the equiangular ſix-ſided priſm, acuminated at each extremity by ſix planes ſet on the lateral planes. *Fig.* 25. is a ſimilar priſm acuminated by three planes at each extremity ſet on the alternate lateral planes: and *fig.* 26. is alſo a ſimilar ſix-ſided priſm acuminated by three planes at each extremity, ſet on the alternate lateral edges. The planes at the oppoſite extremities in *figs.* 25 and 26. are ſet in different planes or edges, and are what the Germans call *unconformable.*

The octahedron, or double four-ſided pyramid (*fig.* 27.), is a common form of cryſtals: it is frequently truncated or bevelled. *Fig.* 28. repreſents the octahedron bevelled at each of the angles. *Fig.* 29. is a double eight-ſided pyramid acuminated by four planes at each extremity, ſet on the alternate lateral edges of the pyramid, thus forming a cryſtal with twenty-four faces, a form common in the leucite. The table may be bevelled on the ſurrounding edges, as in *fig.* 30; but in this figure, the Wernerian mineralogiſts call the ſurrounding ſides the terminal planes, and the larger ſides the lateral planes, a deviation for which there does not appear any ſufficient reaſon, and which is liable to introduce confuſion into the deſcription of cryſtals. Some of the forms here referred to, particularly *figs.* 22 and 24, may be more ſimply deſcribed as four-ſided and ſix-ſided priſms, terminated at each extremity by four-ſided or ſix-ſided pyramids. The edges of a cryſtal may ſometimes be doubly bevelled, or may be bevelled, and the edge of the bevelment truncated. Such modifications are better deſcribed as replacements of the edges by three, four, or more ſmall planes or ſecondary faces. A very long priſm is called a capillary cryſtal, if the diameter be too ſmall to render the faces diſtinct. A very ſhort priſm, in which the length is very ſmall in proportion to the thickneſs, may be regarded as a tabular cryſtal. Moſt cryſtals may be very intelligibly deſcribed by aſſuming the fundamental forms of Werner variouſly modified. We are not, however, to ſuppoſe, that Werner himſelf intended to convey the idea that nature firſt made cryſtals complete, and then cut away the angles and edges; he only expreſſes, by the terms truncation and bevelment, the appearance the cryſtal preſents to the eye. The primitive forms, or the true fundamental forms of cryſtals, as given by Haüy, are enumerated under the article Crystal; but *Plate* VII. *Cryſtallization*, compriſes thoſe forms, and alſo thoſe of the integrant molecule. The primitive forms are, the parallelopiped, including the cube and rhomb (*figs.* 1 and 2.), and the rectangular-table (*figs.* 7 and 8.), the octahedron (*fig.* 27.), the tetrahedron (*fig.* 13.), the hexagonal priſm (*fig.* 5.), the rhomboidal dodecahedron (*fig.* 12.), and the dodecahedron with triangular faces (*fig.* 14.) The integrant molecules are, the tetrahedron (*fig.* 13.), the three-ſided priſm, and the cube (*fig.* 1.)

In nature, we rarely find cryſtals entirely perfect and ſymmetrical. If, ſays Mr. Aikin, the ſtudent ſhould imagine that the real cryſtals of minerals, ſuch as nature preſents them, are formed with the preciſion that characteriſes the models of the cryſtallographer, he will in general find himſelf much miſtaken. By far the greater number of cryſtals are either imbedded in other ſubſtances, from which it is difficult to diſengage them without much injury, or inhere by one extremity in amorphous or uncryſtallized matter of the ſame nature with themſelves. Hence it is, that few priſms occur both terminations of which are entire. Not unfrequently alſo cryſtals, by being formed in narrow clefts, are compreſſed, or in other ways variouſly mutilated, and thus perplex even the moſt ſkilful mineralogiſt. Their minuteneſs too, when the parts are much complicated, is frequently ſuch as to elude the keeneſt eye and the moſt adroit uſe of the goniometer.

It is often by no means eaſy to diſtinguiſh genuine from *ſpurious cryſtals.* The latter are generally ſuppoſed to have been formed in cavities occaſioned by the decompoſition of real cryſtals. Theſe are called caſts. Spurious or ſuppoſititious cryſtals are either caſts or incruſtations; the latter occurs when a mineral is depoſited over a pre-exiſting cryſtal and aſſumes its figure. The cryſtal either remains forming a nucleus, or it diſappears, and the ſuppoſititious cryſtal is hollow.

In the Wernerian oryctognoſy, the magnitude of cryſtals and their mode of aggregation are minutely enumerated. (See Oryctognosy.) In the laſt edition of Mr. Jameſon's external characters, he defines the *ſcopiform* or *faſcicular* aggregation as "compoſed of a number of thin priſmatic cryſtals, diverging from their point of attachment, and forming a kind of faſciculus or bundle; example, zeolite." The manipular, or ſheaf-like, conſiſts of a number of cryſtals that diverge towards both ends and are narrower in the middle, thus reſembling a ſheaf; examples, zeolite and prehnite.

Scalarwiſe is when many cubical cryſtals are arranged like the ſteps of a ſtair; example, cubes of corneous ſilver-ore.

The ſurface of cryſtals is either ſmooth or ſtreaked, the ſtreaks ſometimes croſs longitudinally and ſometimes tranſverſely. Theſe ſtreaks are deſerving of notice, as they frequently ſerve to indicate the ſtructure of cryſtals. See Crystallography, *Addenda.*

Electricity is a character peculiar to a ſmall number of cryſtallized minerals, that exhibit the poſitive and negative electricity at their extremities on being heated. This property was firſt diſcovered in the tourmaline. (See Tourmaline.) The points which exhibit electricity are called the electric poles. In order to diſtinguiſh theſe poles from each other, the following ſimple apparatus is employed. (See Crystallography, *Plate* IV. *fig.* 92. A.) It conſiſts of a needle of copper or ſilver, having at each end two ſmall balls *a*, *b*; this needle, like the common compaſs-needle, is moveable upon a pivot, having a very fine point, and at the bottom a ſtand or foot. The needle and ſtem are inſulated by placing the foot on a plate of wax or reſin. To uſe the apparatus, we place one finger on the ſtem, and preſent near to the needle a ſtick of ſealing-wax, made electrical by rubbing, then withdraw the finger, and afterwards the ſtick of ſealing-wax, and the needle will be poſitively electrified; and when a cryſtal electrified by heat, and held by a pair of ſmall pincers in an inſulated handle, as at B, is brought ſo that the poſitive or negative pole may approach one of the balls *a*, *a*, *b*, it will be attracted or repelled. The electricity of the needle will be perceived a quarter of an hour, or longer, and may be rendered more or leſs ſtrong by varying the diſtance at which the ſtick of ſealing-wax is held. It may be proper to obſerve that many minerals become electric by friction.

Magnetiſm is a character which occurs principally in ores of iron, or in minerals that contain a portion of iron, or iron in a ſtate of black oxyd.

The above are the moſt important phyſical characters, compriſing thoſe which are called the external characters by Werner, and thoſe to which he reſtricts the term phyſical.

Specific Gravity, or weight, is one of the moſt important characters of minerals, and is obtained accurately by weighing them in the hydroſtatic balance. (See HYDROSTATICS.) For moſt practical purpoſes, a pair of common gold ſcales that will turn freely with the tenth part of a grain is ſufficiently accurate. The mineral may firſt be weighed, and the weight be noted, and then it muſt be ſuſpended by a fine thread, and weighed again in rain or river water, about the temperature of 60°. The original weight of the mineral divided by the difference of the weight will give its ſpecific gravity, or the weight compared with that of water. The heavieſt bodies are the metallic, and the metallic ores, which range from about five times the weight of water to ſeventeen; the latter is the ſpecific gravity of native platina. The heavieſt earthy minerals are the barytic and ſtrontitic earths, and the gems; theſe range from 3.5 to 4.5. The other ſolid earthy minerals range from 2. to 3.5, and ſome few ſolid minerals are lighter than water, as rock-cork.

The *feel*, whether unctuous, or ſmooth or dry, meagre or harſh, is a character which ſerves to diſtinguiſh particular minerals. The odour and taſte are alſo characters of particular minerals; ſome yielding a peculiar odour naturally, as petroleum, or when rubbed, as ſwine-ſtone; and others, as the ſaline, affect the taſte. Adheſion to the tongue is alſo a character poſſeſſed by minerals which abſorb water. The coldneſs and ſound of minerals are alſo given as characters by Werner, but they are of little practical value.

Friable minerals are either looſe, as when the particles have no perceptible coherence, or are ſlightly cohering. The particles are in ſome inſtances ſcarcely diſcernible, and are called duſty particles, as in cobalt cruſt; in other inſtances, the particles are large and ſcaly.

The fluid minerals are few in number, and are characteriſed by their fluidity, tranſparency, and luſtre.

The remaining characters are purely chemical, except the action of water, and of the atmoſphere, which is in ſome inſtances chemical, and in others mechanical. Water unites with many of the clays, and renders them plaſtic; other minerals, as fullers'-earth, fall to pieces in water, without being diſſolved, or even rendered plaſtic. In ſome caſes, minerals abſorb water, which alters their tranſparency and colour. Saline minerals chemically combine with water, and are diſſolved. To the abſorption of water, is owing the property of adhering, when applied to the tongue before noticed. The action of the atmoſphere on minerals is principally effected either by the abſtraction or abſorption of moiſture, and the oxydation of minerals when expoſed to the air is for the moſt part owing to the moiſture which it contains.

The chemical characters of minerals are thoſe which the mineralogiſt can aſcertain by the action of acids, or of heat as applied by the blow-pipe, either ſimply or aided by re-agents. The action of acids is of great uſe in aſcertaining many eſſential characters of minerals. For this purpoſe, the muriatic or the nitric acids of moderate ſtrength are moſt convenient. A minute fragment of the mineral may be placed in a watch-glaſs, and a few drops of acid poured upon it. The native carbonates efferveſce, and are diſſolved. Some minerals require to be reduced to a ſtate of powder to ſhew the action of acids, and are hereby reduced to the form of jelly in a few hours, as zeolite. Other minerals only require to be touched with a glaſs rod dipped in acid to aſcertain their nature.

The blow-pipe is an inſtrument of very great uſe to the mineralogiſt; it has been already deſcribed. (See BLOW-PIPE.) A blow-pipe which can be carried in the pocket, to be worked when required by the mouth, is by far the moſt convenient; but it requires ſome precautions in the management to render it efficient. The beſt and cleareſt directions for this purpoſe which we have ſeen are thoſe given by Mr. Aikin.

" Few perſons," he ſays, " are able at firſt to produce a continued ſtream of air through the blow-pipe, and the attempt often occaſions a good deal of fatigue. I ſhall make no apology, therefore, for treating this matter ſomewhat in detail. The firſt thing to be done is to acquire the habit of breathing eaſily and without fatigue through the noſtrils alone; then to do the ſame while the mouth is filled and the cheeks inflated with air, the tongue being at the ſame time ſlightly raiſed to the roof of the mouth, in order to obſtruct the communication between the mouth and the throat. When this has been acquired, the blow-pipe may be put into the mouth, and the confined air expelled through the pipe by means of the muſcles of the cheeks. As ſoon as the air is nearly exhauſted, the expiration from the lungs, inſtead of being made through the noſtrils, is to be forced into the cavity of the mouth; the communication is then inſtantly to be ſhut again by the tongue, and the remainder of the expiration is to be expelled through the noſtrils. The ſecond, and all ſubſequent ſupplies of air to the blow-pipe, are to be introduced in the ſame manner as the firſt. Thus, with a little practice, the power may be obtained of keeping up a continued blaſt for a quarter of an hour, or longer, without inconvenience.

" Much depends on the ſize of the external aperture of the blow-pipe. If ſo large that the mouth requires very frequent repleniſhing, the flame will be wavering, and the operator will ſoon be out of breath; if, on the other hand, the aperture be too ſmall, the muſcles of the cheeks muſt be ſtrongly contracted, in order to produce a ſufficient current, and pain and great fatigue of the part will ſoon be the conſequence. An aperture about the ſize of the ſmalleſt pin-hole will generally be found the moſt convenient, though for particular purpoſes one ſomewhat larger or a little ſmaller may be required.

" Several varieties of form have been recommended for the blow-pipe: they all have their advantages and diſadvantages. Upon the whole, it appears deſirable that there ſhould be an expanſion of the tube ſomewhere between the two extremities, both for the ſake of collecting and retaining the condenſed moiſture of the breath, and for producing a regulated preſſure, and therefore a regular blaſt. The noſle alſo ſhould be tipped with a moveable piece for the convenience of giving at leaſt three different ſizes of aperture. Theſe conditions being obtained, other circumſtances are of ſmall importance, provided neither the bulk nor weight of the inſtrument be troubleſome.

" The fuel for this little reverberatory furnace (as the blow-pipe apparatus may, without impropriety, be denominated) is oil, tallow, or wax, kept in combuſtion by means of a wick. The oil is the worſt, the tallow is better, and the wax is beſt, not only as being cleaner, and free from any offenſive ſmell, but alſo as affording a greater heat. The management of the wick too is a matter of ſome nicety. It ſhould neither be too high nor ſnuffed too low, and ſhould be a little bent at its ſummit *from* the blaſt of the pipe. All caſual currents and drafts of wind ought to be carefully avoided, as rendering the flame unſteady, and very materially impairing its ſtrength. The above conditions being duly complied with, the flame, while acted on by the pipe, will evidently conſiſt of two parts, an outer and inner; the latter will be of a light-blue colour, converging to a point at the diſtance of about an inch from the noſle; the former will be of a yellowiſh-white colour, and will converge loſs perfectly. The moſt intenſe heat is juſt at the point of the blue flame. The white flame conſiſts of matter in a ſtate of full combuſtion, and calcines or oxygenates ſubſtances immerſed in it; the blue flame conſiſts of matter in a ſtate of imperfect combuſtion, and therefore partly deoxygenates metallic oxyds which are placed in contact with it.

" The ſupports of the various ſubſtances while undergoing the action of the blow-pipe come next to be conſidered. Of ſupports there are two kinds, combuſtible and incombuſtible. The combuſtible ſupport (uſed chiefly for metallic ores) is charcoal. The cloſeſt-grained and ſoundeſt pieces are to be ſelected for this purpoſe; and even the beſt often ſplit and become rifty after being uſed for a ſhort time. This will not unfrequently happen in the middle of an experiment, when the melted globule ſinks into the cracks, is loſt, and the experiment muſt be begun again. Inſtead of ſticks of charcoal, ſome perſons recommend that the charcoal, after being finely pulveriſed, ſhould be moiſtened with a ſolution of gum tragacanth, and moulded into a convenient form; a plan that well deſerves to be fairly tried. Perhaps ſimply moiſtening the charcoal-powder, and then ſubmitting it to the action of a very ſtrong ſcrew-preſs, might be ſtill better. The incombuſtible ſupports are, metal, glaſs, and earth, in the uſe of all which one general caution may be given,—to make them as little bulky as poſſible. The ſupport always abſtracts more or leſs of the heat, and in many caſes, eſpecially when metallic ſpoons are employed, entirely prevents the flame from producing its due effect. The beſt metallic ſupport is platina, becauſe it is infuſible, and tranſmits heat to a leſs diſtance and more ſlowly than other metals. A pair of ſlender forceps of braſs, pointed with platina, is the beſt poſſible ſupport for non-metallic minerals that are not very fuſible. For the fuſible earthy minerals, and for the infuſible ones when fluxes are uſed, leaf-platina will be found the moſt convenient; it may be folded like paper into any deſirable form, and the reſult of the experiment may be obtained ſimply by unfolding the leaf in which it was wrapped up. Glaſs ſupports are ſlender tubes or rods of this ſubſtance. If the mineral to be examined is of a longiſh or fibrous ſhape, one end may be cemented to the top of the glaſs rod by heating it, and in this ſtate it may be further examined with great convenience. Earthen ſupports are uſed only for extemporaneous cupellation; they are beſt made of bone aſh, and muſt of neceſſity be of a certain bulk, in order to abſorb the litharge, and other impurities, which it is the object of this proceſs to ſeparate from the *fine metal.* With regard to the magnitude of the ſpecimens required for examination, no very preciſe rule can be given; the moſt fuſible, ſuch as ſome of the metallic ores, may be as large as a ſmall pea, while the more refractory of the earthy minerals ſhould ſcarcely exceed the bulk of a pin's head.

" The heat that is firſt applied to inveſtigate the properties of mineral ſubſtances ſhould be very ſlow, not exceeding that which exiſts on the outſide, even of the yellow flame; at this temperature, the phoſphoreſcence is beſt elicited, and decrepitation for the moſt part takes place, the fuſible inflammables begin to melt, and the metallic and moſt other mineral ſalts loſe their water of cryſtallization. The yellow flame will raiſe a ſubſtance to a tolerably full red heat, by which the following effects are produced. Many changes of colour take place, all the yellow ores of iron become red, and the peach-bloſſom tinge of flowers of cobalt becomes blue; certain earthy minerals loſe their water of cryſtallization or of compoſition, and exfoliate, as gypſum, or throw up coarſe and irregular ramifications, as prehnite and meſotype. At this temperature, alſo, carbonate of ſtrontian begins to tinge the flame with its peculiar crimſon colour, and muriate of copper with its bright green colour. The roaſting of all the metallic ores is beſt carried on at this heat; ſulphur and arſenic are drawn off, and exhibit their characteriſtic odours; grey antimony melts; native biſmuth runs out from the matrix, through which it is diſſeminated; and pearlſpar and ſpathoſe iron blacken and become magnetic. In the ſtill higher degree of heat produced at the point of the interior blue flame, although ſome minerals ſtill continue perfectly refractory, and undergo but little change of any kind, yet the greater part is very ſenſibly altered. Some, as pearl-ſtone, enlarge very conſiderably in bulk at the firſt impreſſion of the heat, but are with difficulty afterwards brought to a ſtate of fuſion. Others become covered with a ſuperficial glazing, and the ſharp edges and angles become gloſſy and rounded off. Others, conſiſting really, though not viſibly, of an intermixture of two ſubſtances differing in fuſibility, undergo the proceſs of *fritting*, in which refractory grains are diſperſed through a vitreous maſs. In others, a complete fuſion takes place, and produces a ſpongy opaque ſemivitreous maſs called a ſlag, or an opaque glaſs called an enamel, or a more or leſs tranſparent or true glaſs, which latter may vary in texture from compact to porous and ſpongy or intumeſcent.

" In examining the habitudes of the earthy minerals with the blow-pipe, no fluxes are required; whereas to moſt of the metallic ores, fluxes will be found at almoſt all times a very uſeful and often a neceſſary addition. The ores of the difficultly reducible metals, ſuch as mangaueſe, cobalt, chrome, and titanium, are characteriſed by the colour which their oxyds give to glaſs; in all theſe caſes, therefore, vitreous fluxes muſt be largely made uſe of, both to diſſolve the earthy matter with which the oxyds are generally mixed very intimately, and to furniſh a body with little or no colour of its own, which may receive and ſufficiently dilute the inherent colour of the oxyd. I ſay *ſufficiently* dilute, becauſe the colour of moſt oxyds is exceſſively intenſe, and moſt perſons in their firſt experiments of this kind, are very apt to obtain ambiguous reſults in conſequence of uſing ſo large a proportion of oxyd, that the glaſs, whether blue, red, or green, appears quite black. With regard to fluxes, the following will, I believe, be found amply ſufficient. Where the object is not only to diſſolve the oxyd, but at the ſame time to retain it at a high ſtate of oxydation, the flux employed ſhould be either nitre or a mixture of this with a glaſs of borax, or, ſtill better, nitrous borax formed by diſſolving common borax in hot water, neutralizing its exceſs of alkali by nitric acid, then evaporating the whole to dryneſs, and laſtly haſtily melting it in a platina crucible. For an active, and at the ſame time non-alkaline flux, boracic acid may be uſed, or neutral borate of ſoda; and where a ſlight exceſs of alkali is required, or at leaſt does no harm, common borax by itſelf, or mixed with a little cream of tartar, when a ſtrong reducing flux is wanted, may be had recourſe to. For coloured glaſſes, the proper ſupport is leaf-platina; but for reductions, charcoal. In the latter caſe, the ore previouſly roaſted, if it contain either ſulphur or arſenic, is to be pulveriſed and accurately mixed with the flux; a drop of water being then added to make it cohere, it is to be formed into a ball, and depoſited in a ſhallow hole in the charcoal, being alſo covered by a piece of charcoal, if a high degree of heat is wanted. The eaſily reducible metals, however, may be treated with leſs ceremony; a bit of the ore being placed on the charcoal, and covered with glaſs of borax, will, in the ſpace of a few ſeconds, be melted by the blow-pipe, and converted into a metallic globule, imbedded in a vitreous ſcoria.

" In all caſes where a metallic globule is obtained, it ſhould be ſeparated from the adhering ſcoria, and examined as to its malleability and other external characters; being then placed a ſecond time on the charcoal, but without flux, it is to be brought to a ſtate of gentle ebullition, during which the ſurface being oxygenated, will exhale a heavy vapour that condenſes on the blow-pipe, or falls down on the charcoal in form of a powder, or of ſpicular cryſtals, from the colour and other characters of which the nature of the metal may probably be aſcertained. If any ſuſpicion is entertained of a portion of ſilver or of gold being mixed with the oxydable metal, the button muſt be placed on an earthen ſupport, and there brought to a full melting heat; by degrees the oxydable metal will become ſcorified, and will entirely ſink into the ſupport, leaving on the ſurface a bright bead of *fine metal*, if ſuch was contained in the alloy; but the proportion of this laſt being generally very ſmall, and the entire maſs of the alloy often not exceeding a large ſhot, it is not unfrequently neceſſary to have recourſe to the magnifying glaſs, to be fully convinced of the preſence or abſence of fine metal." Aikin's Manual of Mineralogy.

The above directions will be found of the greateſt uſe, and are ſufficiently ample to make any additional remarks unneceſſary. Some German mineralogiſts have, indeed, arranged under nearly one hundred heads, the different changes produced on minerals by the action of the blow-pipe, and have given elaborate explanations of words known with ſufficient accuracy by almoſt every child of ſeven years of age. This we regard not as ſmoothing the paths of ſcience, but as blocking them up with rubbiſh to impede the progreſs of the ſtudent.

In the mineralogy of Haüy, he has introduced very judiciouſly what he denominates the *diſtinctive characters* of minerals, noting the particular characters which ſerve to diſtinguiſh one mineral ſpecies from another, to which it has the greateſt general reſemblance.

New ſpecies of minerals have been diſcovered almoſt every year ſince the commencement of the preſent century, the greateſt number of theſe diſcoveries have been made in the mines of Sweden. Few, however, of the newly diſcovered minerals poſſeſs properties that entitle them to much notice, and it is highly probable, that as the ſcience of mineralogy advances to perfection, many of theſe ſuppoſed new ſpecies will be diſcovered to be only varieties of ſpecies that have been long known.

ACTINOLITE, or *Actynolite*. Fr. *actinote*. See STRAHLSTEIN.

ACTINOTE, *Amphibole*. See STRAHLSTEIN.

ADAMANTINE *Spar*, or *Common Corundum; Corindon harmophane*, Haüy. See ADAMANTINE *Spar*.

ADHESIVE *Slate*, a ſpecies of poliſhing ſlate, or *polier ſchiſte*. See POLISHING *Slate*, *Addenda*.

ADULARIA. (See FELSPAR, *Addenda*.) This variety of felſpar was formerly confounded with glaſſy felſpar. (See GLASSY *Felſpar*, *Addenda*.) Adularia occurs in veins of granite in Bamfſhire, in the Iſle of Arran, and other parts of Scotland. Rolled pieces of adularia having a moſt beautiful pearly light are found in the iſland of Ceylon.

AGALMATOLITE, or *Figure-Stone; Beldſtein*, Werner; *Talc graphique*, Haüy. A mineral which may be regarded as an indurated ſteatite, or rather, according to Jameſon, as intermediate between ſteatite and nephrite or jade. It occurs maſſive; the fracture is ſplintery, or imperfectly ſlaty; the colours are greeniſh-grey, apple-green, or yellowiſh-brown, and ſometimes fleſh-red and roſe-red. It is tranſlucent, unctuous to the touch, and yields with eaſe to the knife, owing to which property it is carved with facility into different figures by the Chineſe, and into pagodas, cups, and ſnuff-boxes. The ſpecific gravity is from 2.6 to 2.8. According to Klaproth, the conſtituent parts of agalmatolite are,

	from China.	from Nagyag.
Silex	54	55
Alumine	34	33
Lime	—	—
Potaſh	6.25	7
Iron	0.75	0.50
Water	4	3
	99	98.50

According to Aikin, this mineral occurs at Glyder Bach, Caernarvonſhire.

AGARIC *Mineral*, or *Rock Milk; Chaux carbonatée ſpongieux*, Haüy. See AGARIC *Mineral*.

AGATE. (See AGATE.) The agate is not a ſimple mineral, but is compoſed of various ſiliceous ſubſtances arranged in concentric lamellæ, exhibiting, when cut and poliſhed, zones and angular lines, like fortifications. There is alſo a kind of agate-breccia, in which angular fragments are cemented by quartz or chalcedony. Agates appear to be formed by ſiliceous infiltration in the cavities of baſaltic rocks, the formation commencing from the ſurface, and the cavity gradually filling by ſucceſſive depoſitions on the ſides, until the whole forms one ſolid nodule. According to the direction of the lines or the ſtructure of agates, they are denominated *ribbon or ſtriped agate*, *fortification agate*, *landſcape agate*, *brecciated agate*, *tabular agate*, *jaſper agate*, *ſpotted agate*, *blended agate*, *ſtar agate*, marked with radiated ſpots; *petrifaction agate*, foſſil-ſhells and zoophytes are ſometimes penetrated or filled with agate. In the variety called *moſs agate*, nodules of chalcedony incloſe minute arborizations reſembling moſs, ſome of which are ſuppoſed by mineralogiſts to be branches of moſs ſuddenly incloſed and preſerved in ſiliceous matter.

ALABASTER, *Calcareous*, or *Calc ſinter Alabaſter*, *Gypſeous Alabaſter*. See ALABASTER and GYPSUM.

ALALITE, *Diopſide*, and *Muſſite*, a mineral allied to augit; firſt found in the Alp of La Muſſa, near the town of Ala, from whence the names alalite and muſſite are derived. See DIOPSIDE, *Addenda*.

ALLANITE, *Cerium allanite*, Fr. an ore of the newly-diſcovered metal cerium, firſt analyſed by Mr. Allan, and hence called allanite. Its colour is a browniſh-black; it occurs diſſeminated and cryſtallized in rhomboidal priſms, the angles of which meaſure 117° and 63°. The internal luſtre is ſhining, and reſino-metallic. It is opaque, and yields a greeniſh-grey ſtreak. It ſcratches glaſs, is brittle and eaſily frangible. Before the blow-pipe it froths, and melts into a brown ſlag. It gelatinizes in nitric acid. The ſpecific gravity is from 3.5 to 4. The conſtituent parts are,

Oxyd of cerium	33.9
Oxyd of iron	25.4
Silex	35.4
Lime	9.2
Alumine	4.1
Moiſture	4
	112

It occurs in granite in Weſt Greenland.

ALLOCHROITE,

leſs perfectly. The moſt intenſe heat is juſt at the point of the blue flame. The white flame conſiſts of matter in a ſtate of full combuſtion, and calcines or oxygenates ſubſtances immerſed in it ; the blue flame conſiſts of matter in a ſtate of imperfect combuſtion, and therefore partly deoxygenates metallic oxyds which are placed in contact with it.

“ The ſupports of the various ſubſtances while undergoing the action of the blow-pipe come next to be conſidered. Of ſupports there are two kinds, combuſtible and incombuſtible. The combuſtible ſupport (uſed chiefly for metallic ores) is charcoal. The cloſeſt-grained and ſoundeſt pieces are to be ſelected for this purpoſe ; and even the beſt often ſplit and become rifty after being uſed for a ſhort time. This will not unfrequently happen in the middle of an experiment, when the melted globule ſinks into the cracks, is loſt, and the experiment muſt be begun again. Inſtead of ſticks of charcoal, ſome perſons recommend that the charcoal, after being finely pulveriſed, ſhould be moiſtened with a ſolution of gum tragacanth, and moulded into a convenient form ; a plan that well deſerves to be fairly tried. Perhaps ſimply moiſtening the charcoal-powder, and then ſubmitting it to the action of a very ſtrong ſcrew-preſs, might be ſtill better. The incombuſtible ſupports are, metal, glaſs, and earth, in the uſe of all which one general caution may be given,—to make them as little bulky as poſſible. The ſupport always abſtracts more or leſs of the heat, and in many caſes, eſpecially when metallic ſpoons are employed, entirely prevents the flame from producing its due effect. The beſt metallic ſupport is platina, becauſe it is infuſible, and tranſmits heat to a leſs diſtance and more ſlowly than other metals. A pair of ſlender forceps of braſs, pointed with platina, is the beſt poſſible ſupport for non-metallic minerals that are not very fuſible. For the fuſible earthy minerals, and for the infuſible ones when fluxes are uſed, leaf-platina will be found the moſt convenient ; it may be folded like paper into any deſirable form, and the reſult of the experiment may be obtained ſimply by unfolding the leaf in which it was wrapped up. Glaſs ſupports are ſlender tubes or rods of this ſubſtance. If the mineral to be examined is of a longiſh or fibrous ſhape, one end may be cemented to the top of the glaſs rod by heating it, and in this ſtate it may be further examined with great convenience. Earthen ſupports are uſed only for extemporaneous cupellation ; they are beſt made of bone aſh, and muſt of neceſſity be of a certain bulk, in order to abſorb the litharge, and other impurities, which it is the object of this proceſs to ſeparate from the *fine metal.* With regard to the magnitude of the ſpecimens required for examination, no very preciſe rule can be given ; the moſt fuſible, ſuch as ſome of the metallic ores, may be as large as a ſmall pea, while the more refractory of the earthy minerals ſhould ſcarcely exceed the bulk of a pin's head.

“ The heat that is firſt applied to inveſtigate the properties of mineral ſubſtances ſhould be very ſlow, not exceeding that which exiſts on the outſide, even of the yellow flame ; at this temperature, the phoſphoreſcence is beſt elicited, and decrepitation for the moſt part takes place, the fuſible inflammables begin to melt, and the metallic and moſt other mineral ſalts loſe their water of cryſtallization. The yellow flame will raiſe a ſubſtance to a tolerably full red heat, by which the following effects are produced. Many changes of colour take place, all the yellow ores of iron become red, and the peach-bloſſom tinge of flowers of cobalt becomes blue ; certain earthy minerals loſe their water of cryſtallization or of compoſition, and exfoliate, as gypſum, or throw up coarſe and irregular ramifications, as prehnite and meſotype. At this temperature, alſo, carbonate of ſtrontian begins to tinge the flame with its peculiar crimſon colour, and muriate of copper with its bright green colour. The roaſting of all the metallic ores is beſt carried on at this heat ; ſulphur and arſenic are drawn off, and exhibit their characteriſtic odours ; grey antimony melts ; native biſmuth runs out from the matrix, through which it is diſſeminated ; and pearlſpar and ſpathoſe iron blacken and become magnetic. In the ſtill higher degree of heat produced at the point of the interior blue flame, although ſome minerals ſtill continue perfectly refractory, and undergo but little change of any kind, yet the greater part is very ſenſibly altered. Some, as pearl-ſtone, enlarge very conſiderably in bulk at the firſt impreſſion of the heat, but are with difficulty afterwards brought to a ſtate of fuſion. Others become covered with a ſuperficial glazing, and the ſharp edges and angles become gloſſy and rounded off. Others, conſiſting really, though not viſibly, of an intermixture of two ſubſtances differing in fuſibility, undergo the proceſs of *fritting,* in which refractory grains are diſperſed through a vitreous maſs. In others, a complete fuſion takes place, and produces a ſpongy opaque ſemivitreous maſs called a ſlag, or an opaque glaſs called an enamel, or a more or leſs tranſparent or true glaſs, which latter may vary in texture from compact to porous and ſpongy or intumeſcent.

“ In examining the habitudes of the earthy minerals with the blow-pipe, no fluxes are required ; whereas to moſt of the metallic ores, fluxes will be found at almoſt all times a very uſeful and often a neceſſary addition. The ores of the difficultly reducible metals, ſuch as manganeſe, cobalt, chrome, and titanium, are characteriſed by the colour which their oxyds give to glaſs ; in all theſe caſes, therefore, vitreous fluxes muſt be largely made uſe of, both to diſſolve the earthy matter with which the oxyds are generally mixed very intimately, and to furniſh a body with little or no colour of its own, which may receive and ſufficiently dilute the inherent colour of the oxyd. I ſay *ſufficiently* dilute, becauſe the colour of moſt oxyds is exceſſively intenſe, and moſt perſons in their firſt experiments of this kind, are very apt to obtain ambiguous reſults in conſequence of uſing ſo large a proportion of oxyd, that the glaſs, whether blue, red, or green, appears quite black. With regard to fluxes, the following will, I believe, be found amply ſufficient. Where the object is not only to diſſolve the oxyd, but at the ſame time to retain it at a high ſtate of oxydation, the flux employed ſhould be either nitre or a mixture of this with a glaſs of borax, or, ſtill better, nitrous borax formed by diſſolving common borax in hot water, neutralizing its exceſs of alkali by nitric acid, then evaporating the whole to dryneſs, and laſtly haſtily melting it in a platina crucible. For an active, and at the ſame time non-alkaline flux, boracic acid may be uſed, or neutral borate of ſoda ; and where a ſlight exceſs of alkali is required, or at leaſt does no harm, common borax by itſelf, or mixed with a little cream of tartar, when a ſtrong reducing flux is wanted, may be had recourſe to. For coloured glaſſes, the proper ſupport is leaf-platina ; but for reductions, charcoal. In the latter caſe, the ore previouſly roaſted, if it contain either ſulphur or arſenic, is to be pulveriſed and accurately mixed with the flux ; a drop of water being then added to make it cohere, it is to be formed into a ball, and depoſited in a ſhallow hole in the charcoal, being alſo covered by a piece of charcoal, if a high degree of heat is wanted. The eaſily reducible metals, however, may be treated with leſs ceremony ; a bit of the ore being placed on the charcoal, and covered with glaſs of borax, will, in the ſpace of a few ſeconds, be melted by the blow-pipe, and converted into a metallic globule, imbedded in a vitreous ſcoria.

“ In all caſes where a metallic globule is obtained, it ſhould be ſeparated from the adhering ſcoria, and examined as to its malleability and other external characters ; being then placed a ſecond time on the charcoal, but without flux, it is to be brought to a ſtate of gentle ebullition, during which the ſurface being oxygenated, will exhale a heavy vapour that condenſes on the blow-pipe, or falls down on the charcoal in form of a powder, or of ſpicular cryſtals, from the colour and other characters of which the nature of the metal may probably be aſcertained. If any ſuſpicion is entertained of a portion of ſilver or of gold being mixed with the oxydable metal, the button muſt be placed on an earthen ſupport, and there brought to a full melting heat ; by degrees the oxydable metal will become ſcorified, and will entirely ſink into the ſupport, leaving on the ſurface a bright bead of *fine metal*, if ſuch was contained in the alloy ; but the proportion of this laſt being generally very ſmall, and the entire maſs of the alloy often not exceeding a large ſhot, it is not unfrequently neceſſary to have recourſe to the magnifying glaſs, to be fully convinced of the preſence or abſence of fine metal.” Aikin's Manual of Mineralogy.

The above directions will be found of the greateſt uſe, and are ſufficiently ample to make any additional remarks unneceſſary. Some German mineralogiſts have, indeed, arranged under nearly one hundred heads, the different changes produced on minerals by the action of the blow-pipe, and have given elaborate explanations of words known with ſufficient accuracy by almoſt every child of ſeven years of age. This we regard not as ſmoothing the paths of ſcience, but as blocking them up with rubbiſh to impede the progreſs of the ſtudent.

In the mineralogy of Haüy, he has introduced very judiciouſly what he denominates the *diſtinctive characters* of minerals, noting the particular characters which ſerve to diſtinguiſh one mineral ſpecies from another, to which it has the greateſt general reſemblance.

New ſpecies of minerals have been diſcovered almoſt every year ſince the commencement of the preſent century, the greateſt number of theſe diſcoveries have been made in the mines of Sweden. Few, however, of the newly diſcovered minerals poſſeſs properties that entitle them to much notice, and it is highly probable, that as the ſcience of mineralogy advances to perfection, many of theſe ſuppoſed new ſpecies will be diſcovered to be only varieties of ſpecies that have been long known.

ACTINOLITE, or *Actynolite*. Fr. *actinote*. See STRAHLSTEIN.

ACTINOTE, *Amphibole*. See STRAHLSTEIN.

ADAMANTINE *Spar*, or *Common Corundum ; Corindon harmophane*, Haüy. See ADAMANTINE *Spar*.

ADHESIVE *Slate*, a ſpecies of poliſhing ſlate, or *polier ſchiſte*. See POLISHING *Slate*, *Addenda*.

ADULARIA. (See FELSPAR, *Addenda*.) This variety of felſpar was formerly confounded with glaſſy felſpar. (See GLASSY *Felſpar*, *Addenda*.) Adularia occurs in veins of granite in Bamfshire, in the Iſle of Arran, and other parts of Scotland. Rolled pieces of adularia having a moſt beautiful pearly light are found in the iſland of Ceylon.

AGALMATOLITE, or *Figure-Stone ; Beldſtein*, Werner ; *Talc graphique*, Haüy. A mineral which may be regarded as an indurated ſteatite, or rather, according to Jameſon, as intermediate between ſteatite and nephrite or jade. It occurs maſſive; the fracture is ſplintery, or imperfectly ſlaty ; the colours are greeniſh-grey, apple-green, or yellowiſh-brown, and ſometimes fleſh-red and roſe-red. It is tranſlucent, unctuous to the touch, and yields with eaſe to the knife, owing to which property it is carved with facility into different figures by the Chineſe, and into pagodas, cups, and ſnuff-boxes. The ſpecific gravity is from 2.6 to 2.8. According to Klaproth, the conſtituent parts of agalmatolite are,

	from China.	from Nagyag.
Silex	54	55
Alumine	34	33
Lime	—	—
Potaſh	6.25	7
Iron	0.75	0.50
Water	4	3
	99	98.50

According to Aikin, this mineral occurs at Glyder Bach, Caernarvonſhire.

AGARIC *Mineral*, or *Rock Milk ; Chaux carbonatée ſpongieux*, Haüy. See AGARIC *Mineral*.

AGATE. (See AGATE.) The agate is not a ſimple mineral, but is compoſed of various ſiliceous ſubſtances arranged in concentric lamellæ, exhibiting, when cut and poliſhed, zones and angular lines, like fortifications. There is alſo a kind of agate-breccia, in which angular fragments are cemented by quartz or chalcedony. Agates appear to be formed by ſiliceous infiltration in the cavities of baſaltic rocks, the formation commencing from the ſurface, and the cavity gradually filling by ſucceſſive depoſitions on the ſides, until the whole forms one ſolid nodule. According to the direction of the lines or the ſtructure of agates, they are denominated *ribbon or ſtriped agate*, *fortification agate*, *landſcape agate*, *brecciated agate*, *tabular agate*, *jaſper agate*, *ſpotted agate*, *blended agate*, *ſtar agate*, marked with radiated ſpots ; *petrifaction agate*, foſſil-ſhells and zoophytes are ſometimes penetrated or filled with agate. In the variety called *moſs agate*, nodules of chalcedony incloſe minute arborizations reſembling moſs, ſome of which are ſuppoſed by mineralogiſts to be branches of moſs ſuddenly incloſed and preſerved in ſiliceous matter.

ALABASTER, *Calcareous*, or *Calc ſinter Alabaſter*, *Gypſeous Alabaſter*. See ALABASTER and GYPSUM.

ALALITE, *Diopſide*, and *Muſſite*, a mineral allied to augit ; firſt found in the Alp of La Muſſa, near the town of Ala, from whence the names alalite and muſſite are derived. See DIOPSIDE, *Addenda*.

ALLANITE, *Cerium allanite*, Fr. an ore of the newly-diſcovered metal cerium, firſt analyſed by Mr. Allan, and hence called allanite. Its colour is a browniſh-black ; it occurs diſſeminated and cryſtallized in rhomboidal priſms, the angles of which meaſure 117° and 63°. The internal luſtre is ſhining, and reſino-metallic. It is opaque, and yields a greeniſh-grey ſtreak. It ſcratches glaſs, is brittle and eaſily frangible. Before the blow-pipe it froths, and melts into a brown ſlag. It gelatinizes in nitric acid. The ſpecific gravity is from 3.5 to 4. The conſtituent parts are,

Oxyd of cerium	33.9
Oxyd of iron	25.4
Silex	35.4
Lime	9.2
Alumine	4.1
Moiſture	4
	112

It occurs in granite in Weſt Greenland.

ALLOCHROITE, *idem*, Haüy; *ſplintery garnet* of Karſten. It is claſſed with the garnet family by Werner, but is regarded as a diſtinct ſpecies. It occurs maſſive; the fracture is uneven, paſſing into conchoidal. Its colours are greeniſh and yellowiſh-grey: it is tranſlucent on the edges; internally it has a gliſtening reſinous luſtre. It gives ſparks with ſteel. The ſpecific gravity is 3.5. It has hitherto been found only in an iron-mine at Dramman, in Norway. It is leſs hard and lighter than common garnet. According to Vauquelin, the conſtituent parts are,

Silex	35
Alumine	8
Lime	30.5
Oxyd of iron	17
Carbonate of lime	6
Oxyd of manganeſe	3.5
	100

ALMANDINE, regarded as a variety of garnet. See ALMANDIN; but for granite *r.* garnet.

ALUM-EARTH, *Alum-Slate, Common and Gloſſy, Alum-Stone.* See ALUM, *Ores of.*

ALUMINITE, *Subſulphate of Alumine; Reine thonerde*, Werner; *Alumine pure*, Haüy. This mineral is of a ſnow-white colour, verging on yellowiſh-white. It occurs in reniform pieces, it has no luſtre, the fracture is earthy, and the conſiſtence between friable and ſolid. It is opaque, ſoils ſlightly, affords a gliſtening ſtreak, and adheres feebly to the tongue. It feels fine, but meagre. The ſpecific gravity is 1.66. A variety of the ſame mineral ſubſtance occurs at Newhaven in Suſſex, filling up fiſſures in chalk. This variety is white, yields to the nail, and adheres ſtrongly to the tongue. The conſtituent parts of the foreign aluminite are,

Alumine	32
Water	47
Sulphuric acid	19.25
With a trace of ſilex, lime, and iron, equal in ſome ſpecimens to	1.25
	99.5

AMALGAM, *Native*, ſemifluid and ſolid. See MERCURY, *Ores of.*

AMANTHOIDE, *Capillary*, and *Amanthoide, Byſſolite;* the latter ſo called by Sauſſure. The former appears to be a variety of amianthus; the latter reſembles it, but differs from it in chemical compoſition, if the analyſis of Sauſſure be correct. It is ſuppoſed to be hornblende in a capillary form. Haüy.

AMAZON-STONE, green felſpar from South America, which is cut and poliſhed, and ſold under that name, becauſe it is found in rolled pieces on the banks of the river of the Amazons.

AMBER, *White* and *Yellow*. The white amber is of a ſtraw-yellow or yellowiſh-white colour. It occurs maſſive, and ſometimes incloſed in the yellow amber; it is leſs tranſparent than yellow amber. See AMBER.

AMETHYST, a variety of cryſtallized quartz. (See QUARTZ, and AMETHYST.) Werner divides amethyſts into two ſub-ſpecies, common and fibrous. The prevailing colour of the amethyſt is violet-blue of different degrees of intenſity; but it is ſometimes plum-blue and browniſh-black; alſo grey, olive-green, and piſtachio-green, which laſt colour is very rare. In maſſive varieties of amethyſt, ſeveral colours occur together. In cryſtallization and other properties, the amethyſt does not differ from quartz. It contains 97.50 of ſilex, with a minute trace of alumine, oxyd of iron, and manganeſe; to theſe oxyds, no doubt, its colours are owing. Amethyſts occur in agate balls in baſaltic rocks. Thick fibrous amethyſt occurs maſſive and in rolled pieces; it occurs in agate veins, in the ſame rocks as common amethyſt. A red colour is given to amethyſts by the jewellers, by incloſing them in charcoal, which is ignited, and allowed to conſume gradually. When the colour is not uniformly diffuſed, it is expoſed in a mixture of ſand and iron to a moderate heat, by which it is rendered more uniform.

AMIANTHUS, *Flexible aſbeſtus; Amiant*, Werner; *Aſbeſte amianthe*, Fr. (See AMIANTHUS, and ASBESTUS.) It is found in ſerpentine in the Iſle of Angleſea, and in the ſame rock at Portſoy in Scotland.

AMPELITE is a bituminous ſlate, or ſhale, of which drawing-ſlate, alum-ſlate, and ſlate-clay, are varieties. See SLATE.

AMPHIBOLE, hornblende. See HORNBLENDE, *Addenda*.

AMPHIBOLE *Lamellaire*, common hornblende.

AMPHIBOLE *Cryſtalliſée*, baſaltic hornblende.

AMPHIBOLE *Actinote*. See STRAHLSTEIN.

AMPHIBOLE *Fibreux*, glaſſy actinolite. See STRAHLSTEIN.

AMPHIBOLE *Aciculaire*, aſbeſtous actinolite. See STRAHLSTEIN.

AMPHIBOLE *Blanc et Soyeux*, aſbeſtous tremolite, grammatite. See TREMOLITE.

AMPHIBOLE *Grammatite*, common tremolite and glaſſy tremolite.

AMPHIGENE. See LEUCITE.

ANALCIME. See ZEOLITE.

ANATASE, or *Octahædrite, Titane anatare*, Haüy. See TITANIUM.

ANDALUSITE, *Feldſpath aphyre*, Haüy, is of a fleſh-red colour, ſometimes inclining to pearl grey; it occurs maſſive or cryſtallized in rectangular four-ſided priſms, with the terminal edges and angles ſometimes truncated. The ſtructure is imperfectly lamellar, with a double rectangular cleavage, parallel with the lateral planes of the priſm. It is tranſlucent; it ſcratches quartz with eaſe, but is rather eaſily frangible. The ſpecific gravity is 3.16. Before the blowpipe it becomes white, but is infuſible. According to Vauquelin, the conſtituent parts are,

Silex	32
Alumine	52
Potaſh	8
Oxyd of iron	2
	94

It occurs in veins in granite, gneiſs, and mica-ſlate, along with felſpar, quartz, mica, and ſchorl. It was firſt found in the province of Andaluſia. It has ſince been found in Aberdeenſhire. The cryſtals are generally middle-ſized or ſmall, and occur imbedded. It is diſtinguiſhed from felſpar by its greater hardneſs, weight, and infuſibility; and from corundum by its double rectangular cleavage, and its inferior ſpecific gravity.

ANHYDRITE, or *Anhydrous Gypſum*, a ſpecies of gypſum which contains ſcarcely a trace of water in its compoſition, and is much harder than common gypſum; the latter (ſee GYPSUM) contains 22 *per cent.* of water, and ſome varieties 38 *per cent.* There are five varieties of anhydrite : *compact, fibrous, radiated, ſparry,* and *ſcaly.*

Compact Anhydrite.—Its colours are various ſhades of white, inclining to ſmall blue, blueiſh-grey, and is alſo red and browniſh-red. It occurs maſſive, contorted, and reniform. The contorted variety, from its reſemblances to the convolutions of the inteſtines, was called tripe-ſtone, or *pierre de tripes.* Compact anhydrite is more or leſs tranſlucent, is feebly glimmering, has a ſmall ſplintery fracture, paſſing into even or conchoidal. The fragments are ſharp-edged : it is difficultly frangible. Specific gravity from 2.8 to 2.9. According to Klaproth, the conſtituent parts are,

Lime	41.48
Sulphuric acid	56.28
Water	.75
	98.51

Fibrous Anhydrite is of a red colour : it occurs maſſive, and has a delicately fine and parallel fibrous ſtructure. *Radiated anhydrite* has a blue or greyiſh colour, and is ſometimes ſpotted with red: it occurs maſſive. The ſtructure is radiated, the ſurface ſplendent and pearly : it is tranſlucent and rather hard. Its ſpecific gravity and conſtituent parts are the ſame as the former variety.

Sparry Anhydrite, or Cube-Spar; Chaux ſulphatée laminaire, Haüy.—The prevailing colour is white, inclining to blue-grey, pale yellow, and red. It is more or leſs tranſparent, the luſtre ſplendent and pearly : it refracts doubly. It is cryſtallized in rectangular four-ſided priſms, and in ſix or eight ſided priſms. It alſo occurs maſſive. It has a foliated ſtructure, with a cleavage parallel with the ſides of a rectangular priſm, which is its primitive form. It ſcratches calcareous ſpar, but is eaſily frangible. The ſpecific gravity is 2.9. Before the blow-pipe, it becomes glazed over with a white friable enamel, but does not melt and exfoliate like gypſum. It is met with in the ſalt-mines in the Tyrol, and in Switzerland, and alſo in the gypſum of Nottinghamſhire. Scaly anhydrite is generally white, inclining to blue or grey : it occurs maſſive, has a confuſed foliated ſtructure, and a ſplendent and pearly luſtre. It is tranſlucent on the edges, is eaſily frangible, and is ſoft. Specific gravity 2.9. According to Klaproth, the conſtituent parts are,

Lime	41.75
Sulphuric acid	55.
Muriate of ſoda	1.
	97·75

It occurs in the ſalt-mines of Hall in the Tyrol.

ANTHOPHYLITE. Its colour is between dark yellowiſh-grey and olive-brown : it occurs maſſive and cryſtallized in reed-ſhaped cryſtals, which appear to be four-ſided priſms longitudinally ſtreaked. The luſtre is ſhining and pearly, approaching to metallic. The ſtructure is radiated. It has a two-fold cleavage parallel with the ſides of a rectangular priſm. It is more or leſs tranſlucent, yields to the knife, but ſcratches glaſs with difficulty. It is infuſible before the blow-pipe. Its ſpecific gravity is 3.2. The conſtituent parts are,

Silex	56.00
Alumine	13.30
Magneſia	14.00
Lime	3.33
Oxyd of manganeſe	3.
Iron	6.
Water	1.43
	97·06

This mineral is allied to hornblende : it occurs at Konigſberg in Norway.

ANTHRACITE, or *Anthracolite,* ſlaty glance-coal and columnar glance-coal. Anthracite is that ſpecies of coal which has a ſhining luſtre approaching to metallic, and burns without ſmoke. *Kilkenny coal* and *Welſh culm* are varieties of anthracite. See COAL.

ANTIMONY, *Native,* and *Ores of.* See ANTIMONY-*Ores,* and RED *Antimony, Addenda.*

APATITE. (See APATIT.) *Chaux phoſphatée,* Haüy. Werner makes two ſub-ſpecies of apatite, the common and conchoidal. The latter, or *conchoidal apatite,* has a conchoidal fracture : it has been called *aſparagus ſtone.* Apatite has been diſcovered in Cornwall, and recently near Bovey in Devonſhire. Maſſive apatite and earthy apatite have received from Werner the names of common phoſphorite and earthy phoſphorite. Phoſphorite has nearly the ſame conſtituent parts as apatite, with an addition of a ſmall portion of fluoric acid, about 2.50 *per cent.*

APHRITE. (See SCHAUM-*Earth.*) Aphrite is divided into *ſcaly aphrite, ſlaty aphrite,* and *ſparry aphrite.*

APLOME, a mineral cloſely allied to garnet, but is ſuppoſed to have a different primitive form of the cryſtal or that of a cube. (See GARNET.) Aplome is conſidered by Jameſon as cryſtallized common garnet.

APOPHYLITE. See ZEOLITE.

AQUA, *Marine.* See BERYL.

ARENDALITE. See EPIDOTE, *Addenda.*

ARKTIZITE, a name given by Werner to the mineral ſince called Wernerite. See WERNERITE.

ARRAGONITE. (See ARRAGONITE.) Since that article was written, the remarkable anomaly in the cryſtallization of this mineral has been partly explained by the diſcovery that it contains a portion of the carbonate of ſtrontian, which is ſuppoſed to give a different form to its primitive cryſtal. The conſtituent parts, as given by Stromeyer, are,

Arragonite from Molina, in Arragon.

Carbonate of lime	94·57
Carbonate of ſtrontian	3·96
Hydrate of iron	·70
Water	·30
	99·53

From Baſtanes.

Carbonate of lime	94·82
Carbonate of ſtrontian	4·08
Manganeſe and a trace of iron	·09
Water	·98
	99·97

Werner divides arragonite into common, columnar, and acicular. Arragonite occurs in trap rocks in various parts of Scotland, and we have acicular cryſtals of arragonite in lava from Veſuvius.

ARSENIATE *of Copper.* See COPPER-ORES.

ARSENIATE *of Iron.* See IRON-ORE, ſection *Cube-Ore.*

ARSENIATE *of Lead.* See LEAD, *Ores of.*

ARSENIC, *Native.* See ARSENIC, *Ores of.*

ARSENIC *Bloom.* See PHARMACOLITE, *Addenda.*

ARSENIC *Oxyd,* and *Arſenical Pyrites,* or *Marcaſite.* See ARSENIC, *Ores of.*

ASBESTUS, *Common and Flexible,* (ſee AMIANTHUS and ASBESTUS,) *Aſbeſtus ligniform,* or wood aſbeſtus. Its colour is wood-brown, and from its fibrous ſtructure it preſents the reſemblance of wood.

ASBESTOUS *Actinolite*. See STRAHLSTEIN.

ASBESTOUS *Tremolite*. See TREMOLITE.

ASPARAGUS-STONE. See APATITE, *Addenda*.

ASPHALT, ſlag mineral pitch ; *Bitume ſolide*, Haüy. (See ASPHALTUM.) Aſphalt appears to be indurated petroleum : it occurs in veins, interſecting ſtrata connected with coal ſtrata, and near baſaltic rocks.

ATACAMITE, muriate of copper. See COPPER-ORES, and SANDY *Copper*.

AUGITE, *Pyroxene*, Haüy. (See AUGIT.) Since that article was written, it has been diſcovered that augite forms a conſtituent part of many baſaltic rocks in Great Britain, and that it is alſo a common conſtituent of almoſt all dark-coloured lava. (See VOLCANIC *Products*.) Augite occurs cryſtallized, and in angular and round pieces. The cryſtals are generally ſix or eight ſided priſms, with dihedral ſummits. According to Haüy, the primitive form is an oblique rhomboidal priſm, the alternate angles of which are 92° 18′ and 87° 42′. The colour of augite inclines to green and greeniſh-black : it is more or leſs tranſlucent. Augite has generally a darker colour than olivine, and a greater hardneſs and ſpecific gravity. They very frequently occur together in baſalt and lava. Werner divides augite into four ſubſpecies : *granular augite*, which is opaque, and has hitherto been found only at Arendal in Norway : *foliated augite*, the luſtre of which is reſino-vitreous and internally ſhining, approaching to ſplendent ; it occurs at Etna and Veſuvius, and in the baſalt of Bohemia : *conchoidal augite*, which is ſometimes of an olive-green colour, and has an imperfect flat conchoidal fracture : and *common augite*. There is alſo a variety of augite which occurs maſſive or diſſeminated, of a deep black colour and opaque ; this has been called *ſlaggy augite*. The term pyroxene, or a ſtranger to fire, given to this mineral by Haüy, is extremely inappropriate, as this mineral forms a conſtituent part of moſt dark-coloured lava.

AUTOMALITE, *Spinelle zincifere*, Haüy. (See RUBY.) This mineral is claſſed with the ſpinel-ruby. The ſpecific gravity is from 4 to 4.2 : it is remarkable for containing 28 *per cent.* of oxyd of zinc. It occurs imbedded in talcous ſlate at Fahlun, in Sweden.

AXINITE. See THUMMERSTONE.

AZURE-STONE, *Lazulite*, Haüy. See LAZULI LAPIS.

BASALT. See BASALT, *Addenda*, and WHIN-STONE, ROWLEY-*Rag*, and VOLCANIC *Products*.

BASALTIC *Hornblende*, *Amphibole cryſtallizée*, Haüy. This mineral is frequently confounded with ſchorl by the older mineralogiſts : it has a velvet-black or browniſh-black colour ; it occurs in irregular ſix-ſided priſms, variouſly acuminated, but moſt frequently by flat trihedral pyramids with rhomboidal faces. The ſtructure is lamellar, with joints in two directions parallel to the ſides of an oblique rhomboidal priſm, the alternate angles of which are 124½° and 55½°. It is opaque, and has a ſplendent and vitreous luſtre ; it has a fine-grained uneven fracture ; it ſcratches glaſs ; and melts with difficulty into a black glaſs. The ſpecific gravity is from 3.15 to 3.25. The conſtituent parts, as given by Klaproth, are

Silex - - - - -	47
Alumine - - - - -	26
Lime - - - - -	8
Magneſia - - - - -	2
Oxyd of iron - - -	15
Water - - - -	.50
	98.50

It occurs in common baſalt, in wacke, and in lava ; alſo in ſome kinds of porphyry. It decompoſes more ſlowly than baſalt ; hence, according to profeſſor Jameſon, we frequently find cryſtals of baſaltic hornblende diſperſed through clay formed by the decompoſition of baſaltic rocks. See HORNBLENDE, *Addenda*.

BASANITE, black flinty ſlate. See SLATE.

BERGMANNITE, a mineral which occurs maſſive with grey and red quartz at Freidichſwarn, in Norway, and is claſſed with ſcapolite in the felſpar family in Jameſon's Mineralogy. Its colours are greeniſh and greyiſh-white, or yellowiſh-grey and muddy fleſh-red. It is extremely gliſtening, with a luſtre between pearly and reſinous. The ſtructure is delicately fibrous, curved, or diverging. It is faintly tranſlucent on the edges, and ſcratches felſpar. It melts before the blow-pipe without intumeſcing into a white enamel.

BERYL. (See BERYL and EMERALD.) In Weiſs's collection at Vienna, there are two cryſtals of beryl in a group croſſing each other, which are a foot and a half in length, and one foot in diameter. It has been found in alluvial ſoil, in the upper part of Aberdeenſhire, and in the county of Wicklow, in Ireland, imbedded in granite.

BILDSTEIN. See AGALMATOLITE.

BISMUTH, *Native*. See BISMUTH-*Ore*.

BISMUTH, *Glance*, or *Sulphuretted Biſmuth*. See BISMUTH-*Ore*.

BISMUTH-*Ore*, *Plumbo cupriferous*, has a ſteel-grey colour, with a pale copper-red tarniſh. It occurs diſſeminated and cryſtallized in oblique four or ſix-ſided acicular priſms, longitudinally ſtreaked. The cryſtals are frequently adhering together, and are ſometimes curved, and divided by croſs rents. The luſtre is metallic. The croſs fracture is fine-grained and uneven. It yields eaſily to the knife. The ſpecific gravity is 6.2. Before the blow-pipe, it melts into a ſteel-grey globule ; by continuing the heat, it is partly volatilized, and depoſits in the charcoal a yellow powder, after which there remains a red globule, containing a grain of cupriferous metallic lead, which communicates a blueiſh-green colour to borax. According to John, the conſtituent parts are,

Biſmuth - - - - -	43.20
Lead - - - - -	24.32
Sulphur - - - - -	12.10
Sulphur - - - - -	11.58
Nickel - - - - -	1.58
Tellurium ? - - -	1.32
Gold - - - - -	0.79
	94.89

It occurs near Berezof, in the diſtrict of Catharinenburg, in Siberia.

BISMUTH-*Ore*, *Cupreous*, or *Cupriferous ſulphuretted Biſmuth-Ore*, has a light lead-grey colour, ſometimes ſteel-grey and tin-white. It occurs maſſive, diſſeminated, and in diverging priſms. The luſtre is metallic ; it is ſectile. According to Klaproth, the conſtituent parts are,

Biſmuth - - - - -	47.24
Copper - - - - -	34.66
Sulphur - - - - -	12.58
	94.48

This is a very ſcarce ore of biſmuth.

BISMUTHIC *Silver-Ore*. See SILVER-ORE.

BITUMEN, *Liquid, Tenacious, Solid, Compact,* and *Elaſtic.* See BITUMEN.

BITUMINOUS *Marle-Slate* occurs in beds in the lower ſtratified lime-ſtone in various parts of Europe. It has a dark-brown or blackiſh-grey colour, a glimmering or gliſtening luſtre, a ſlaty ſtructure, and is ſoft, meagre, opaque, and ſectile. It frequently contains ores of copper. It is remarkable for the number of petrified fiſh which occur in it. It alſo contains foſſil remains of ſhells, corals, and of cryptogamous freſh-water plants. In many of its characters, it appears to reſemble the alum-ſhale of Whitby. It is a frequent mineral in Saxony, Thuringia, Franconia, Bohemia, Bavaria, and in Switzerland.

BITUMINOUS *Wood*, a variety of brown-coal or wood-coal, in which the fibres of the wood are diſtinguiſhable. See COAL and WOOD-*Coal.*

BLACK *Coal.* See COAL.

BLACK *Chalk*, or *Drawing-Slate, Ampelite graphique,* Fr. occurs in beds, in rocks of the ſlate formation. It has a blueiſh or greyiſh-black colour, a ſlaty ſtructure, an earthy croſs fracture, is dull, meagre to the touch, and leaves a diſtinct mark on paper. It is ſectile, and becomes gliſtening in the ſtreak. The ſpecific gravity is 2.11. According to Wregleb, its conſtituent parts are,

Silex - - - - -	64
Alumine - - - - -	11
Carbon - - - - -	11
Water - - - - -	7
Iron - - - - - -	3

It is found at Morilla in Spain, in Brittany, in Germany, and in Italy. It is cut into ſquare pencils, and uſed for drawing; it is alſo ground and uſed in painting. Thoſe varieties which have the darkeſt colour and the fineſt earthy texture are to be preferred. The pencils become hard, unleſs kept in a moiſt place.

BLACK-JACK, a provincial name for blende.

BLENDE, *Black, Brown,* and *Yellow,* various ſulphurets of zinc. See ZINC-ORES.

BOG *Iron-Ores.* (See IRON-ORES.) Werner ſuppoſes bog-iron, whether in meadows, ſwamps, or marſhes, to be formed by water impregnated with vegetable acid, diſſolving part of the iron in the rocks over which it flows, which, being poured into hollows, becomes ſtagnant, and evaporates. Thus ſucceſſive depoſitions are formed, which are at firſt yellowiſh earthy, and of little conſiſtence. This is moraſs-ore. In courſe of time, it becomes harder, and the colour paſſes to brown, forming ſwamp-ore. After the ſwamp is dried up, the ore becomes much harder, and paſſes into meadow-ore, which is covered with ſoil and vegetation.

BOLE. See BOLE.

BOLOGNESE *Spar*, or *Radiated Heavy Spar.* See HEAVY *Spar, Addenda.*

BORACIC *Acid, Native* or *Saſſoline,* is found in ſaline incruſtations on the borders of hot ſprings, near Saſſo, in the territory of Florence. It has a greyiſh or yellowiſh-white colour; it occurs in thin cruſts or minute pearly ſcales; it is ſoft and friable, and is feebly tranſlucent. To the taſte, it is ſlightly bitter and acidulous. It melts eaſily before the blow-pipe into a tranſparent globule. According to Klaproth, the conſtituent parts are,

Boracic acid - - - - -	86
Ferruginous ſulphate of magneſia	11
Sulphate of lime - - - -	3
	100

BORACITE, *Magneſie boratée,* Haüy. (See BORACITE.) Vauquelin found no lime in this mineral, and ſuppoſes it to be a ſimple *borate of magneſia.* Boracite is remarkable for its electric properties when heated. The form is generally that of the cube, and thoſe angles which are diagonally oppoſite are, one poſitive, and the other negative, forming eight electric poles.

BOTRYOLITE occurs in mamillary or botryoidal concretions, in a bed of gneiſs, near Arendal in Norway, aſſociated with quartz, ſchorl, calcareous ſpar, and iron pyrites. Its colours are, pearl-grey, greyiſh or reddiſh-white, and pale roſe-red. The colours are concentric ſtripes. It has a delicately fibrous ſtellular ſtructure, and ſometimes a ſplintery fracture. It has a pearly glimmering luſtre internally, is tranſlucent on the edges. According to Klaproth, the ſpecific gravity is 2.88; and the conſtituent parts are,

Silex - - - - - -	36.0
Lime - - - - - -	39.5
Boracic acid - - - - -	13.5
Oxyd of iron - - - - -	1.0
Water - - - - - -	6.5
	96.5

Earthy botryolite occurs with the above, which has a ſnow-white colour, and an earthy fracture.

BOVEY *Coal.* Bituminous wood coal, found at Bovey Heathfield, Devonſhire. See COAL.

BRONZITE, *Diallage metalloide,* Haüy. A mineral nearly allied to Labrador hornblende or hyperſtene. It has a yellowiſh-brown or pinchbeck-yellow colour, and a ſemi-metallic luſtre: it occurs maſſive, and coarſely diſſeminated: it has a foliated and fibrous ſtructure, with a diſtinct ſingle cleavage. It is opaque. The ſpecific gravity is 3.2. According to Klaproth, the conſtituent parts are,

Silex - - - - - -	60.0
Magneſia - - - - -	27.5
Iron - - - - - -	10.5
Water - - - - - -	0.5
	98.5

It occurs in ſienite at Glentilt, in Perthſhire, and at the Lizard, in Cornwall, intermixed with jade in ſerpentine.

BROWN *Spar, Pearl Spar,* or *Dolomite Spar; Chaux carbonatée ferro manganeſefere,* Haüy; *Bitter Spath,* Werner. Its prevailing colours are, milk-white, greyiſh-white, yellowiſh-grey, and pearl-grey: it alſo occurs red, brown, yellow, and black. It occurs both maſſive and cryſtallized in oblique rhomboids, and in compreſſed hexahedrons. The joints are parallel to the faces of an oblique rhomboid, the alternate angles of which meaſure 106° 18′ and 73° 45′. The faces of the rhomb are ſometimes convex or concave; it occurs alſo in lenticular forms. The luſtre is ſhining, and between vitreous and pearly: it is more or leſs tranſlucent. It yields to the knife, but is harder than calcareous ſpar. Its ſpecific gravity is from 2.18 to 2.88. It hardens and becomes an opaque browniſh-black before the blow-pipe. It diſſolves ſlowly in cold muriatic acid, but with conſiderable effervefcence in hot acid. According to Klaproth, the conſtituent parts are,

Carbonate of lime - - -	53
———— magneſia - -	43
Oxyd of iron and mangameſe -	3
	99

The proportion of manganeſe and iron is ſometimes much greater, and there are ſeveral intermediate varieties, which it is difficult to determine whether they are to be claſſed with brown ſpar or ſparry iron-ore. Brown ſpar occurs in veins along with galena and other ores of lead, in the mines of Cumberland and Northumberland. Fibrous brown ſpar, both maſſive and in balls, occurs in veins in Lower Hungary. Columnar brown ſpar has a ſplendent luſtre and a foliated ſtructure, but no diſtinct cleavage can be obſerved in it. The fragments are wedge-ſhaped. It has been found at Gerſdorf in Saxony, and Guanaxto in Mexico. The name brown ſpar was given to this ſpecies becauſe it changes its colour, on expoſure to the air, from a light to a dark brown, bordering on black.

Buttermilk, *Silver*. See Silver-Ores.

Byssolite, a name given by Sauſſure to a variety of aſbeſtous actinolite, which occurs in minute acicular diverging cryſtals, which are elaſtic. See Actinolite.

Cacholong, *Quarz agate cacholong*, Haüy, is by ſome mineralogiſts conſidered as a variety of milk-white chalcedony, by others as a kind of common opal. Cacholong is diſtinguiſhed by its milk-white colour, its reſinous luſtre, its even fracture, and its want of tranſlucency, except at the edges. It ſometimes adheres when applied to the tongue. This mineral accompanies flints and chalcedony, and, according to Brongniart, even pitch-ſtone is ſometimes coated with it; hence it is ſuppoſed to be the reſult of alteration in theſe minerals, produced by an unknown cauſe, as it is obſerved paſſing into them by almoſt imperceptible gradations. The true cacholongs, which have given the name to this variety, are found near the banks of the river Cach, in Bucharia; they are ſpread over the fields, but are not rounded; on the contrary, they form tables compoſed of alternate layers of cacholong and chalcedony. Cacholongs are ſometimes cut and employed in jewellery.

Calamine. See Zinc-Ores.

Calcareous *Spar*, cryſtallized carbonate of lime. See Lime-stone.

Calc *Sinter*. See *Stalactical fibrous Lime-ſtone*, in the article Lime-stone.

Calc *Tufa*, or *Tufaceous Lime-ſtone*, a light porous lime-ſtone, formed by the depoſition of calcareous matter, in calcareous ſprings, or near lakes or rivers. It frequently encloſes the remains of animals or vegetables which have been encaſed and imbedded in it by ſucceſſive depoſitions. See Tufa.

Calp, a name given by Kirwan to a dark ferruginous lime-ſtone, agreeing in many of its characters with the Engliſh lias. See Lias, *Addenda*.

Candle *Coal*. Bituminous coal, ſo called on account of the great light which it affords in burning. See Coal.

Cat's-Eye, *Quarz agathe chatoyant*, Haüy; by ſome mineralogiſts called *falſe opal*. It appears to be a variety of agate occurring like the latter mineral in trap rocks, but remarkable for reflecting a peculiar play of colour, reſembling that of the eye of a cat, whence its name; it is uſed in jewellery, and is generally cut into ring ſtones. Cat's-eye occurs maſſive and in looſe angular and rounded pieces; its colours are various, inclining moſt frequently to yellowiſh and greeniſh-grey, and ſometimes to brown-red and greyiſh-black. It exhibits a beautiful opaleſcence when cut in a ſpherical form, which proceeds from the fibrous ſtructure, and ſometimes from the intermixture of amianthus. It is tranſlucent in different degrees; it has a ſhining vitreo-reſinous luſtre, a ſmall conchoidal fracture; it ſcratches quartz. Cat's-eye becomes opaque and ſpotted by expoſure to the blow-pipe. Its ſpecific gravity is 2.64. According to Klaproth, its conſtituent parts are,

Silex - - - - -	95.00
Alumine - - - -	1.75
Lime - - - - -	1.50
Oxyd of iron - - -	0.25
	98.50

Cat's-eye occurs in the Hartz, in Hanover, in trap, with amianthus, aſbeſtus, axinite, and calcareous ſpar. It is brought from Ceylon, Malabar, Sumatra, Perſia, and Arabia.

Celestine, ſulphate of ſtrontian. See Strontian.

Cerium, or *Cerite*, *Cerium oxydé ſilicifere*, Haüy, an ore of the newly-diſcovered metal cerium. (See Cerium.) The colour is between roſe-red and fleſh-red, and alſo reddiſh-brown; when pulveriſed it is grey; it occurs both maſſive and diſſeminated. The fracture is ſplintery, the luſtre glimmering and reſinous. Opaque (Jameſon), tranſparent (Aikin). It ſcratches glaſs with difficulty; it is brittle and eaſily frangible. Specific gravity 4.6 to 4.9. Infuſible before the blow-pipe, but changes from grey to yellow. According to Klaproth, the conſtituent parts are,

Oxyd of cerium - - -	54.5
Silex - - - - -	34.5
Oxyd of iron - - - -	3.5
Lime - - - - -	1.2
Water - - - - -	5.0
	98.7

Cerium occurs in a bed of copper pyrites, ſituated in gneiſs, near Riddarhytta, in Weſtmannland, Sweden.

Ceylanite, *Pleonaſte*, Haüy, is claſſed with the ruby family by Werner: its colours are a muddy dark-blue and greyiſh-black, which approaches to iron-black: it occurs in grains and in ſmall cryſtals, either perfect octahedrons or truncated on the edges, or with the angles acuminated by four planes, which are ſet on the lateral planes, alſo in rhomboidal dodecahedrons. The cryſtals are ſmooth and ſplendent: it is tranſlucent on the edges. The fracture is flat conchoidal: it ſcratches quartz. Before the blow-pipe, it is infuſible. The ſpecific gravity of ceylanite is 3.8. According to Berzelius, the conſtituent parts are,

Alumine - -	27.25
Magneſia - -	14.63
Silex - - -	5.48
Oxyd of iron - -	4.26
	51.62

This mineral was firſt found in the iſland of Ceylon, where it occurs in the ſands of rivers with tourmaline, zircon, ſapphire, and iron-ſand. It occurs in lava from Veſuvias, with olivine, augit, and mica. It occurs alſo in baſalt, near Andernach, on the Rhine.

Chabasie and *Chabaſite*. See Zeolite.

Chalcedony. See Chalcedony and Quartz.

Chalk. See Chalk, and Geology, *Addenda*.

Chert, a variety of horn-ſtone: it differs from flint principally by being more opaque, and having leſs luſtre; it occurs in nodules and maſſes in the ſand under the chalk formation, and in beds in ſome mountain lime-ſtone.

Chiastolite, or *Hollow Spar*, occurs cryſtallized in ſlender rhomboidal priſms, the edges of which are ſometimes rounded,

rounded; ſometimes four priſms are arranged in the form of a croſs. The priſms appear compoſed of two diſtinct ſubſtances, as if they had once been hollow, and theſe hollows filled up with clay-ſlate, nearly ſimilar to what the cryſtals are imbedded in. The exterior part of the priſm is of a greyiſh-white or reddiſh colour, and varies in thickneſs, in ſome ſpecimens being a mere ſhell; within this, is a dark-blue or black priſm, exactly parallel to that by which it is incloſed. Frequently from each angle of the interior priſm a black line or thread proceeds, biſecting the correſponding angle of the white priſm, and often terminated by a ſmall black priſm. The white part exhibits a lamellar ſtructure, parallel with the lateral planes of the priſm: it has a ſlight gliſtening luſtre, is tranſlucent, and ſcratches glaſs. The ſpecific gravity is 2.9. Before the blow-pipe, it fuſes into a whitiſh ſcoria; the black part affords a black glaſs. This mineral occurs in acicular cryſtals in ſome beds of dark ſlate in the mountain Skiddaw, Cumberland. The largeſt cryſtals are found in clay-ſlate, near St. Brieux, in Brittany. Some mineralogiſts conſider chiaſtolite as the ſame ſubſtance as andaluſite; others claſs it with common felſpar, and ſome regard it as a diſtinct ſpecies.

Chlorite, *Talc chlorite*, Haüy. This mineral is nearly allied to talc and mica. The prevailing colour is various ſhades of green; hence it derives its name from the Greek χλωρος, *green*. It is divided by profeſſor Jameſon into four ſub-ſpecies: earthy chlorite, common chlorite, ſlaty chlorite, and foliated chlorite.

Earthy Chlorite occurs maſſive and diſſeminated, and incruſting other minerals, and incloſed in dendritical forms in adularia and rock-cryſtal. It conſiſts of fine ſcaly particles cloſely adhering, and has a glimmering or gliſtening pearly luſtre, and feels rather greaſy. The green colour becomes lighter in the ſtreak. The ſpecific gravity is 2.6. Before the blow-pipe, it melts into a blackiſh ſlag. According to Vauquelin, the conſtituent parts are,

Silex	26.50
Alumine	18.50
Magneſia	8.00
Muriate of ſoda and potaſh	2.00
Oxyd of iron	43.00
	98.00

According to Haüy, the ſcaly particles are regular hexagonal priſms when viewed with the microſcope.

Common Chlorite is a leek or dark-green colour, intermixed with black. It occurs in rocks of various kinds, in beds and veins, either alone, or with quartz, magnetic iron-ſtone, iron-pyrites, hornblende, actinolite, and other minerals. It is amorphous, has a glimmering luſtre, an earthy fracture, and a fine granular, laminated, or ſcaly ſtructure. Common chlorite is ſoft, opaque, and greaſy. Its ſpecific gravity is 2.8. It occurs in various parts of Scotland, and in Cornwall, Cumberland, and all alpine parts of England.

Foliated Chlorite: Talc chlorite, Haüy.—Its colour is leek-green: it occurs cryſtallized in ſix-ſided tables, curiouſly aggregated in cylindrical or conical forms. The cryſtals are longitudinally ſtreaked. The luſtre is reſinous, either gliſtening or ſhining. The ſtructure is curvedly lamellar, with a ſingle cleavage. It is opaque or tranſlucent at the edges; it is ſoft, ſectile, and rather greaſy. The ſpecific gravity is 2.8. According to Lampadius, the conſtituent parts are,

Silex	35
Alumine	18
Magneſia	30
Iron	19
Water	3
	105

Foliated Chlorite is found in various parts of the continent of Europe, and on the iſland of Jena, one of the Hebrides.

Chlorite Slate has a greyiſh or darkiſh-green colour; it occurs in beds in clay-ſlate, ſometimes aſſociated with talc-ſlate, into which it paſſes. It has a gliſtening reſinous luſtre, a ſlaty ſtructure, inclining to ſcaly. On minute examination, it appears compoſed of ſmall ſcales of chlorite cloſely adhering. Chlorite-ſlate forms beds in mountains of clay-ſlate in various parts of the Grampian-hills. It paſſes into hornblende-ſlate and clay-ſlate. The ſpecific gravity is 3.03.

Chlorophane, a variety of fluor ſpar from Siberia, which gives out a beautiful apple-green light when placed on a heated iron. Pallas mentions a pale-violet blue variety ſpotted with green, which becomes phoſphoreſcent when held in the hand, and gives out a pale-whitiſh light; in boiling water, it emits a green light, and at a higher temperature a blue light. See Fluor Spar.

Chromate *of Iron*, *Fer chromaté*, Fr. has a pitch-black colour, with ſomewhat of an olive tinge ſuperficially. It occurs maſſive and diſſeminated, and alſo cryſtallized in octahedrons. It has a ſhining luſtre, between reſinous and metallic. The fracture is uneven, or imperfectly ſmall conchoidal, and ſometimes imperfectly lamellar. It ſcratches glaſs, is opaque. The colour of the ſtreak is aſh-grey or browniſh. The ſpecific gravity is 4.03. It is rarely magnetic, is infuſible, but tinges borax of a beautiful green colour. According to Vauquelin, the conſtituent parts are,

Chrome of France.	
Oxyd of chrome	43
Oxyd of iron	35
Alumine	20
Silex	2
	100

According to Klaproth,

Chrome of Storia.	
Oxyd of chrome	55
Oxyd of iron	33
Alumine	6
Silex	2
Loſs by heating	2
	98

Chromate of iron occurs in beds and veins, and in imbedded maſſes, in ſerpentine and talc-ſlate. It has been found at Portſoy, in Bamfſhire, and is ſaid to occur in conſiderable quantities in the Shetland iſlands. It occurs in the vicinity of Nantes, and in the department of Van. The greateſt quantity has hitherto been found in ſerpentine, in the Bare-hills near Baltimore. The chromic acid obtained from this mineral when combined with lead forms a beautiful yellow pigment, and is now an article of commerce.

CHROMATE *of Lead*, red lead-ore. See LEAD-ORES.

CHRYSOCOLLA, *Earthy Malachite*, *Criore malachite cryſocolle*, Fr. See COPPER-ORE.

CHRYSOLITE, *Peridot chryſolithe*, Fr. (See CHRYSOLITE.) This gem is the ſofteſt of the precious ſtones; its colours change by heat. It is brought to Europe from the ſhores of the red ſea. *Jameſon.*

CHRYSOPRASE. Apple-green chalcedony coloured by the oxyd of nickel. (See CHRYSOPRASE.) It has hitherto been found only in the vicinity of the towns of Glaſſendorf, Grochau, and Koſemutz, in Lower Sileſia. It is ſofter than common chalcedony. It is uſed in jewellery.

CIMOLITE. See CIMOLITE.

CINNABAR, *Mercure ſulphuré*, Haüy. (See MERCURY-ORES.) Beſides the localities of cinnabar there enumerated, various mines of cinnabar occur in New Spain. In the kingdom of New Granada, cinnabar is found in three different places in veins, and alſo in alluvial ſoil, mixed with gold. In Peru, cinnabar occurs in various parts, particularly near the town of Huancavelica, at the height of twelve thouſand feet above the level of the ſea. Cinnabar is found in veins near to Sillacara, interſecting alpine lime-ſtone; theſe veins, according to Humboldt, at preſent furniſh all the mercury of Peru.

CINNAMON-STONE. This gem was originally found in the ſands of rivers in Ceylon. It has been claſſed with hyacinth, but is a variety of garnet. Its colours are, hyacinth-red inclining to orange-yellow. It is found in blunted-angular or in roundiſh pieces. It has a ſhining vitreous luſtre approaching to ſplendent. The fracture is flat and ſmall conchoidal. It is tranſparent or ſemi-tranſparent, but generally full of cracks. It ſcratches quartz with difficulty. When cut it feels rather greaſy. The ſpecific gravity is 3.6. According to Klaproth, the conſtituent parts are,

Silex - - - - -	38.80
Alumine - - - - -	21.25
Lime - - - - -	31.25
Oxyd of iron - - -	6.50
	97.80

Before the blow-pipe, it fuſes into a blackiſh enamel. When free from flaws it is of conſiderable value.

CLAY, *Porcelain Clay*, *Potters' Clay*, and *Slate Clay*. See CLAY.

CLAY *Iron-ſtone*, *Argillaceous Iron-ſtone; Fer oxydé maſſif*, Haüy. (See IRON-ORES.) The name has been inappropriately given to this ſpecies of iron-ore, as it frequently contains ſcarcely any alumine or clay in its compoſition. The following analyſis of Deſcotels, given in the Ann. de Chemie for 1812, N° 251, will ſhew how greatly this ſpecies of ore varies in its compoſition.

	From Blancheland.	Geiſlantern.	Colebrookdale, Shropſhire.
Oxyd of iron	54.0	38.60	50.0
Oxyd of manganeſe	2.4	1.8	2.6
Silex - -	12.0	32.0	10.6
Alumine - -	1.0	4.0	2.0
Magneſia -	2.0	4.3	2.4
Carbonic acid and water - -	24.0	20.0	32.0

In theſe ſpecimens, the iron was in the ſtate of carbonate; in others, it exiſts in the ſtate of oxyd. According to Mr. Jameſon, it would appear that the carbonated iron-ſtones by decompoſition loſe their carbonic acid, and are in time converted into the oxydated varieties. In thoſe common *clay iron-ſtones* which have a yellow or brown ſtreak, the iron is in the ſtate of hydrate; in thoſe having a red ſtreak in the oxydated ſtate, and in moſt of the varieties having a grey ſtreak, the iron is carbonated. When the carbonated varieties begin to decay they become ſoft, and aſſume a liver or reddiſh-brown colour. This ſpecies of iron-ſtone, beſides occurring in numerous thin ſtrata alternating with coal-ſhale and ſand-ſtone in the coal formation, occurs in kidney-ſhaped and rounded nodules. The greateſt repoſitory of this ore in Great Britain is in the coal baſin extending from Pembrokeſhire into Glamorganſhire, on the borders of the Briſtol Channel.

CLAY-SLATE, *Argillaceous Schiſtus*. See SLATE.

CLAY-STONE is nearly connected with baſaltic and porphyritic rocks of the trap formation. It forms the baſis of clay porphyries. The colours of clay-ſtone are blueiſh and yellowiſh-grey or yellowiſh-white, lavender-blue and browniſh-red. It is ſometimes ſpotted and ſtriped. It has a fine earthy fracture, ſometimes inclining to ſlaty or conchoidal. The fragments are angular and rather blunt-edged. It is opaque, yields to the knife, and is rather eaſily frangible. The ſpecific gravity is 2.2. It occurs in various parts of Scotland, in North Wales, and in Shropſhire.

CLINK-STONE, *Phonolite*, *Porphyry-ſlate*, *Felſpath compacte ſonore*, Fr. has moſt frequently a greeniſh-grey colour. It occurs in beds of conſiderable magnitude in rocks of the trap formation. (See TRAP.) The principal fracture is ſlaty, with a ſcaly aſpect and a gliſtening pearly luſtre. The croſs fracture is ſplintery and faintly glimmering. It occurs columnar and tabular, is tranſlucent on the edges, and eaſily frangible. The thin tables yield a metallic ſound when ſtruck. The ſpecific gravity is 2.8. It melts before the blow-pipe into a grey-coloured glaſs. According to Klaproth, the conſtituent parts are,

Silex - - - - -	57.25
Alumine - - - - -	23.50
Lime - - - - -	2.75
Soda - - - - -	8.10
Oxyd of iron - - -	3.25
Manganeſe - - -	0.25
Water - - - - -	3.00
	98.10

This mineral is regarded as principally compoſed of compact felſpar. It paſſes into baſalt, with which rock it is often aſſociated.

COAL, *Black* and *Brown*. (See COAL, and COLLIERIES.) The coal called by the Germans glance-coal is deſcribed in that article as uninflammable or Kilkenny coal. For a further account of it, ſee GLANCE-*Coal*, *Addenda*.

COBALT-ORES. (See COBALT.) Earthy cobalt-ore has been found in ſand-ſtone at Alderly-edge, in Cheſhire; and other ores of cobalt have recently been diſcovered in ſeveral mines in Cornwall.

COCCOLITE, *Pyroxene granuliform*, Haüy. A granular variety of augit. (See AUGIT.) The colour is various ſhades of green. It occurs in ſlightly coherent granular concretions, has a lamellar ſtructure, a ſhining vitreous luſtre, is more or leſs tranſlucent, and ſcratches glaſs. The ſpecific gravity is 3.3. According to Vauquelin, the conſtituent parts are,

Silex	50.0
Lime	24.0
Magneſia	10.0
Alumine	1.5
Oxyd of iron	7.0
Oxyd of manganeſe	3.0
	95.5

Columbite, an ore of tantalum. See Tantalite.

Compact *Felſpar*. See Felspar, *Addenda*.

Copper *Nickel*. See Nickel-ores, *Addenda*.

Copper-ores. (See Copper-ores, and Phosphate *of Copper*, *Addenda*.) The following table of the annual quantity of copper raiſed in Europe is given in the laſt edition of Jameſon's Mineralogy, vol. iii. p. 196. The authority is not ſtated.

Quintals of 100 Pounds.

England	200,000
Ruſſia	67,000
Auſtrian dominions	60,000
Sweden	22,000
Kingdom of Weſtphalia in 1808	17,229
States of Denmark	8,500
Bavaria (including the Tyrol)	3,000
France	2,500
Saxony in 1808	1,320
Pruſſia after the treaty of Tilſit	0,337
Spaniſh European mines	0,309
Total of quintals	382,195

Cornelian. See Chalcedony and Agate.

Corundum, *Corinden*, Fr. The French mineralogiſts claſs as varieties of corundum the oriental *ruby*, the *ſapphire*, and *emery*. (See theſe articles.) Though they are principally compoſed of alumine, they are, excepting the diamond, the hardeſt of mineral ſubſtances, and nearly the heavieſt of earthy minerals, the ſpecific gravity being from 3.87 to 4.28. Common corundum, or adamantine ſpar, has a greeniſh-white colour: it is ſometimes pearl-grey, brown, or red. It is tranſlucent and ſometimes nearly tranſparent, and is doubly refracting. It has a diſtinct lamellar ſtructure, and ſplits into rhomboids, the angles of which are 86° 38′ and 93° 22′. (See Adamantine *Spar*.) This mineral is found imbedded in granite, like felſpar, in various parts of India, and alſo in North America, and imbedded in micaceous ſchiſt in Italy.

Cross-stone, *Harmotome*, Haüy. See Zeolite.

Cryolite, *Alumine fluatée*, Fr. This mineral has hitherto been found only in Weſt Greenland. It occurs in two thin layers in gneiſs. Its name is derived from the Greek word denoting ice, becauſe this mineral melts almoſt like ice at a low heat. Its colours are pale greyiſh-white, ſnow-white, and yellowiſh-brown. It occurs maſſive and diſſeminated. It has a ſhining or gliſtening vitreous luſtre, inclining to pearly, and is tranſlucent. The ſtructure is imperfectly lamellar, with joints in three directions parallel to the faces of a rectangular parallelopiped. It is ſofter than fluor ſpar, and is eaſily frangible. The ſpecific gravity is 2.9. It becomes more tranſlucent in water, but does not melt. Before the blow-pipe it firſt melts, then hardens, and aſſumes the appearance of a ſlag. According to Klaproth, the conſtituent parts are,

Alumine	24
Soda	36
Fluoric acid and water	40
	100

According to Vauquelin,

Alumine	21
Soda	32
Fluoric acid and water	47
	100

Crysoberyl, *Cymophane*, Haüy. See Crysoberyl.

Cube-ore, *Arſeniate of Iron*, *Fer arſeniaté*, Haüy. See Iron-ore.

Cupreous *Arſeniate of Iron*, *Martial Arſeniate of Copper*. See Copper-ores.

Cyanite, or *Kyanite; Sappare*, Sauſſure; *Dorthene*, Haüy. See Kyanite, *Addenda*.

Datolite, (ſee Datholite,) is compoſed of boracic acid, united with lime and ſilex. It occurs maſſive and cryſtallized in oblique four-ſided priſms, generally truncated on the edges and angles. The primitive form of the cryſtal is ſtated by Hanſmann to be an oblique four-ſided priſm, with angles of 77° 30′ and 102° 30′. It gelatinizes with acids. In the flame of a candle it becomes opaque and friable. Before the blow-pipe it intumeſces, and then melts into a globule of a pale roſe-colour.

Diallage, *Smaragdit* of Sauſſure; *Diallage verte*, Haüy. Its colours are graſs-green and apple-green; it occurs maſſive and diſſeminated. The luſtre is ſhining, gliſtening, and pearly; it is tranſlucent on the edges. Diallage has a lamellar ſtructure, with a two-fold nearly rectangular cleavage, only one of which is diſtinct. It is rarely ſo hard as glaſs. The ſpecific gravity is 3. Before the blow-pipe, it melts into a grey or greeniſh enamel. According to Vauquelin, the conſtituent parts are,

Silex	50.00
Magneſia	6.00
Alumine	11.00
Lime	13.00
Chrome	7.00
Iron	6.30
Copper	1.50

Diallage is found in Corſica with ſauſſurite, and on Mont Blanc in Switzerland; alſo in Carinthia and Tranſylvania. The mixture of diallage and ſauſſurite is named Gabbro by the Italians, Euphotide by the French, and Verde de Corſica duro by artiſts. When cut and poliſhed it has a beautiful appearance, and is made into various articles of ornament.

Diallage *Metalloide*. See Bronzite, Hyperstene, and Schiller *Spar*, *Addenda*.

Diamond, *Diamant*. (See Diamond.) In addition to the characters of the diamond given under that article, it may be proper to ſtate, that beſides the colours there enumerated, the diamond occurs ſometimes blue, red, brown, yellow, and green, with the following tranſitions. The only variety of blue is indigo-blue, which appears to paſs into red. Of red, the varieties are roſe-red and cherry-red. From the latter colour it paſſes into olive-brown, and yellowiſh-brown, ochre-yellow, orange-yellow. wine-yellow, and ſulphur-yellow ; further into ſiſkin-green, aſparagus-green, piſtachio-green, leek-green, and mountain-green, which latter paſſes into greeniſh-grey and greeniſh-white.

The olive-brown paſſes into blackiſh-brown, pitch-black, and greyiſh-black.

Beſides occurring cryſtallized, the diamond is alſo found in rolled pieces and grains. The cryſtallizations of the diamond, beſides the octahedron and its varieties, are, the perfect tetrahedon ; the tetrahedron with truncated angles, or with the angles acuminated by three planes, ſet on the lateral planes ; ſegments of the tetrahedron, either detached or united, forming twin cryſtals ; the rhomboidal dodecahedron, with convex planes or faces ; the ſame figure ſomewhat elongated ; the dodecahedron, with the planes divided diagonally ; an acute double ſix-ſided pyramid, with the lateral planes ſet on each other, and the apex acuminated by ſix planes ſet on the lateral planes ; a flat double three-ſided pyramid, with convex planes ſet laterally on each other, and the angles of the common baſe acuminated by four planes ſet on the lateral planes ; a flat double three-ſided pyramid, on which the lateral planes of the one are ſet on the lateral edges of the other, and the angles of the common baſe truncated ; a ſix-ſided table, with oblique terminal plates; and laſtly, the diamond has been found in a cubic form, either perfect or with the edges truncated, or variouſly modified.

The ſurface of the octahedron is either ſmooth or ſtreaked ; the external luſtre of the natural diamond is adamantine, and alternates from ſplendent to glimmering; internally it is highly ſplendent. It is ſeldom completely tranſparent. The black diamonds are nearly opaque. The diamond has a four-fold equiangular cleavage parallel with the planes of the octahedron in this direction ; it is rather eaſily frangible. The diamond ſcratches all other minerals. Its ſpecific gravity is ſtated by Mr. Lowry at 3.488. The diamond, beſides its other localities, is found in the diſtrict of Serro Dofria, in Braſil: it was firſt diſcovered there about the middle of the laſt century, in gullies of torrents, and the beds of rivers, where gold is alſo obtained, but for a very conſiderable time, the diamonds being unknown, were diſregarded and thrown away. Diamonds occur alſo in other parts of Braſil, in the rivers Giquitignogna, Riacha Fundon, and Rio de Peixe. See Gem.

Diaspore is regarded as a variety of wavellite. (See Wavellite.) It occurs in curved lamellar concretions eaſily ſeparable from each other ; it has a grey colour, a ſhining pearly luſtre, the angular pieces cut glaſs. It flies before the blow-pipe, but is infuſible. Its ſpecific gravity is 3.43. According to Vauquelin, the conſtituent parts are,

Alumine - - - -	80
Water - - - -	17
Oxyd of iron - - -	3
	100

Dichroite. See Iolite, *Addenda*.

Diopside. See Alalite, *Addenda*.

Dioptare, *Emerald Copper Ore*, occurs in cryſtallized ſix-ſided priſms, acuminated by three planes ſet on the lateral edges: it is tranſlucent, and ſcratches glaſs feebly. The ſpecific gravity is 3.3, Haüy. According to Luvitz, the conſtituent parts are,

Oxyd of copper - - -	55
Silex - - - - -	33
Water - - - - -	12
	100

A very ſmall ſpecimen analyſed by Vauquelin gave forty-two *per cent.* of lime. This mineral is found, according to Hermann, in the land of Konguire, 125 leagues from the Ruſſian frontier, where it is aſſociated with malachite and calcareous ſpar.

Dipyre. See Zeolite.

Disthene, or *Kyanite; Sappare*, Sauſſure. See Kyanite, *Addenda*.

Dolomite, a ſpecies of magneſian lime-ſtone, to which the name was given in honour of Dolomieu, the celebrated French Geologiſt. Mr. Jameſon has claſſed the different kinds of magneſian lime-ſtone into one order, which he calls the dolomite family: it contains four ſpecies, dolomite, brown ſpar, miemite, and gurhoſite. The dolomite ſpecies he has divided into four ſub-ſpecies, *common dolomite, dolomite ſpar* or *rhomb ſpar*, *columnar dolomite*, and *compact dolomite* or *magneſian lime-ſtone*.

Common dolomite occurs in beds in primitive mountains, and frequently contains tremolite. It nearly reſembles primitive lime-ſtone or ſtatuary marble, the *chaux carbonatée ſaccaroide* of the French, but may be diſtinguiſhed from it by the little effervеſcence which it yields on the application of mineral acids compared with the former. The grains of dolomite are alſo more looſely adhering than in white primitive lime-ſtone. The mineralogical characters of common dolomite are given under the article Dolomite. Dolomite generally phoſphoreſces when rubbed in the dark or heated. The conſtituent parts of different dolomites are given by Klaproth as under :

	St. Gothard.	Apperiones.	Carinthia.
Carbonate of magneſia -	46.50	38.00	48.00
Carbonate of lime - -	52.00	65.00	52.00
Oxyd of manganeſe -	0.25		
Oxyd of iron - -	0.50		
Loſs - - - -	0.75		20
	100	103	100.20

Flexible dolomite is found in the mountain of Campo Longoman, St. Gothard.

Dolomite *Spar*, or *Rhomb Spar*. See Brown *Spar*, *Addenda*.

Dolomite, *Columnar*, occurs in ſerpentine, in a mine at Mjaſs, in Ruſſia, in ſtraight priſmatic concretions: its colour is pale greyiſh-white, the luſtre vitreous inclining to pearly. It is feebly tranſlucent. The ſpecific gravity is 2.765. According to Klaproth, the conſtituent parts are,

Lime - - - -	28.20
Magneſia - - -	19.74
Oxyd of iron - - -	0.50
Carbonic acid - - -	39.25
Water - - - -	11.31
Loſs - - - -	1.
	100

Dolomite, *Compact*, magneſian lime-ſtone. See Magnesian *Lime-ſtone*, *Addenda*.

Egyptian Jasper. See Jasper.

Elaolite, *Fettſteen*, Werner ; *Piene-graſſe*, Haüy. The colours of this mineral are dark-greeniſh or blueiſh-grey, and fleſh-red ; it is tranſlucent in a low degree, and has a ſhining reſinous luſtre. The blueiſh varieties diſplay a peculiar opaleſcence. It occurs maſſive, and has a diſtinct double cleavage. The fracture is uneven. It ſcratches glaſs, is rather eaſily frangible, and melts before the blow-pipe into a white enamel. When pounded it gelatinizes in acids. The ſpecific gravity is 2.58 to 2.61. According to Klaproth, the conſtituent parts are,

Silex	46.50
Alumine	30.25
Lime	0.75
Potaſh	18.00
Oxyd of iron	1.00
Water	2.00
	98.50

According to Vauquelin,

Silex	44.00
Alumine	34.00
Lime	0.12
Potaſh and ſoda	16.50
Oxyd of iron	4.00
	98.62

This mineral has hitherto been found only in the rock named zircon ſienite. (See Zircon *Sienite.*) It is claſſed by Mr. Jameſon in the felſpar family; but is placed by Werner between jaſper and cat's-eye.

Elastic *Mineral Pitch,* or *Elaſtic Bitumen.* Mineral caoutchouc. *Bitume elaſtique,* Haüy. See Bitumen.

Electrum, an argentiferous gold-ore, or native alloy. Its colour is a pale braſs-yellow. It is not ſoluble either in nitrous or nitro-muriatic acid. It contains, according to Klaproth,

Gold	64
Silver	36
	100

It occurs at Schlangenberg, in Siberia.

Emerald, *Emeraude verte,* Haüy. See Emerald.

Falſe emeralds are ſometimes offered for ſale, which are either green fluor ſpar, green quartz, or praſe. The emerald of Braſil is ſometimes the green tourmaline. The true emerald is harder than quartz. The beryl and the emerald have both the ſame primitive form of the cryſtal or the hexahedral priſm. The terminal planes of the emerald are rough, thoſe of the beryl ſmooth. The emerald agrees in chemical compoſition with the beryl, both containing from thirteen to fourteen parts of the newly-diſcovered earth glucine; but the colouring matter of the emerald *chrome* is wanting in the beryl. See Gem.

Emery, *Corindon granulaire,* Haüy. (See Emery.) This mineral owes its hardneſs to an intermixture of blue corundum. See Adamantine *Spar,* and Corundum, *Addenda.*

Epidote. (See Pistazite, and Thallite. Under the latter article, for Arundel in Norway *r.* Arendal.) Epidote occurs at the Malvern-hills in Worceſterſhire, at Wallow Cragg near Keſwick in Cumberland, and near Marazzion in Cornwall.

Epsom *Salt, Native,* or ſulphate of magneſia, occurs as an efflореſcence at Hurlet near Paiſley, and ſometimes is found efflореſcent on old walls, and on the ſurface of different rocks, particularly gypſum, ſand-ſtone, clay, and compact lime-ſtone.

Euclare. See Euclare.

Fahlerz, Werner; grey copper ore. See Copper-Ores.

Felspar. (See Felspar.) The name of this mineral appears to be derived from the Saxon term *fell,* a mountain, ſtill uſed in the northern counties of England; hence felſpar, in its original ſignification, denoted mountain ſpar. In the mineralogical ſyſtems of Werner and Mr. Jameſon, the felſpar family compriſes various ſpecies of minerals, which are ſuppoſed to be nearly allied to felſpar. The felſpar ſpecies is alſo divided into *adularia, glaſſy felſpar, Labrador felſpar, common felſpar, diſintegrated felſpar,* and *compact felſpar.*

Adularia. (See Felspar.)—The forms of cryſtals of adularia are the ſame as thoſe of common felſpar. It poſſeſſes double refraction. It melts before the blow-pipe into a tranſparent white glaſs. Adularia occurs in veins in granite and gneiſs, in various parts of Aberdeenſhire and Bamfshire, in the iſle of Arran, and in the granite of Switzerland, France, and Germany. The largeſt and moſt beautiful cryſtals are found in the mountain of Stelia, a part of St. Gothard. Rolled pieces having a beautiful pearly light are collected in the iſland of Ceylon. The variety which exhibits a ſtrong pearly light is cut in a ſemi-globular form, and is ſold under the name of morn-ſtone, and is uſually worn as a ring-ſtone.

Glaſſy Felſpar occurs always cryſtallized in broad rectangular four-ſided priſms, bevelled on the extremities. Theſe cryſtals are very much cracked, and always imbedded. It is tranſparent, and has a ſplendent vitreous luſtre internally. Its other characters agree with adularia. It occurs in pitch-ſtone and trap in various parts of Scotland.

Labrador Felſpar. See Felspar.

Common Felſpar occurs variouſly cryſtallized. Haüy enumerates more than twenty of its ſecondary forms; ſeveral of them are repreſented *Plate* I. *figs.* 8, 9, 10, 11, 12, &c. *Cryſtallography.* The primitive form is an oblique-angled parallelopiped. The ſtructure is perfectly lamellar, with a double, very diſtinct, rectangular cleavage, and an oblique indiſtinct cleavage interſecting the two former. The four rectangular planes have ſplendent faces; the faces of the oblique cleavage are dull. This remarkable character is peculiar to felſpar, and may very frequently be obſerved in the rhomboidal fragments of this mineral. Felſpar has been frequently analyſed with different reſults. According to Berzelius, the moſt probable compoſition of common felſpar, ſo far as we can calculate it from the many analyſes of which we are in poſſeſſion, is, that the alumine bears the ſame proportion to the potaſh as in alum, and that the ſilica contains three times the oxygen of the baſe. The following is therefore a compariſon between the calculated and experimental reſults, according to the principles of Berzelius's new ſyſtem of mineralogy. See Systems *of Mineralogy.*

	Vauquelin.		Klaproth.	Roſe.	Calculated Reſult.
Silica	64	62	68	66	66.26
Alumine	20	17	15	17	17.61
Potaſh	14	13	14	12	16.13
Lime	2	3			
Protoxyd of iron		1		1	

The lime and protoxyd of iron are regarded as accidental admixtures. Felſpar is one of the principal conſtituent ingredients of many of the rocks called primary, in many of the trap rocks, and many of the lighter-coloured lavas. It forms an eſſential conſtituent part of granite, gneiſs, ſienite, green-ſtone, and forms the baſe of many porphyries, and the rock called *white-ſtone.* (See White-Stone.) In green-ſtone, the felſpar is often tinged of a green colour, from the admixture of hornblende or augit. In many of the porphyries, it exiſts in a compact ſtate, or as *compact* felſpar. The colours of compact felſpar are various ſhades of white, grey, green, or red. The lamellar ſtructure is nearly loſt in many of the compact felſpars, particularly in thoſe varieties which have little luſtre. When it contains cryſtals of quartz or felſpar, it conſtitutes a felſpar porphyry. It forms extenſive beds in many alpine diſtricts. It is diſtinguiſhed from horn-ſtone by its inferior hardneſs, fuſibility, and its frequent intermixture with hornblende or mica.

Diſintegrated Felſpar has generally a greyiſh-white colour. It occurs maſſive and in imbedded cryſtals which have the ſame form as common felſpar. It is gliſtening, glimmering, or dull, and ſoft and ſectile. In ſome inſtances, it appears to be felſpar in a decompoſing ſtate; in others, to be a ſofter kind of felſpar in an unaltered ſtate.

Fibrolite, a mineral which occurs with corundum; it has a white or grey colour, is cryſtallized in rhomboidal priſms, the angle of whoſe planes are 80° and 100°. It has a fibrous ſtructure, and an uneven croſs fracture. Internally it is gliſtening. Fibrolite is harder than quartz. Its ſpecific gravity is 3.21. According to Chenevix, the conſtituent parts are,

Alumine - - -	58.25
Silex - - - -	38.00
Iron and loſs - - -	3.75
	100

Figure-Stone. Agalmetolite, or bildſteen.

Fish-Eye-*Stone*, or ichthyophthalmite.

Flint. See Flint.

Float-Stone, *Quarz nectique*, Haüy; ſometimes called ſwimming quartz. Its colours are yellowiſh-white and grey. It is dull, earthy, and friable, abſorbs water and becomes tranſlucent. Its ſpecific gravity is leſs than water, being from 0.448 to 0.793. The conſtituent parts are,

Silex - - - -	91 to 98
Water - - -	6
Carbonate of lime -	2
Oxyd of iron and alumine	2

It is found at St. Oien, in the vicinity of Paris, along with flint, and ſometimes contains the ſame petrifactions as thoſe found in flint. Flint is ſometimes found in the centre of float-ſtone, and paſſes into it by gradation. Float-ſtone may therefore be conſidered as a porous ſtate of flint.

Flos *Ferri, Coralloidal Arragonite*, occurs in ſnow-white dendritical branches, either ſmooth or incruſted with points. It is found in the mines at Duſton Fell, Weſtmoreland; it is ſuppoſed by count Bournon to be formed by ſublimation.

Fluor Spar, *Flus*, Werner; *Chaux fluatée*, Fr. See Fluor Spar.

Foliated *Granular Lime-ſtone.* The name given by Mr. Jameſon to cryſtalline primitive lime-ſtone, called by the French *chaux carbonatée ſauaroide*. See Lime-stone, and Lime-stone, *Addenda*.

Fossil-Copal, or *Highgate Reſin*, a reſinous ſubſtance found in perforating the bed of London clay at Highgate. It appears to be a true vegetable gum or reſin, partly changed by remaining in the earth. It gives out a reſinous aromatic odour when heated, and melts into a limpid fluid. It takes fire when applied to the flame of a candle, and burns away entirely before the blow-pipe. The colour of foſſil-copal is a yellowiſh-brown: it has a reſinous luſtre, is brittle, and yields eaſily to the knife. The ſpecific gravity is 1.046.

Fullers'-Earth, *Argile ſmectique*, French. See Fullers'-Earth.

Gadolinite. See Gadolinite.

Galena, or *Sulphuret of Lead, Lead Glance; Plomb ſulphuré*, Haüy. See Lead.

Garnet, *Grenat*, French. (See Garnet, *Precious*, and Garnet, *Common*.) The garnet family of Werner and profeſſor Jameſon, in their mineralogical ſyſtems, compriſes the following minerals, ſuppoſed to have an alliance with garnet: leucite, veſuvian, groſſalar, melanite, allochroite, garnet, grenatite, pyrope, and cinnamon-ſtone. (See theſe articles in the preceding volumes, and in the *Addenda*.) In the Britiſh Muſeum, theſe minerals are claſſed together under the name of grenatic ſubſtances, whereby the confuſion of making the ſame word repreſent both the genus and ſpecies is avoided.

Glance-Coal, *Anthracite.* The coal which has a ſplendent luſtre, and burns without flame. (See Coal.) It is principally compoſed of carbon, and paſſes into graphite, or black-lead. Werner divides glance-coal into three ſubſpecies; conchoidal glance-coal, ſlaty glance-coal, and columnar glance-coal. See Coal.

Glauber *Salt, Native Glauberite; Sonde ſulphatée*, Fr. occurs as a mealy efflореſcence in the neighbourhood of ſome ſalt lakes, and occaſionally encruſting ſand-ſtone and marle-ſlate. It is ſometimes ſtalactitic, botryoidal, or cryſtallized in acicular cryſtals. Accordiug to Reuſs, the glauber ſalt of Eger, in Bohemia, contains

Sulphate of ſoda - - -	67
Carbonate of ſoda - -	16
Muriate of ſoda - - -	11
Carbonate of lime - -	5
	99

Glassy *Felſpar.* See Felspar, *Addenda.*

Glassy *Tremolite.* See Tremolite.

Gold. (See Gold.) In addition to the localities of gold given under that article, we may ſtate that native gold is found in ſome of the ſtream works of Cornwall, and, like the ſtream tin which accompanies it, was doubtleſs once a part of the metallic veins that have been deſtroyed by the natural diſintegraction of the rocks which theſe once interſected. We have ſeen globules of native gold the ſize of a pea in a matrix of quartz, in the poſſeſſion of the Rev. Mr. Hennor, of Plymouth.

Native gold was found in alluvial ſoil in various parts of Scotland, and was once extenſively worked at the lead-hills. In the time of queen Elizabeth, it is ſaid that three hundred men were employed in ſearching for it, and that in the courſe of a few ſummers a quantity was collected equal to 100,000*l.* ſterling. Gold was obtained a few years ſince in a ferruginous ſand in Ireland, near Arklow, in the county of Wicklow. One maſs of pure gold weighing twenty-two ounces was found, which was the largeſt piece hitherto diſcovered in Europe. The total amount of gold exported to Europe annually from the Spaniſh and Portugueſe colonies in America is ſtated by Humboldt at 45,580 pounds troy, of which 25,000 pounds weight comes from the Spaniſh colonies; the remainder from the Portugueſe, principally from the Brazils, where it is collected by waſhing the ſands of rivers and alluvial depoſits. Gold is found almoſt every where along the feet of theſe immenſe mountains which run in a chain nearly parallel with the coaſt, from 5° to 30° of ſouth latitude. Many of the ſilver-ores in America are alſo rich in gold. (See Silver.)

SILVER.) For a more particular account of theſe repoſitories of the precious metals, we muſt refer our readers to the various travels of M. Humboldt, to whom we are indebted for almoſt all the correct information we have reſpecting the European colonies in South America. The quantity of gold and ſilver imported from theſe colonies between the years 1492 and 1803, he ſtates at eleven hundred and ſixty-ſix millions in pounds ſterling; an amount ſomewhat exceeding that of the preſent national debt of England!!

GRAMMATITE, *Tremolite*. See TREMOLITE.

GRANULAR *Lime-ſtone*, ſtatuary marble; *Chaux carbonatée ſauarcide*, Fr. See LIME-STONE, and LIME-STONE, *Addenda*.

GRAPHIC *Gold* and *Graphic Tellurium*. See TELLURIUM.

GRAPHITE. Plumbago or black-lead, (ſee PLUMBAGO,) has an iron-grey colour, and a glimmering or gliſtening metallic luſtre. It is ſectile, and when freſh cut has a lead-grey colour: it is unctuous to the touch, yields to the nail, and leaves a diſtinct lead-grey mark on paper. Before the blow-pipe it gradually burns away, leaving a portion of red oxyd of iron. According to Berthollet, the conſtituent parts are,

Carbon	90.9
Iron	9.1

The graphite of Borrowdale occurs with ochreous and unctuous clay; it is found in nodules and maſſes of various ſizes. The bed in which it is found lies in a rock of grey porphyrite felſpar, which has been improperly called grey wacke. Three beds of ſcaly graphite have lately been diſcovered in a rock of mica-ſlate or gneiſs, near Buley, in Inverneſs-ſhire.

GREEN *Earth*, *Chlorite zographique*, French. This mineral, though made a diſtinct ſpecies by Werner, appears to be ſoft earthy chlorite (ſee CHLORITE): it generally occurs in cavities or incruſting agates in amygdaloid. It is of various ſhades of green, is ſoft and ſectile, and adheres ſlightly to the tongue. The ſpecific gravity is 2.5. Before the blow-pipe, it is converted into a black ſlag. It is uſed as a green colour in water-painting. When ſlightly burned, it affords a beautiful and durable brown.

GRENATITE, *Staurotide*, Haüy; the ſtaurolite of ſome mineralogiſts. (See STAUROLITE.) This mineral is claſſed in the garnet family by Werner; but it varies from garnet in the form of its cryſtal, which is an oblique four-ſided priſm, truncated on the acute lateral edges. Sometimes it is bevelled on the extremities by two planes ſet on the lateral edges, and the edge of the bevelment is truncated. The cryſtals ſometimes interſect each other, forming a croſs; hence it has been called croſs-ſtone by ſome mineralogiſts: but it is a very diſtinct ſpecies from the *harmotome*, or croſs-ſtone, which is a member of the zeolite family. (See ZEOLITE.) The colour of grenatite is dark reddiſh-brown. It is infuſible before the blow-pipe. The above characters diſtinguiſh it from precious garnet. It occurs imbedded in mica-ſlate, and in talc, generally accompanied with kyanite and precious garnet.

GREY *Antimony-Ore*. (See ANTIMONY-ORES.) Grey antimony occurs in ſome of the mines in Cornwall in conſiderable quantities, particularly at St. Stephen's, Padſtead, and Huel bays. It is found alſo at Glendenning, in Dumfriesſhire.

GREY *Cobalt-Ore*. (See COBALT-ORE.) This mineral is found at Herland and Dolcooth mines, and in ſome other veins, in Cornwall.

GREY *Manganeſe-Ore*. See MANGANESE.

GYPSUM, ſelenite; *Chaux ſulfatée*, Haüy. See GYPSUM.

HARMOTOME, *Croſs-ſtone*. See ZEOLITE.

HAÜYNE, *Latialite*, Haüy. A mineral claſſed by the German mineralogiſts with the azure-ſtone, or lapis lazuli family. It was firſt diſcovered in the volcanic rocks of Albano and Fraſcati, and called *latialite*, from ancient Latium, and was afterwards diſcovered in the baſaltic rock of Andernach, and has been called *Haüyne*, in honour of the celebrated mineralogiſt Haüy. Haüyne has a ſky-blue colour, paſſing into pale Berlin-blue and blueiſh-green. It occurs in imbedded grains, and cryſtallized in minute ſplendent rhomboidal dodecahedrons. The fracture is conchoidal, paſſing into uneven; it has a vitreous luſtre, is tranſparent or ſemi-tranſparent, ſcratches glaſs, and is infuſible before the blow-pipe. When pulverized, it gelatinizes with muriatic acid, giving out an odour of ſulphuretted hydrogen. The ſpecific gravity is from 3.1 to 3.3. According to Vauquelin, the conſtituent parts are,

Silex	30.0
Alumine	15.0
Sulphate of lime	20.5
Potaſh	11.0
Iron	1
Water	17.5
	95.0

It has by ſome mineralogiſts been claſſed with ſapphire, and deſcribed under the name of *ſaphirin*. It was arranged by Cordier with ſpinel.

HEAVY SPAR, *Sulphate of Barytes*, *Baro-Selenite*. This mineral exceeds in weight all other purely earthy minerals, its ſpecific gravity being from 4.3 to 4.49. It occurs both maſſive and cryſtallized in many metallic veins. Its colours are various ſhades of white, yellow, red, greeniſh-grey, and blue. Cryſtallized heavy ſpar is tranſparent or tranſlucent, and refracts doubly; it has a diſtinct lamellar ſtructure, and ſplits into a right-rhomboidal priſm, which is its primitive form; the angles of the rhomb are 101½° and 78½°. The joint parallel to the baſe of the rhomb is the moſt diſtinct. The luſtre is ſhining, between vitreous and reſinous: it yields readily to the knife. Before the blow-pipe it decrepitates violently, and then melts into a hard white enamel. A piece expoſed to the blow-pipe, and laid on the tongue, gives the flavour of ſulphuretted hydrogen. The powder of ſome varieties of heavy ſpar, when calcined, abſorbs light, and emits it again in the dark. Sulphate of ſtrontian (ſee STRONTIAN) is the only earthy mineral with which heavy ſpar can probably be confounded. White lead-ore may be diſtinguiſhed from heavy ſpar, as it is ſofter, and yields a metallic globule before the blow-pipe. Pure heavy ſpar conſiſts of

Barytes	67
Sulphuric acid	33
	100

Mr. Jameſon makes the following varieties of heavy ſpar, which he claſſes as ſub-ſpecies: earthy heavy ſpar, compact heavy ſpar, granular heavy ſpar, lamellar heavy ſpar, radiated heavy ſpar, fibrous heavy ſpar, and priſmatic heavy ſpar; and he divides lamellar heavy ſpar into three kinds, ſtraight lamellar heavy ſpar, curved lamellar heavy ſpar, and diſintegrated lamellar heavy ſpar.

Earthy Heavy Spar occurs ſometimes looſe, and ſometimes cohering in the druſy cavities in veins: it is compoſed of dull or glimmering duſty particles, which feel meagre.

Compact Heavy Spar occurs maſſive, diſſeminated, reniform, ſemi-globular; it has a coarſe earthy fracture, and is ſometimes imperfectly foliated; it has a glimmering luſtre, is ſlightly tranſlucent, ſoft, and eaſily frangible. It is often marked with dendritic delineations. According to Weſtrumb, it contains

Sulphate of barytes	83
Silex	6
Alumine	1
Water	2
Oxyd of iron	4
	96

In Derbyſhire, this mineral is called *cawk* by the miners.

Granular Heavy Spar occurs maſſive: the ſtructure is finely granular; the ſtructure of the grains is lamellar. This mineral nearly reſembles granular lime-ſtone, but is much heavier, and does not efferveſce with acids.

Lamellar, or Cryſtallized Heavy Spar, occurs in the following ſecondary forms. 1. A rectangular four-ſided table, either perfect, or with the terminal planes bevelled, and ſometimes the angles of the bevelment are truncated. 2. An oblique four-ſided table, perfect, or with the angles or edges truncated. 3. A longiſh ſix-ſided table, either perfect or variouſly bevelled. 4. Eight eight-ſided tables, either perfect, bevelled, or truncated. Curved lamellar heavy ſpar occurs in diſtinct concretions, which have a curved lamellar ſtructure.

Fibrous Heavy Spar has a cheſnut-brown colour. It occurs in reniform or botryoidal maſſes, and has a plumoſe or diverging fibrous ſtructure.

Radiated Heavy Spar, or Bologneſe Spar.—Its colours are, ſmoke-grey, aſh-grey, or yellowiſh-white. It occurs in roundiſh compreſſed pieces, which are always covered with marle or clay. The ſtructure is lamellar in one direction, and in the longitudinal fracture radiated: it is tranſlucent. It is remarkably phoſphoreſcent after being heated and expoſed when cool to the light, and carried into a dark room. It was firſt found at Monte Paterno, near Bologna. Its conſtituent parts are,

Sulphate of barytes	62
Lime	2
Silex	16
Alumine	14.75
Oxyd of iron	0.25
Water	2
	97

Columnar Heavy Spar: Baryte ſulphatée baccillaire, Haüy.—Its colours are, yellowiſh, greyiſh, and greeniſh-white. It occurs cryſtallized in acicular oblique four-ſided priſms, laterally aggregated into columns; the luſtre is ſhining and pearly: it is tranſlucent, and has a lamellar ſtructure.

Priſmatic Heavy Spar is heavy ſpar cryſtallized in four-ſided or ſix-ſided priſms, variouſly acuminated and modified by bevelments and truncations.

Hepatite, Baryte ſulphatée fetide, Haüy, may be claſſed as a variety of heavy ſpar, which poſſeſſed the property of yielding a fetid ſulphureous odour when heated or rubbed. It occurs in globular maſſes, from an inch to a foot in diameter; theſe maſſes have a curved lamellar ſtructure. According to John, the conſtituent parts are,

Sulphate of barytes, with a trace of ſtrontian	93.58
Sulphate of lime	3.58
Oxyd of lime	0.87
Water, carbonaceous matter, ſulphur, and alumine	2.00
	100.03

According to Klaproth,

Sulphate of barytes, with a trace of ſtrontian	85.25
Carbon	0.50
Sulphate of lime	6.00
Oxyd of iron	5.00
Alumine	1.00
Loſs, including water and ſulphur	2.25
	100.00

Hepatite occurs at Buxton, in Derbyſhire.

HELIOTROPE, *Quarz agathe ponctué*, Haüy.

HEMATITE, *Black and Brown; Fer oxydé hematite*, Haüy.

HEMATITE, *Red; Fer oligiſte concretione*, Haüy. See IRON-ORES.

HEPATIC PYRITES, or *Lower Pyrites*. See PYRITES.

HEPATITE. See HEAVY SPAR, *Addenda*.

HIGHGATE-RESIN. See FOSSIL-COPAL, *Addenda*.

HOLLOW SPAR. See CHIASTOLITE, *Addenda*.

HONEY-STONE. See MELLITE.

HORN-STONE, a mineral nearly allied in compoſition to flint, but has a more earthy texture; it received its name from the ſuppoſed reſemblance to horn. A more opaque variety of flint, which occurs along with flint and chalcedonic flint in the ſand ſtrata below chalk, is called chert. (See CHERT, *Addenda*.) This is a kind of horn-ſtone. Horn-ſtone is the *petro-ſilex* of ſome mineralogiſts, and under that name is often confounded with *compact felſpar*. Indurated ſlate, which contains a large portion of ſilex in its compoſition, is ſometimes called *horn-ſtone ſlate*. Sauſſure, under the names of paliopetre and neopetre, appears to include both the ſplintery horn-ſtone and flinty ſlate of Werner. Werner divides horn-ſtone into three ſub-ſpecies, ſplintery horn-ſtone, conchoidal horn-ſtone, and wood-ſtone.

Splintery Horn-ſtone occurs of various ſhades of grey, red, and green. It is generally maſſive, but ſometimes is found in large balls, and ſometimes lenticular, or in the form of cryſtals, in the cavities where cryſtals have once occurred, and hence called ſuppoſititious cryſtals. The luſtre is dull, the fracture ſplintery; it is more or leſs tranſlucent, is ſomewhat leſs hard than quartz. It is infuſible before the blow-pipe, which diſtinguiſhes it from compact felſpar. The latter mineral is not ſo hard as horn-ſtone, and has more luſtre. Horn-ſtone paſſes into compact felſpar, quartz, common jaſper, and chalcedonic flint. In theſe tranſitions, it is frequently difficult to determine among which of theſe it ſhould be placed. It forms the baſis of horn-ſtone porphyry.

Conchoidal Horn-ſtone is glimmering or gliſtening, with a vitreous luſtre; it has a more or leſs perfect and flat conchoidal fracture. It is harder and leſs tranſlucent than ſplintery horn-ſtone. It occurs maſſive, globular, and ſometimes forms ſuppoſititious cryſtals. It is found in veins and beds. Chert appears to belong to this ſub-ſpecies.

Wood-ſtone, *Quarz agathe xyloide*, Haüy, is generally various ſhades of grey, frequently ſtriped or clouded. It occurs rounded, and in the ſhape of the trunks, branches, or roots of trees; it is generally tranſlucent at the edges, with little or no luſtre. The croſs fracture is imperfectly conchoidal, the longitudinal ſplintery and fibrous. Wood-ſtone is properly wood ſilicified, in which the greater part of the vegetable matter has diſappeared, and ſiliceous matter has occupied the place, preſerving the form and texture of wood. Some wood is petrified with opal, forming wood opal; and ſometimes the mineral matter of petrified wood is quartz, or calcareous earth.

HORNBLENDE, *Amphibole*, Haüy. The deſcription of this mineral, ſo important in geology, was omitted in the proper place, and is given here. Hornblende may be divided into common hornblende, baſaltic hornblende, and hornblende ſlate. Haüy, under the term amphibole, claſſes actinolite with hornblende. (See ACTINOLITE.) Hornblende generally occurs of various ſhades of dark green paſſing into black; ſometimes common hornblende occurs of various ſhades of brown. Hornblende has a lamellar ſtructure longitudinally, with a two-fold oblique angular cleavage, parallel to the planes of a rhomboidal priſm, the alternate angles of which are 124½° and 56½°. This is the form of the primitive cryſtal, and diſtinguiſhes it from epidote, which cleaves at an angle of 114½° and 65½°, and augit or pyroxene, which cleaves at an angle of 92° and 88°. The croſs fracture of hornblende is coarſe-grained, uneven; it melts eaſily before the blow-pipe into a greyiſh-black coloured glaſs. Theſe characters, together with the cleavage, ſerve to diſtinguiſh hornblende from augit or epidote; its inferior hardneſs diſtinguiſhes it from ſchorl.

Common Hornblende occurs both maſſive, diſſeminated, and cryſtallized; the cryſtals are oblique four-ſided priſms, aggregated or long flattiſh priſms, interſecting each other, or confuſedly radiated. The ſtructure is lamellar or bladed. The cryſtals are long and deeply ſtreaked longitudinally. The luſtre is ſhining and pearly. The black-coloured varieties are opaque; the green generally tranſlucent at the edges. It yields pretty eaſily to the knife, leaving a greeniſh-grey ſtreak. It is very tough, and becomes indented by the ſtroke of a hammer. The ſpecific gravity is from 3.20 to 3.28. According to Klaproth, the conſtituent parts are,

Silex	42.00
Alumine	12.00
Lime	11.00
Magneſia	2.25
Oxyd of iron	30.00
Ferruginous manganeſe	0.25
Water	0.75
A trace of potaſh	0.00
	98.25

This mineral occurs forming beds in mountains, or is diſſeminated, as a conſtituent part of many compound rocks. It occurs occaſionally in granite, gneiſs, mica-ſlate, and ſlate, and is an eſſential part of ſienite and green-ſtone. It forms a conſtituent part of many baſaltic and volcanic rocks, but has frequently been confounded with augit. (See VOLCANIC *Products*.) Hornblende occurs abundantly in various parts of Scotland and in England, particularly at the Malvern-hills in Worceſterſhire, and at Charwood foreſt in Leiceſterſhire, and in Devonſhire, Cornwall, and Cumberland.

Baſaltic Hornblende, *Amphibole ſchorlique baſaltique*, Fr. is diſtinguiſhed from common hornblende by its velvet-black colour, and more perfect cryſtallization. It occurs cryſtallized in unequiangular ſix-ſided priſms, terminated at each extremely by a trihedral pyramid, with rhombic faces. It is ſometimes terminated diſſimilarly at each extremity, and ſometimes acuminated by four or more planes. The angles of the cleavage have been already deſcribed. Baſaltic hornblende has a ſplendent vitreous luſtre. The fracture is fine-grained, uneven, and gliſtening. It is black, opaque, and ſcratches glaſs. It is more frangible than common hornblende, and melts with greater difficulty. The ſpecific gravity is from 3.15 to 3.19. According to Klaproth, the conſtituent parts are,

Silex	47.00
Alumine	26.00
Lime	8.00
Magneſia	2.00
Oxyd of iron	15.00
Water	0.50
	98.50

It occurs imbedded in baſalt, as at Arthur's ſeat, near Edinburgh, and in various parts of Scotland. It is frequently found in lava, particularly in the lava of Veſuvius. It was formerly confounded with ſchorl, until Werner pointed out its characters.

Hornblende-Slate occurs in beds in granite, gneiſs, and mica-ſlate; in the latter rocks, it is often much intermixed with mica, and ſometimes contains garnets, as is the caſe near Tyndrum in Perthſhire. Its colour is greeniſh-black. It has in the maſs a ſlaty ſtructure, and is internally laminar or fibrous, and has a gliſtening or velvet-like luſtre. No very well characteriſed beds of hornblende-ſlate occur in England.

HORN-MERCURY, *Mercure muriaté*, Haüy. See MERCURY-*Ores*.

HORN-SILVER, *Argent muriaté*, Haüy. See SILVER-*Ores*.

HUMITE occurs at mount Somina near Naples, in a granular topaz rock, intermixed with brown and olive-green mica and white Haüyne. Its colour is reddiſh-brown; it occurs cryſtallized in octahedrons, which are always more or leſs truncated and bevelled; the planes are frequently tranſverſely ſtreaked; it has a ſhining luſtre, and is tranſparent; it ſcratches quartz with difficulty. This mineral was named humite in honour of ſir Abraham Hume, by the count de Bournon, who has given the preceding characters of it in his *Catalogue Mineralogique*.

HYACINTH, *Zircon hyacinth*. See ZIRCON.

HYALITE, *Muller glaſs*, Werner; *Quarz concretioné*, Haüy. (See HYALITE.) The ſpecific gravity of this mineral is given in the laſt edition of profeſſor Jameſon's Mineralogy at 2.47, from Karſten. Its conſtituent parts are given by Bucholz as under:

Silex	92
Water	6.33
Trace of alumine	
Loſs	1.66
	99.99

HYDRATE *of Magneſia* has a white colour with a greeniſh tinge; it occurs maſſive, has a lamellar-bladed ſtructure, a pearly luſtre, and is more or leſs ſemitranſparent, but becomes

comes opaque by expoſure to the air. The lamellæ are ſomewhat elaſtic; it is ſoft, and adheres ſlightly to the tongue. Specific gravity 2.3. It is infuſible, but ſoluble in muriatic acid. According to Vauquelin, the conſtituent parts are,

Magneſia	64
Water	29
Oxyd of iron	2.5
Silex	2
	97.5

HYDROPHANE. See OPAL, *Addenda.*

HYPERSTENE, *Labrador Hornblende; Diallage metalloide,* Haüy. Its colours are, dark-greyiſh, browniſh, or greeniſh-black, with generally a pſeudo-metallic luſtre, reflecting a copper-red, a pinchbeck-brown, or a gold-yellow light. It occurs both maſſive and diſſeminated; it has a lamellar ſtructure and a two-fold cleavage, the planes forming angles of 100° and of 80°. It is opaque, and yields a greeniſh-white ſtreak. It is harder than common hornblende. Its ſpecific gravity is 3.38. Before the blow-pipe it blackens, but is infuſible. According to Klaproth, the conſtituent parts are,

Silex	54.25
Magneſia	14.00
Alumine	2.25
Oxyd of iron	24.50
Lime	1.50
Water	1
Mangaueſe, a trace	
	97.50

Until very recently, this mineral had only been found on the coaſt of Labrador, where it forms a conſtituent part of a rock compoſed of Labrador felſpar, and ſometimes containing common hornblende and magnetic iron-ſtone. It has been lately diſcovered by Dr. Macculloch in ſienite, at Lock Scavig in Skye, alſo near Portſoy, and is ſuppoſed to exiſt in many rocks which have hitherto been deſignated green-ſtones.

ICHTHYOPHTHALMITE, *Apoplylite,* Haüy. See ZEOLITE.

IDOCRASE, *Veſuvian.* See VESUVIAN.

INDIANITE, a mineral brought from the Carnatic, of which we have the following account by its diſcoverer the count de Bournon. Its colours are white and grey, its luſtre ſhining; it has a lamellar ſtructure, is tranſlucent inclining to tranſparent; it ſcratches glaſs, but is leſs hard than felſpar; it occurs maſſive, and is aſſociated with hornblende. Its ſpecific gravity is 2.74. According to Chenevix, the conſtituent parts are,

Silex	42.5
Alumine	37.5
Lime	15
Iron	3
A trace of Manganeſe	
	98

INDICOLITE, Indigo blue, tourmaline. See TOURMALINE.

IOLITE, *Dichroite,* occurs principally cryſtallized, in ſmall equiangular and equilateral ſix-ſided priſms, which have rough ſurfaces. The colour is violet-blue, or dull pruſſian blue, but when viewed by tranſmitted light at right angles to the axis of the priſm is a browniſh-yellow. The ſtructure is indiſtinctly lamellar, with joints paſſing through the axis at right angles to the lateral faces of the priſm. The fracture is uneven, paſſing into conchoidal. It paſſes from tranſlucent to opaque. Iolite ſcratches quartz. Its ſpecific gravity is 2.5. It is not affected by acids. Before the blow-pipe, it melts with difficulty into a greeniſh-grey enamel. This mineral occurs at Cape de Gate, in Spain; it is found imbedded in fragments of gneiſs and compact felſpar, contained in what is ſuppoſed by Cordier to be a volcanic tufa, which contains, beſides blocks of ſcoriæ, obſidian and baſalt. Iolite has alſo been found in trap at Arendal in Norway.

IRIDIUM, *Native,* has a pale ſteel-grey colour; it occurs in flat ſmall irregular grains in alluvial ſoil in South America. It has a ſhining metallic luſtre, a lamellar ſtructure, is brittle and harder than platina. The ſpecific gravity is 19.5. It is proved by Dr. Wollaſton to be an alloy of *Irridium* and *Oſmium;* which ſee.

IRON-CLAY is of a reddiſh or browniſh-red; it occurs maſſive and veſicular, as the baſes of ſome amygdaloids which form beds in baſaltic rocks. It is intermediate between baſalt and wacke, having leſs hardneſs than the former, and more than the latter. It is alſo more eaſily frangible than either baſalt or wacke.

IRON-FLINT is generally of a brown or browniſh-red colour; it is opaque and hard, and has an imperfect conchoidal fracture. It occurs maſſive in rounded pieces, and cryſtallized in ſmall equiangular ſix-ſided priſms. Its ſpecific gravity is from 2.5 to 2.8. It is infuſible. This mineral appears to be quartz rendered opaque by a chemical combination with iron. According to Bucholz, the conſtituent parts are,

Silex	93	92
Oxyd of iron	5	5.75
Volatile matter	1	1
Oxyd of manganeſe		1
	99	99.75

Pebbles of iron-flint are uſed at Worceſter for burniſhing the gilding in china. They have ſometimes been found in conſiderable quantities in the ploughed fields near Aſhby-de-la-Zouch in Leiceſterſhire.

IRON-MICA. Micaceous iron glance, or iron-ore. See IRON-ORES.

IRON, *Native.* See IRON-ORES.

IRON, *Native and Meteoric, Fer native meteorique,* Haüy, is the iron which has been obſerved in various places to fall from the atmoſphere. See STONE, *Meteoric,* FALLING *Stone,* and METEORIC *Iron, Addenda.*

IRON-ORE and *Iron-Stones.* (See IRON.) We ſhall here enumerate the different ſpecies of iron-ſtone, with the names given to them by the French and German mineralogiſts.

Iron Pyrites, Common; Fer ſulphuré, Haüy; *Gemeiner ſchwefelkies,* Werner. *Capillary Pyrites, Fer ſulphuré capillaire,* Haüy; *Haarkies,* Werner. *Cellular Pyrites, Zellkies,* Werner. *Radiated Pyrites, Fer ſulphuré radié,* Haüy; *Strahlkies,* Werner. *Hepatic,* or *Liver Pyrites, La pyrite hepatique,* Brochant; *Leberkies,* Werner. *Magnetic Pyrites, Fer ſulphuré fernſere, ou magnetique,* Haüy; *Magnetkies,* Werner. *Foliated Magnetic Pyrites, Blathicher magnetkies,* Werner. For an account of theſe ſpecies, ſee PYRITES, and IRON-ORE.

IRON-STONE, *Magnetic, Common, Fer oxydulé,* Haüy; *Gemeiner*

Gemeiner magnetſtein, Werner. This ore is highly magnetic with polarity. According to Berzelius, it contains

Peroxyd of iron - - -	71.86
Protoxyd of iron - - -	28.14
	100

It occurs in various parts of the world, chiefly in primitive mountains; it is found at St. Juſt in Cornwall, and Taviſtock in Devonſhire.

Iron-ſand, or *Sandy Magnetic Iron-ſtone*, *Fer oxydulé titanifere*, Haüy, (ſee Iron-ore,) occurs in volcanic and baſaltic rocks, forming a component part of many black lavas, and in the ſands of rivers. According to Cordier, its conſtituent parts are,

Iron-ſand, Teneriffe.	
Oxyd of iron - - -	79.2
Oxyd of titanium - -	14.8
Oxyd of chrome, a trace -	
Oxyd of manganeſe - -	1.6
Silex and alumine - -	0.8
	96.4

According to Thompſon,

River Dee, Aberdeenſhire.	
Oxyd of iron - - -	85.3
Oxyd of titanium - -	9.5
Arſenic - - - - -	1.0
Silex and alumine - -	1.5
	97.3

Earthy Magnetic Iron-ſtone; Fer oxydulé fuligineux, Haüy; *Ochriger magneteiſenſtein*, Werner.—The colour is blueiſh-black; it is opaque, ſoft, ſectile, and eaſily frangible. It appears to be common magnetic iron-ſtone in a ſtate of decompoſition. Common magnetic iron-ſtone and iron-ſand are diſtinguiſhed from iron-glance by the colour of the ſtreak, which is black; but that of iron-glance is red. According to Mr. Jameſon, Werner was the firſt who obſerved that magnetic iron-ſtone does not poſſeſs the magnetic property when at a depth in the earth, but it acquires it after expoſure to the atmoſphere.

Specular Iron-ore, or *Common Iron Glance; Fer oligiſte*, Haüy; *Eiſenglanz*, Werner.—This ore, according to different analyſes, appears to contain about 90 *per cent.* of oxyd of iron. See Iron-ores.

Scaly Red Iron-ore, or *Iron Froth; Fer oligiſte rouge luiſant*, Haüy; *Rother eiſenrahm. Ochry Red Iron-ſtone; Fer oxydé rouge groſſier; Ochriger rotherſenſtein*, Werner.

Compact Red Iron-ſtone; Fer oligiſte compacte, Haüy; *Dichter rotherſenſtein*, Werner.

Red Hematite, or *Fibrous Red Iron-ſtone; Fer oligiſte concretioné*, Haüy; *Rother glaſskopf*, Werner. See Iron-ores.

Scaly Brown Iron-ore; Brauner eiſenrahm, Werner. *Ochry Brown Iron-ſtone; Fer oxydé pulverulent*, Haüy. *Compact Brown Iron-ſtone; Fer oxydé brun compacte*, Fr.; *Dichter braun eiſenſtein*, Werner. *Brown Hematite; Fer oxydé hematite brun*, Haüy; *Brauner glaſskopf*, Werner.—Brown iron-ſtone is diſtinguiſhed from red iron-ſtone by its red ſtreak and inferior ſpecific gravity: it alſo contains more water, the brown iron-ſtone being an hydrate. This ore, according to profeſſor Jameſon, makes but indifferent caſt-iron, but affords good malleable iron and excellent ſteel. See Iron-ore.

Compact Black Iron-ſtone; Dichter ſwarzeiſſenſtein. Black hematite; Mine de fer noire compacte, Fr.; *Schwarzer glaſskopf*, Werner.—When melted with borax before the blow-pipe, it yields a violet-blue glaſs; hence it is conjectured to contain much manganeſe.

Sparry Iron-ſtone; Chaux carbonatée ferrifere aver manganeſe, Haüy.

Clay Iron-ſtone; Fer oxydé maſſif, Haüy; *Thoneiſonſtein*, Werner. See Iron-ore, and Clay *Iron-ſtone*, *Addenda*.

Reddle; *Argile ocreuſe rouge graphique*, Haüy; *Roëthel*, Werner.

Columnar Clay Iron-ſtone; Fer argilleux bacillaire, Fr.

Lenticular Clay Iron-ſtone; *Fer oxydé brun granuleux ou lenticulaire*, Fr. (See Iron-ore.)—The following analyſis of this ore is given by Daubuiſſon, Journal des Mines, 1810.

Peroxyd of iron - - -	73
Water - - - - - -	14
Silex - - - - - -	9
Peroxyd of manganeſe - -	1
Loſs - - - - - -	3
	100

Jaſpery Clay Iron-ſtone. See Iron-ore.

Reniform Clay Iron-ſtone; Fer oxydé geodique, Haüy.—The conſtituent parts of this ore are ſtated by Daubuiſſon.

Peroxyd of iron -	76	78
Water - - -	14	13
Silex - - -	5	7
Oxyd of manganeſe	2	a trace
Alumine - - -	0	1
	97	99

See Iron-ore.

Pea-ore, or *Piſiform Iron-ore; Fer oxydé globuliforme*, Haüy; *Bohnerz*, Werner. See Iron-ore.

Bog Iron-ore. See Iron-ore, and Bog *Iron-ore*, *Addenda*.

Pitchy Iron-ore; Fer oxydé reſinite.—The pitchy iron deſcribed under the article Iron-ores appears to be a phoſphate of iron: later mineralogiſts deſcribe it as an oxyd and ſulphate of iron. It is a rare ore, having been found only in one mine near Freyberg, and in the diſtrict of Pliſs in Upper Sileſia. Its colour is greyiſh-black, paſſing into dark liver-brown. It is ſaid to occur forming cruſts. It has a ſplendent or ſhining reſinous luſtre. The fracture is imperfectly conchoidal: it is compoſed of granular diſtinct concretions: it is tranſlucent on the edges: the ſtreak is lemon-yellow: it is ſoft. When placed in water, it becomes ſemitranſparent and vitreous. According to Klaproth, its conſtituent parts are,

Oxyd of iron - - -	67
Sulphuric acid - - -	8
Water - - - - -	20
	95

Blue Iron-ore; Blue Iron Earth; Fer phoſphaté terreux, Haüy. (See Iron-ore.) According to Klaproth, this ore contains,

Oxyd of iron	47.50
Phoſphoric acid	32.0
Water	20
	99.5

Chromate of Iron. See Chrome, and Chromate *of Iron, Addenda.*

Cube Ore. See Ores *of Iron.*

Muriate of Iron, Native, or *Pyroſlamite, Fer muriaté,* Fr. has a liver-brown colour, inclining to piſtachio-green. It occurs cryſtallized in ſhort ſix-ſided priſms. The terminal planes of the cryſtals are ſhining and pearly, the lateral planes, when clear, are ſhining and vitreous. It has a foliated ſtructure and four-fold cleavage, the moſt diſtinct of which is parallel with the terminal planes. It is tranſlucent on the edges, and yields a browniſh-white ſtreak. Its ſpecific gravity is 3.08. It is inſoluble in water, but ſoluble in muriatic acid, except a ſmall reſiduum of ſiliceous earth. Before the blow-pipe, it gives out copious fumes of oxy-muriatic acid. This is a very rare ore of iron.

The following table of the annual quantity of iron raiſed and ſmelted in different parts of Europe, is extracted from the ſecond edition of Jameſon's Mineralogy, vol. ii. p. 314.

	Quintals of 100 Pounds each.
Great Britain	5,000,000
France	4,500,000
Ruſſia	1,075,679
Sweden	1,500,000
Auſtria	1,010,400
Pruſſia, after the treaty of Tilſit	322,053
Kingdom of Weſtphalia in 1808	187,411
Spain	180,000
Daniſh ſtates	135,000
Bavaria and the Tyrol	110,000
Kingdom of Saxony	80,000

The United States of America, without including Louiſiana and the Indiana territory, are ſaid to yield 480,000 quintals, and, according to Dr. Bruce, the value of the iron and manufactured articles of iron in the United States is from twelve to fifteen millions of dollars. The annual importation, including bar-iron and every article of iron or ſteel, is eſtimated at four millions.

Iridium, an alloy of iridium with oſmium. See Osmium, *Addenda.*

Iserine. See Titanium.

Jade, *Jade-Nephrite,* Fr. See Nephrite, *Addenda.*

Jasper. (See Jasper.) In that article it is ſtated, that common jaſper is excluſively found in veins: this is not ſtrictly correct, for jaſper occurs in irregular beds and maſſes in the argillaceous ſchiſtus, which covers the granite of the Grampian-hills in Kincardineſhire. Jaſper occurs in ſome of the beds of manganeſe near Exeter.

Jenite. See Yenite.

Jet *Pitch-coal, Jayet,* Fr., has a black colour, and yields a browniſh-black ſtreak. It occurs maſſive, and in the ſhape of branches. Jet has a ligneous ſtructure. The fracture is large and perfect conchoidal, with a ſhining reſinous luſtre. It becomes electric by friction, and burns with a greeniſh flame and bituminous odour. Jet, according to the experiments of Dr. Macculloch, contains vegetable extract on diſtillation; but when heated under compreſſion, it is converted into true mineral coal. For ſome account of the localities of jet, ſee Jet.

Kaolin. See Porcelain *Earth, Addenda.*

Kyanite, or *Cyanite; Diſthené,* Haüy; *Sappare,* Sauſſure. Its colours are blueiſh, or grey ſky-blue, and pale blueiſh-green. The white varieties are partially ſhaded with blue. It occurs cryſtallized and maſſive. The form of the cryſtals are an oblique four-ſided priſm, with two oppoſite broad, and two oppoſite narrow planes. This is the primitive cryſtal. It occurs alſo truncated on the two oppoſite acute lateral edges, forming an hexahedral priſm; ſometimes all the lateral edges are truncated; and ſometimes two priſms are joined by their broader lateral planes, forming a twin cryſtal. The narrow lateral planes are longitudinally ſtreaked. The luſtre is ſhining and pearly, and that of the broad planes is ſometimes ſplendent. Kyanite has a lamellar ſtructure, with a cleavage parallel to the planes of an oblique tetrahedral priſm; that parallel with the broad lateral planes is the moſt diſtinct. The ſtructure of amorphous kyanite is more or leſs curvedly lamellar, paſſing into bladed. It is tranſlucent or tranſparent; it ſcratches glaſs, and is eaſily frangible. The ſpecific gravity is 3.47 to 3.51. Some of the cryſtals become poſitively electric, others negative; hence the name diſthene was given to it by Haüy, on account of its double electrical powers. It is infuſible before the blow-pipe. According to Klaproth, its conſtituent parts are,

Alumine	55.5
Silex	43
Oxyd of iron	0.5
	99.0

According to Langier,

Alumine	55.30
Silex	38.50
Lime	0.50
Oxyd of iron	2.75
	97.05

It occurs in primitive mountains, in mica-ſlate, talc-ſlate, and white-ſtone. It has been found at Boharn, in Bamfſhire, and Bamhory, Aberdeenſhire. In India it is cut and poliſhed, and ſold as an inferior kind of ſapphire. Sometimes cryſtals of kyanite may be ſeen joined and intermixed with grenolite, (ſee Grenolite,) which ſhews the near alliance of theſe minerals, which have alſo nearly the ſame chemical compoſition.

Labrador *Felſpar.* See Felspar.

Labrador *Hornblende.* See Hyperstene, *Addenda.*

Lapis-Lazuli. See Lazuli.

Latialite. See Haüyne, *Addenda.*

Laumonite. See Zeolite.

Lazmestone. See Lazuli.

Lazulite. See Lazulite.

Lead-Ores. (See Lead, where eleven ſpecies of lead-ore are deſcribed.) The antimonial lead-ore is called the triple ſulphuret of lead. Four other ſpecies of lead-ores have ſince been deſcribed; cobaltic lead-ore, native minium, arſeniate of lead, and muriate of lead.

Cobaltic Lead-ore. has a freſh lead-grey colour, and a ſhining metallic luſtre. It occurs minutely diſſeminated, and in extremely minute cryſtals, aggregated like moſs; it is opaque, ſoft, and ſectile. Before the blow-pipe it ſplits into ſmall pieces, and communicates a ſmall blue colour to borax.

Native Minium; Plomb oxydé rouge, Haüy.—It has a ſcarlet-red colour. It occurs maſſive and pulverulent; when examined with a lens, it exhibits a cryſtalline ſtructure, like galena, in which it is generally found. Before the blow-pipe, on charcoal it is firſt converted into litharge, and then into metallic lead. This mineral is probably produced by the decompoſition of galena, which it incruſts. It has been found at Graſſington, and other parts of Craven, in Yorkſhire.

Muriate of Lead, or Corneous Lead-Ore.—Its colours are greyiſh or yellowiſh-white, paſſing into wine-yellow. It occurs cryſtallized in cuboidal priſms, either ſimple, or terminated by tetrahedral pyramids, or bevelled on the edges. It exhibits a lamellar ſtructure, with joints in three directions parallel to the faces of a cuboidal priſm; the croſs fracture is conchoidal; it has a ſplendent adamantine luſtre; is more or leſs tranſparent. It is very ſoft and frangible. On expoſure to the blow-pipe, on charcoal it melts into an orange-coloured globule, and appears reticular externally, and of a white colour when ſolid; if melted again, it becomes white; and on increaſe of the heat the acid flies off, and minute globules of lead remain. According to Klaproth, its conſtituent parts are,

Oxyd of lead - - -	85.5
Muriatic acid - - -	8.5
Carbonic acid and water -	6
	100

Arſeniate of Lead, or *Reniform Arſeniate of Lead; Plomb arſenié compacte*, Haüy.—Its colours in the freſh fracture are reddiſh-brown and browniſh-red; externally ochre-yellow and ſtraw-yellow; internally the luſtre is ſhining and reſinous; the fracture is conchoidal, inclining to uneven; it is opaque, ſoft, and brittle. The ſpecific gravity is 3.93. This ore has hitherto been found only in one mine near Nertchinſk, in Siberia. It occurs in reniform and tuberous maſſes; it is inſoluble in water. Before the blow-pipe, on charcoal it gives out arſenical vapours, and is more or leſs perfectly reduced. Its conſtituent parts are,

Oxyd of lead - - -	35
Arſenic acid - - -	25
Water - - - -	10
Oxyd of iron - - -	14
Silver - - - -	2.5
Silex - - - -	7
Alumine - - - -	2
	95·5

Filamentous Arſeniate of Lead, Plomb arſenié filamentena, Haüy, occurs cryſtallized in ſmall acicular priſms, or in delicate ſilky filaments, at St. Foix, in the department of Saône and Loire, in France.

Earthy Arſeniate of Lead occurs in cruſts, in the ſame mine with the filamentous. Its colour is yellow; it has an earthy fracture; is ſoft and friable. This ore has alſo been found aſſociated with white lead-ore, copper-ores, and quartz, in the hill of Horpie, in Oiſans.

Indurated Earthy Lead-Ore, Plomb carbonatée teneuz, Fr. deſcribed as lead-earth under the article Lead-Ores, has been analyſed by John. Its conſtituent parts are,

Oxyd of lead - - -	66
Carbonic acid - - -	12
Water - - - -	2.25
Silex - - - -	10.50
Alumine - - - -	4.75
Iron and oxyd of manganeſe	2.25
	97·75

This ore occurs in conſiderable quantities in ſome of the mines in Craven, in Yorkſhire, and is ſmelted as a rich ore of lead.

Conchoidal Phoſphate of Lead contains a ſmall portion of arſenic and muriatic acid. It differs from green lead-ore, deſcribed under the article Lead-Ore. When cryſtallized, the planes of the cryſtals are generally convex. It occurs alſo ſtalactitic, reniform, and botryoidal. The colour is orange-yellow, paſſing into lemon-yellow and red; the fracture is conchoidal; it is tranſlucent; internally the luſtre is ſhining and reſinous. Its ſpecific gravity is 7.26. According to Langier, its conſtituent parts are,

Oxyd of lead - - -	76.8
Phoſphoric acid - - -	9
Arſenic acid - - -	4
Muriatic acid - - -	7
Water - - -	1.5
	98·3

According to Roſe,

Oxyd of lead - - -	77·5
Phoſphoric acid - - -	7·5
Arſenic acid - - -	12·5
Muriatic acid - - -	1·5
	99

This ore has been found in Huel Unity mine, Cornwall.

The greateſt quantity of lead is raiſed in England of any country in Europe. The following table contains the annual amount of lead in quintals from the following countries:

	Lead in Quintals.
Great Britain - -	250,000
France - - - - -	60,000
Weſtphalia in 1809 - -	59,771
Auſtrian dominions -	45.809
Spain - - - - -	32,000
Pruſſia, after the treaty of Tilſit	12,992
Saxony in 1808 - -	10,000
Ruſſia - - - - -	10,000
Bavaria and the Tyrol -	400
	480,972

Leelite, a mineral very recently diſcovered at Gryphyla, in Sweden, of which we have only the following deſcription. It has a red colour, the luſtre and tranſparency of horn, and the hardneſs of flint. The ſpecific gravity is 2.71. Its conſtituent parts are,

Silex	75
Alumine	22
Manganeſe	2.50
Water	.50
	100

LEPIDOLITE. (See LEPIDOLITE.) When that article was written, it was ſuppoſed that this mineral was excluſively found on Mount Hradiſco, in Moravia. Lepidolite has ſince been diſcovered in Saxony, Sweden, Norway, France, the Iſland of Elba, and in ſeveral parts of Scotland, particularly in lime-ſtone, near Dalmally, in a ſlate-quarry at Ballachuliſh, at the head of Loch Fyne, and at Glentilt in Perthſhire.

LEUCITE, *Amphigene*, Haüy. See LEUCITE.

LIEOCITE, or *Yenite*. See YENITE.

LIME-STONE. See LIME-STONE and GEOLOGY, *Addenda*.

LITHOMARGE, *Friable*. (See LITHOMARGE.) This variety is characteriſed by its ſcaly particles ſoiling, and low degree of coherence. According to Klaproth, it contains

Silex	32.
Alumine	26.50
Iron	21.
Muriate of ſoda	1.50
Water	17.
	98

LITHOMARGE, *Indurated; Argil lithomarge*, Haüy. (See LITHOMARGE.) This variety occurs in veins in porphyry, gneiſs, grey wacke, and ſerpentine, and in druſy cavities in baſaltic rocks. It is intermediate between ſteatite and variegated clay, and appears ſometimes to paſs into meerſchaum.

LYDIAN-*Stone*. See FLINTY *Slate*, and HORN-STONE, *Addenda*.

LYTHRODES, a mineral diſcovered in Norway, which appears allied to elaolite, and was called lythrodes by Karſten, becauſe when firſt broken it appears as if ſpotted with coagulated blood. Its colour is aurora-red, paſſing into browniſh-red or brown; it is occaſionally marked with cream-yellow and greeniſh ſpots. It occurs maſſive and diſſeminated; it has an imperfect foliated ſtructure. The luſtre of the ſurface is reſinous and glimmering. The croſs fracture is ſplintery and dull: it is feebly tranſlucent on the edges; it is hard. The ſpecific gravity is 2.5. According to John, the conſtituent parts are,

Silex	44.62
Alumine	37.36
Lime	2.75
Soda	8.00
Water	6.
Oxyd of iron	1.
	99.73

MACLE, a name given by the French mineralogiſts to chiaſtolite or *Hollow ſpar;* which ſee.

MADREPOSITE, a variety of black lime-ſtone, ſo called on account of its occurring in radiated or diverging priſmatic concretions, which are ſuppoſed to reſemble the ſtars of madrepores: it has a minute and indiſtinctly curvedly lamellar ſtructure. When rubbed, it emits a ſtrong ſmell of ſulphuretted hydrogen gas. Patron ſuſpects that this mineral is faſciculated arragonite. According to Klaproth, it conſiſts of

Carbonate of lime	93.
Carbonate of magneſia	0.50
Carbonate of iron	1.25
Carbon	0.50
Siliceous ſand	4.50
	99.75

Other analyſes give a ſmall portion of ſulphur and manganeſe.

MAGNESIAN *Lime-ſtone*, or *Compact Dolomite*, has generally a yellowiſh-brown or yellowiſh-grey colour, a granular ſtructure, a glimmering or gliſtening luſtre, and diſſolves ſlowly in acids; theſe characters diſtinguiſh it from common lime-ſtone. The ſpecific gravity is about 2.8. It contains fewer petrifactions than moſt common lime-ſtones. It occurs in regular ſtrata on the eaſtern ſide of England from Nottinghamſhire to Sunderland. It occurs alſo in amorphous maſſes, and variouſly contorted beds, and alſo forming a kind of lime-ſtone breccia in the red marle. According to Tennant, its conſtituent parts are,

Yorkſhire.	
Lime	30
Magneſia	20
Carbonic acid	47
Alumine	1
	98

According to Thomſon,

Near Sunderland.	
Carbonate of lime	56.80
Carbonate of magneſia	40.84
Carbonate of iron	0.36
Inſoluble matter	2.
	100

MAGNESITE, *Magneſia carbonatée*, Haüy. It occurs in amorphous maſſes and tuberous ſpongiform. The fracture is ſplintery and large, and flat conchoidal. It is opaque, earthy. The colour is yellowiſh-grey or white, with ſpots and dendritic delineations of blackiſh-brown. Magneſite yields to the nail externally, but internally it is harder than calcareous ſpar; it feels ſomewhat meagre, adheres to the tongue, and abſorbs from nine to ten *per cent.* of water when immerſed in it, and becomes ſemi-tranſparent on the edges. It is ſlowly ſoluble with efferveſcence in concentrated muriatic acid. Before the blow-pipe it is infuſible, but becomes ſufficiently hard to ſcratch glaſs. Its ſpecific gravity is 2.88. According to Bucholz, the conſtituent parts are,

Magneſia	45.52	to	48
Carbonic acid	47.00	to	52
Silex	4.50		—
Alumine	0.50		a trace
Manganeſe	0.50		a trace
Lime	0.08		a trace
Water	2.		
	100.10		100

It is found in ſerpentine in Moravia, along with meerſchaum and earthy talc. It is diſtinguiſhed from meerſchaum by its colour, external ſhape, fracture, meagre feel, and weight.

MAGNETIC *Iron-Stone*, and *Magnetic Pyrites*. See IRON-*Stone*, and PYRITES.

MALACHITE. See COPPER-*Ores*.

MANGANESE-*Ores*. See MANGANESE and WADD.

MARL. See MARLE.

MEERSCHAUM. (See MEERSCHAUM.) This mineral, of which an account is given under the article, appears to be hydrate of magneſia combined with ſilex; it is ſtated by Mr. Jameſon to be fuſible on the edges into a white enamel. It occurs in veins in the ſerpentine of Cornwall. In Natolia it occurs in beds under the ſoil, and from 600 to 700 men are employed in digging it. When firſt raiſed, it is ſoft and greaſy, and lathers with water like ſoap; hence it is uſed by the Tartars for waſhing. Meerſchaum is extenſively manufactured in Turkey into tobacco-pipes, which are boiled in oil or wax; afterwards they are baked, and then poliſhed.

MEIONITE. See MEIONITE.

MELANITE, *Grenat noire*, Haüy. See GARNET.

MELLITE and MELLILITE, *Honey-Stone*. See MELLITE.

MENACHANITE. See TITANIUM.

MENILITE, *Quarz reſinite ſubluiſante brunatre*, Haüy. See MENILITE.

MERCURY-*Ores*. See MERCURY, and CINNABAR, *Addenda*.

MESOTYPE. See ZEOLITE.

METEORIC, *Native Iron; Fer natif meteorique*, Haüy. The colour is pale ſteel-grey, which inclines to ſilver-white, like platina; it is generally covered with a thin brown cruſt of oxyd of iron; it occurs in racemoſe or globular maſſes, and alſo minutely diſſeminated in meteoric ſtones. (See STONE, *Meteoric*.) The external ſurface is ſmooth and glimmering; the internal glimmering or gliſtening with a metallic luſtre: it yields a ſplendent ſtreak, and is malleable and flexible, but not elaſtic. The ſpecific gravity of meteoric iron is from 6.48 to 7.57: it is magnetic. According to Mr. Howard, the conſtituent parts are,

Iron	96.5	96.75
Nickel	3.5	3.25

All the meteoric iron which has yet been examined contains a portion of nickel; the latter metal is alſo found in moſt of the meteoric ſtones. The phenomena attending the deſcent of meteoric iron are preciſely ſimilar to thoſe which accompany the fall of meteoric ſtones. In moſt inſtances, loud detonations and brilliant light or fire-balls have preceded the fall. Theſe fire-balls appear to be the metallic or mineral matter in a ſtate of vivid ignition. Pliny mentions the fall of a maſs of ſpongy iron from the atmoſphere in Lucania fifty-ſix years before the Chriſtian era. Avicenna mentions a maſs of iron weighing fifty pounds, which fell from the air near Lurgea; and Averrhoes ſays, a maſs of iron weighing one hundred pounds fell at Cordova in Spain. In the year 1164, a ſhower of iron fell in Miſnia. (Georg. Fabri. Rer. Miſnia, lib. i. p. 32.) In the year 1552 fire-ſtone or maſſes of iron fell near Miſkos, in Tranſylvania. And among numerous other inſtances in the year 1751, a fire-ball burſt with a loud exploſion in the biſhopric of Agram, in Croatia: two maſſes of iron fell from it; the one, which weighed ſeventy-two pounds, ſunk a conſiderable depth into the earth; and the other, which was ſixteen pounds, fell on the ſurface of a meadow, at the diſtance of 2000 paces from the former; the larger is ſtill preſerved in the Imperial cabinet of Vienna.

Numerous maſſes of native iron occur in various parts of the world, which agree in external appearance and chemical compoſition with thoſe whoſe deſcent from the air is well atteſted. Profeſſor Pallas diſcovered a maſs of native iron, weighing about 1600 pounds, on the ſurface of a hill between Kraſnojark and Abakunſk, in Siberia. It is conſidered as a holy relic by the natives, who believe that it fell from heaven.

Several maſſes of native iron have been met with in Mexico; and many years ſince, a maſs of native iron, calculated to weigh about thirty tons, was diſcovered in the diſtrict of St. Jago de Eſtro, in South America. It lies in the middle of a great plain, where no rock or mountain is within an hundred miles of it. According to Howard, it conſiſts of 90 parts of iron, and 10 of nickel. Similar maſſes have been found in Africa, North America, and the Eaſt Indies.

MICA. See MICA.

MIEMITE, *Granular*, is a variety of magneſian lime-ſtone, firſt found at Miemo in Tuſcany: it has a light green or greeniſh-white colour; it occurs maſſive and cryſtallized, in ſmall flat double three-ſided pyramids, in which the lateral planes of one pyramid are ſet on the lateral edges of the other; the cryſtals are often joined by the edges, or interfect each other. It is tranſlucent, and has internally a ſplendent and pearly luſtre. The ſtructure is curvedly lamellar. Its ſpecific gravity is 2.88: it diſſolves ſlowly in acids. The conſtituent parts are,

Carbonate of lime	53
Carbonate of magneſia	42
Carbonate of iron and manganeſe	3
	98

Priſmatic Miemite occurs in low, ſmall, three-ſided pyramids, deeply truncated on the edges; it appears to contain leſs magneſia than the preceding.

MILK *Quartz*, or *Roſe Quartz*. See QUARTZ.

MINERAL *Caoutchouc*, or *Elaſtic Bitumen*. (See BITUMEN.) This ſingular mineral has been hitherto only found in the Odin mine, near Caſtleton in Derbyſhire. According to the analyſis of Klaproth, it contains in 100 grains,

	Cubic Inches.
Carbonated hydrogen	38
Carbonic acid	4
	Grains.
Bituminous oil	73
Acid water	1.50
Carbon	6.23
Lime	1.50
Silex	.75
Sulphate of lime	.50
Alumine	.25

MINERAL *Oil*. See PETROLEUM.

MINERAL *Pitch*, *Earthy*, or *Maltha*. See BITUMEN.

MINERAL *Pitch*, *Slaggy*, or *Aſphaltum*. See BITUMEN.

MISPICEL, *Arſenical Pyrites*. See ARSENIC, and PYRITES.

MOLYBDENA, or *Sulphuret of Molybdena; Molybdene ſulphurée*, Haüy; is of a bright lead-grey colour. It occurs maſſive, diſſeminated in plates, and cryſtallized. The form of the cryſtals is a regular ſix-ſided table, or a very ſhort ſix-ſided priſm, terminated by two low ſix-ſided pyramids. The luſtre is metallic and ſhining. The ſtructure is lamellar, with a ſingle cleavage parallel with the lateral planes of the table. It is ſectile and ſomewhat flexible, but not elaſtic. Molybdena is unctuous to the touch, and leaves a mark on paper like plumbago, but on white porcelain it makes a greeniſh mark. Its ſpecific gravity is from 4.5 to 4.7. Before the blow-pipe it gives out a ſulphureous odour, and when urged by the utmoſt force, it yields a white vapour, and a pale blue flame; in carbonate of ſoda, it is ſoluble with violent effervefcence. The characters here given, particularly its mark on china, ſerve to diſtinguiſh molybdena from graphite and plumbago. (See Molybdenum, and Sulphur.) According to Bucholz, its conſtituent parts are,

Molybdenum	60
Sulphur	40
	100

This mineral occurs in ſome parts of Scotland, and in granite at Coldbeck-fell in Cumberland. It is found alſo at Huel-Gorland, Cornwall.

Molybdena *Ochre* is a yellow colour, paſſing into yellowiſh-green; it is friable and dull, and occurs incruſting molybdena, on which it is doubtleſs formed by the decompoſition of the latter mineral.

Moon-stone, a variety of adularia. See Adularia, and Felspar.

Morass-*Ore*. See Bog *Iron-Ore*.

Mountain *Cork*, or *Mountain Leather; Aſbeſte treſſe*, Haüy. It is ſometimes called mountain fleſh and mountain pader. It occurs in thin flexible plates like leather, or in thicker and leſs flexible pieces like cork-wood. The colours are yellowiſh and greyiſh-white; it yields to the nail, is meagre to the touch, and ſo light as to ſwim on water. The ſtructure is finely and promiſcuouſly fibrous. According to Bergmann, its conſtituent parts are,

Silex	56.2
Magneſia	26.1
Alumine	2
Lime	12.7
Oxyd of iron	3
	100

Mountain, or *Rock Wood*, or *Ligniform Aſbeſtus; Aſbeſte ligniforme*, Haüy; has a wood-brown colour, and a curved and fibrous ſtructure reſembling wood. It is ſoft, opaque, and ſectile; it is ſlightly flexible; it feels meagre. According to Jameſon, it is infuſible; it is claſſed by him in the talc family.

Muller *Glaſs*. See Hyalite.

Muriate *of Ammonia, Native*, is a frequent product of volcanoes. See Ammonia.

Muriate *of Copper*. See Copper-*Ores*.

Muriate *of Lead*, or *Corneous Lead-Ore*. See Lead-*Ore*.

Muriate *of Soda*. See Rock-*Salt* and Salt.

Muscovy *Glaſs*, the large plates of mica, which are generally brought from Siberia. (See Mica.) Theſe plates are erroneouſly called talc

Mussite, a variety of Diopside; which ſee.

Naphtha, *Bitume liquide blanchatre*, Haüy. See Bitumen.

Natrolite. See Natrolite, and Zeolite.

Natron, *Soude carbonatée*, Fr. Native carbonate of ſoda is depoſited on the ſides of lakes, or on the ſurface of the ground, and generally containing muriate and ſulphate of ſoda. See Soda.

Radiated Natron, Soude carbonatée aciculaire, Fr. occurs in Africa, and forms a conſiderable article of commerce. This variety is nearly pure carbonate of ſoda, containing, according to Klaproth,

Water of cryſtallization	22.50
Carbonic acid	38
Pure ſoda	37
Sulphate of ſoda	2.50
	100

Nepheline, or *Sommite*. (See Sommite.) This mineral occurs in the lava of Veſuvius, and bears a near reſemblance to Meionite (which ſee). Nepheline is cryſtallized in ſix-ſided priſms or tables, but the cryſtals of meionite are four-ſided priſms. The latter mineral is eaſily fuſible, but nepheline melts with difficulty. Nepheline has a four-fold cleavage, three of which are parallel with the lateral planes, and one to the terminal planes of the priſm. Tranſparent pieces of nepheline become cloudy in nitric acid; hence it was named by Haüy from the Greek word νεφελη, *a cloud.*

Nephrite, or *Jade; Jade nephritique*, Haüy. The colour is leek-green, paſſing to greyiſh-green; it occurs maſſive. The fracture is uneven and ſplintery, with a glimmering and ſomewhat greaſy luſtre; it is tranſlucent. Nephrite yields to the knife, but ſcratches glaſs; it has a greaſy feel, is very tough. The ſpecific gravity is from 2.9 to 3. Before the blow-pipe, it melts into a white enamel. According to Kaſtner, its conſtituent parts are,

Silex	50
Alumine	10
Magneſia	31
Iron	5.50
Chrome	0.05
Water	2.75
	99.30

Nephrite occurs in granite veins in the Hartz in Saxony; the moſt beautiful varieties are from Perſia and Egypt. In Turkey it is cut into handles for ſabres and daggers. It was formerly believed that this ſtone had the property of relieving nephritic complaints; hence it has been called nephritic ſtone. A ſlaty kind of nephrite is uſed by the inhabitants of New Zealand for hatchets, and hence has been called axe-ſtone. Nephrite is nearly allied to ſerpentine and ſteatite; there is alſo a kind of nephrite which is more nearly allied to felſpar, and is claſſed by Mr. Jameſon with the felſpar family; it is called ſauſſurite, after the celebrated geologiſt Sauſſure, by whom it was firſt diſcovered. See Saussurite, *Addenda*.

Nickel-*Ores* are, *native nickel, copper nickel,* and *nickel ochre*.

Native Nickel has only been found hitherto in the Adolphus mine at Johanngeorgenſtadt in Saxony, and at Joachimſtal in Bohemia. Its colour is bronze-yellow, but is frequently tarniſhed greeniſh-grey, or ſteel or lead-grey, and occaſionally inveſted with a cruſt of brown iron-ſtone. It occurs in capillary cryſtals, which are either promiſcuouſly or ſcopiformly aggregated. Internally the luſtre is ſplendent and metallic, externally ſhining or ſplendent when untarniſhed. The croſs fracture is even paſſing into flat conchoidal; it is eaſily frangible, and rather hard; it is more or leſs flexible and elaſtic. Before the blow-pipe, on charcoal it melts into a metallic globule, without any ſmell of arſenic or ſulphur, which ſerves to diſtinguiſh it from capillary pyrites. Native nickel contains the metal nickel with a minute portion of cobalt. See NICKEL.

Copper Nickel, Nickel arſenical, Haüy, has a copper or crimſon colour, of different degrees of intenſity, and often tarniſhed grey or black. It occurs maſſive and diſſeminated, and ſometimes reticulated, botryoidal, or dendritical, and very rarely cryſtallized in ſix-ſided tables; it has a ſhining metallic luſtre. The fracture is imperfectly conchoidal, paſſing into granular and uneven. It is uſually compact, but ſometimes occurs in granular diſtinct concretions. It yields with difficulty to the knife, and is difficultly frangible. Its ſpecific gravity is from 6.6 to 7.5. Before the blow-pipe it gives out an arſenical vapour, and then fuſes with difficulty into a dark ſcoria, mixed with metallic grains: it is ſoluble in nitro-muriatic acid, forming a dark green liquor, from which cauſtic alkali throws down a pale green precipitate, which diſtinguiſhes it from copper; the precipitate of the latter is a dark brown. This ore is a compound of nickel and arſenic; it occurs in ſmall quantities in the lead-mines of Lead-hills and Wanlockhead, in Scotland, and in various parts of the continent of Europe, generally in veins in primitive mountains: it nearly reſembles native copper, but may be diſtinguiſhed by its brittleneſs.

Black Nickel-Ore has a greyiſh or browniſh-black colour; it occurs maſſive, diſſeminated, and in cruſts; it is dull, has an earthy fracture, but becomes reſinous and ſhining in the ſtreak; it ſoils ſlightly. In nitric acid it forms an apple-green ſolution, which lets fall a precipitate of white arſenic. It is rather a rare mineral, and is found in veins with other ores of nickel, and is ſuppoſed to be formed by the decompoſition of copper nickel.

Nickle Ochre, Nickel oxydé, Haüy, has an apple-green colour, but on expoſure to the air becomes greeniſh-white: it is generally found as a thin coat or cruſt, and ſeldom maſſive or diſſeminated; it is in looſe powder or friable, meagre to the touch, and light. It is infuſible before the blow-pipe, but with borax it forms a red colour; in cold nitric acid it remains inſoluble. This ore occurs at Lead-hills and Wanlockhead, in Scotland, and in Saxony and France.

NIGRINE. See TITANIUM.

NITRE, *Native, Potaſſe nitratée,* Fr. occurs in flakes, cruſts, and capillary cryſtals on the ſurface of the ground. In many countries, it appears to form at certain ſeaſons of the year. It abounds in many of the plains of Spain, Hungary, the Ukraine and Podalia, and on the walls and floors of chalk caves in France. It is very abundant in India, Egypt, and in ſome parts of North and South America. See POTASH, *Nitrate of.*

OBSIDIAN, or *Volcanic Glaſs; Lava vitreuſe obſidienne,* Haüy. (See OBSIDIANUS LAPIS.) This mineral bears ſo cloſe a reſemblance to dark-green bottle-glaſs as ſcarcely to be diſtinguiſhed from it. Its moſt common colours are dark-grey or greeniſh, or browniſh-black; it has a vitreous and ſhining or ſplendent luſtre; the fracture is large and perfectly conchoidal. It paſſes from tranſparent to nearly opaque, according to the intenſity of the colour; it ſcratches glaſs, but is eaſily frangible. The ſpecific gravity varies from 2.34 to 2.38. The black obſidian of Iceland is ſaid to melt into a pale aſh-grey veſicular glaſs on charcoal; that of Spaniſh America loſt its black colour when expoſed to heat, became white, ſpongy, and fibrous, and increaſed to ſeven or eight times its original bulk; hence it appears that ſome gaſeous ſubſtance eſcapes. Humboldt conjectures, that the gas evolved during the volcanic fuſion of obſidian in the interior of the earth, may give riſe to the earthquakes that agitate the Cordilleras. According to Abilgaard, the conſtituent parts of obſidian are given as under:

Obſidian of Iceland.

Silex	74
Alumine	2
Oxyd of iron	14
Loſs, ſuppoſed to be potaſh or ſoda	10
	100

According to Collet Deſcotils,

America.

Silex	72.0
Alumine	12.5
Manganeſe	2.0
Potaſh and ſoda	10.0
	96.5

Some analyſes give 1.6 lime, and only 5 of potaſh and ſoda.

Obſidian is found in a great many volcanic countries, and alſo in various parts of the world, where no volcanic fires have exiſted ſince the hiſtory of man. For a long period it was contended by Werner and his followers, that this mineral was of aqueous origin, but the appearance of obſidian, and the ſituations in which it occurs, offer deciſive proofs of its formation by fire. The mountain de la Caſtagna, in Lipari, according to Spallanzani, is wholly compoſed of it, which appears to have flowed in ſucceſſive currents, like ſtreams of water falling with a rapid deſcent and ſuddenly frozen. The obſidian is ſometimes compact and ſometimes porous and ſpongy. On the ſouth ſide of the Peak of Teneriffe, there is a ſtream of obſidian ſeveral miles in length. In the iſland of Felicuda, a current of lava intermixed with obſidian may be traced to the very crater of a volcano. Obſidian appears to be lava ſuddenly cooled, as it is well known, ſince the experiments of Mr. Keir, Mr. Watt, and ſir James Hall, that lava or baſalt cooled ſuddenly forms black glaſs; and we have a ſpecimen of lava from Veſuvius, which flowed in the year 1818, one part of which is compact black lava, the other is a vitreous ſubſtance paſſing from pitch-ſtone to obſidian. See VOLCANIC *Products.*

OCTAHEDRITE, *Anataſe.* See TITANIUM.

OLIVINE. (See OLIVINE.) This mineral forms a conſtituent part of many lavas, and is of frequent occurrence in baſaltic rocks. When cryſtallized, it is in broad rectangular four-ſided priſms, which are imbedded, and ſo eaſily broken, that it is difficult to aſcertain their form; the ſtructure of the cryſtals is imperfectly lamellar, in a direction parallel with the planes of the priſm. Werner conſiders olivine as a diſtinct ſpecies from chryſolite (ſee CHRYSOLITE), with which it is claſſed by many mineralogiſts. The colour, luſtre, and fracture of olivine and chryſolite, are not preciſely the ſame; olivine is alſo ſofter and more frangible than chryſolite. Chryſolite is more tranſparent, and has a greater ſpecific gravity, being from 3.4 to 3.34; that of olivine is 3.22 to 3.26. Olivine is often much intermixed with augit; it has generally a paler colour and greater tranſparency than the latter mineral. Olivine is ſubject to decompoſition, and when this commences it exhibits on the ſurface irrideſcent colours, but afterwards falls into an earth reſembling iron ochre.

OLIVEN-ORE, or *Olive Copper-Ore*, arſeniate of copper. See COPPER-ORES.

ONYX, a variety of chalcedony with white and grey ſtripes. See CHALCEDONY.

OPAL, *Quarz reſinite opalin*, Haüy. (See GEM.) This mineral is divided into ſeven ſub-ſpecies by Mr. Jameſon.

Precious Opal has frequently a milk-white colour inclining to blue, and diſplays brilliant and changeable reflections of green, blue, yellow, and red. It is tranſlucent or ſemi-tranſparent, and when placed between the eye and the light exhibits a beautiful yellow or blue colour. It occurs in veins in clay-porphyry, either maſſive, diſſeminated, or in plates; it has a ſhining or ſplendent vitreous luſtre, a perfect conchoidal fracture, ſcratches glaſs, and is eaſily frangible. Some varieties adhere to the tongue. Precious opal becomes white and opaque before the blow-pipe, but is infuſible. The ſpecific gravity is 2.110. According to Klaproth, the conſtituent parts are,

Silex	90
Water	10
	100

Hence it appears, that the precious opal is properly a hydrate of pure ſiliceous earth. This mineral, on account of its beauty, is employed in jewellery, and is held in great eſtimation. Jewels of opal muſt be kept with care, as they are eaſily ſcratched, and are apt to crack on ſudden changes of temperature. Precious opal is found more abundantly at Caſcherwenitza, near Kaſchau, in Upper Hungary, than in any other known ſituation. It occurs there in clay-porphyry, and mines of it have been worked for a long period; towards the end of the fourteenth century, about 300 men were employed in theſe mines. Precious opal is ſometimes ſparingly found in the baſaltic rocks, in the north of Ireland, and in the Faroe iſlands. The finer varieties of opal are named oriental opal. Taverner, however, informs us, that no precious opal is found in the eaſt, and thoſe which are ſold as oriental are brought from Hungary. Thoſe varieties of opal that adhere to the tongue are leſs tranſlucent than the others, and more dull; but when immerſed in water, they become nearly tranſparent, and acquire a beautiful play of colours. Theſe opals have received various names, as the oculus mundi, hydrophane or changeable opal. They are much prized by collectors. To preſerve their beauty, the water in which they are immerſed ſhould be perfectly pure, and they ſhould be taken out as ſoon as they have acquired their full tranſparency. If theſe precautions are neglected, the pores become filled with earthy particles depoſited from the water, and the hydrophane will remain more or leſs opaque.

Common Opal differs from precious opal, principally by its inferior luſtre and tranſparency, and the greater variety of its colours, which are either milk-white, grey, yellowiſh-white, yellow, red, or green. The ſame ſpecimen never ſhews more than one colour by reflected light, but the milk-white variety, when held oppoſite the light, tranſmits a wine-yellow colour. Common opal occurs maſſive, diſſeminated, and in ſharp angular pieces. Internally the luſtre is ſhining, ſplendent, and vitreous; the fracture is conchoidal; it ſcratches glaſs, and is eaſily frangible. Before the blow-pipe it is infuſible. The ſpecific gravity is 2.01 to 2.14. According to Klaproth, its conſtituent parts are,

	Opal of Koremutz.	of Telkobayna.
Silex	98.75	93.50
Alumine	10	
Oxyd of Iron	10	1.00
Water		5
	98.95	99.50

Common opal occurs in veins of porphyry and ſerpentine, and with chalcedony in baſaltic amygdaloid; it is found in ſome metallic veins in Cornwall. Green commom opal is ſometimes cut into ring-ſtones. The yellow variety is alſo uſed for jewellery; it has been called *wax opal* and *pitch opal*.

Fire Opal, ſo called on account of its brilliant red colours and tranſparency, is properly a variety of precious opal: it has hitherto been found only at Zimapan in Mexico. According to Klaproth, its conſtituent parts are,

Silex	92.
Water	7.75
Iron	25
	100

Mother-of-Pearl Opal, or *Cacholong*, is a milk-white variety of opal, not unlike mother-of-pearl.

Semi-opal.—Its colours are generally darker and more muddy than thoſe of common opal; ſometimes ſeveral colours occur together. Semi-opal is maſſive, diſſeminated, reniform, and botryoidal; it has a gliſtening luſtre, is more or leſs tranſlucent, is hard and eaſily frangible. The fracture is large and flat, is conchoidal; it adheres to the tongue. The ſpecific gravity is from 2. to 2.18; it is infuſible. According to Klaproth, the conſtituent parts are,

Silex	81
Alumine	3
Oxyd of iron	1.75
Carbon	5
Ammoniacal waters	8
Bituminous oil	0.33
	99.08

Semi-opal occurs in Scotland and the iſle of Rum, and in various parts of Europe: it paſſes into chalcedony and conchoidal horn-ſtone.

Wood Opal, *Quarz reſinite xyloide*, Fr. is petrified wood, penetrated with opal, and is intermediate between common opal and ſemi-opal. It has a ligneous ſtructure, and is diſtinguiſhed from wood-ſtone by its lighter colours, higher luſtre, perfect conchoidal fracture, greater tranſparency, and inferior hardneſs. Wood-opal is cut into plates, and uſed for ſnuff-boxes and ornaments.

Jaſper Opal is of various ſhades of reddiſh-yellow or reddiſh-brown; it is ſometimes veined and ſpotted; it has a ſhining luſtre, between vitreous and reſinous, and is opaque or feebly tranſlucent at the edges. It is hard, and eaſily frangible; it occurs maſſive in large and ſmall pieces, in porphyry and in veins. The ſpecific gravity is from 1.86 to 2.07; it is infuſible. According to Klaproth, the conſtituent parts are,

Silex	43.5
Oxyd of Iron	47
Water	7.5
	98

It appears to be common or ſemi-opal rendered opaque by the great intermixture of oxyd of iron.

ORIENTAL *Amethyſt*, *Sapphire*, *Ruby*, *Topaz*, and *Emerald*, names given by jewellers to varieties of the ſapphire. The blue ſapphire is the true or *oriental ſapphire;* the violet-blue is the *oriental amethyſt;* the red ſapphire, the *oriental ruby;* the yellow ſapphire, the *oriental topaz;* and the green ſapphire, the *oriental emerald.* See SAPPHIRE, &c.

ORPIMENT, *Red*, or *Realgar*, *Sulphuret of Arſenic; Arſenic ſulphurée rouge*, Fr. (See ARSENIC.) According to Klaproth, the compoſition of this ore is,

Arſenic - - -	69
Sulphur - - -	31
	100

ORPIMENT, *Yellow*, is compoſed, according to Klaproth, of

Arſenic - - -	62
Sulphur - - -	38
	100

OSMIUM occurs as a native alloy of the metal ſo called with iridium; it is found in grains along with platina in alluvial ſoil in South America. The greens have a pale ſteel-grey colour, a metallic luſtre, and lamellar ſtructure; it is harder than platina, and brittle. The ſpecific gravity is 19.5. By fuſion with nitre, it acquires a dark-black colour, but regains its luſtre and colour by heating with charcoal.

PALLADIUM is a native alloy of the metal palladium, with a minute portion of platina and iridium; it occurs in grains along with grains of platina in the alluvial gold diſtricts in Brazil. Its colour is pale-ſteel grey paſſing into ſilver-white; the ſtructure of the grains is divergingly fibrous, the luſtre metallic. The ſpecific gravity is 12.148, Lowry. Palladium is infuſible; but on the addition of ſulphur, it melts with eaſe by continuance of the heat, the ſulphur is diſſipated, and a globule of metallic palladium remains. With nitric acid, it forms a deep-red ſolution.

PARANTHINE. See SCAPOLITE.

PEARL-SPAR. (See BROWN SPAR, *Addenda.*) The name pearl-ſpar has been given to thoſe varieties of this mineral which in colour and luſtre have a ſtrong reſemblance to pearl, but it often occurs brown, black, and of various colours.

PEARL-STONE, *Lave vitreuſe perlée*, Haüy. (See PEARL-STONE.) This mineral is regarded by many mineralogiſts as a volcanic production; it is frequently intermixed with obſidian, and hence is claſſed by them as a variety of the latter mineral. It occurs in baſaltic and porphyritic rocks, in large and ſomewhat angular concretions, which are compoſed of ſmaller roundiſh concretions, and thoſe of others ſtill ſmaller. The ſurface of the concretions is ſmooth, ſhining, and pearly. The colour is grey, paſſing into pearl-grey and greyiſh-black. It is tranſlucent on the edges; it ſcarcely ſcratches glaſs, is eaſily frangible, and is fuſible with intumeſcence before the blow-pipe into a white ſpongy glaſs. This mineral has been found near Sandy Bræ, in Ireland, in the iſland of Iceland, and in Mexico; it was firſt diſcovered in Hungary, where it occurs in large beds. It is claſſed by Mr. Jameſon and Werner with obſidian, pitch-ſtone, and pumice, as forming a member of the pitch-ſtone family.

PEA-STONE, *Piſolithe*, Fr. This mineral is compoſed of carbonate of lime, ſlightly coloured yellowiſh-white or brown by the oxyd of iron; it is properly a calcareous tufa, containing rounded globules, varying in ſize, from a pea to a hazel-nut; theſe conſiſt of concentric lamellæ, and often contain in the centre a minute fragment of quartz, felſpar, or granite, and ſometimes, but rarely, a double ſix-ſided pyramid of rock-cryſtal; but in ſome inſtances, the centre of the globule is hollow. Pea-ſtone occurs in great maſſes in the vicinity of the hot ſprings at Carlſbad, in Bohemia; its formation we conceive to be analogous to that of roe-ſtone, and to be the reſult of cryſtallization; the particles included having diſpoſed the calcareous matter to cryſtallize round them, in the ſame manner as a thread or fragment of a ſtone in a ſaline ſolution, generally diſpoſes the cryſtals to ſhoot round them.

PERGASITE, the name given to a new mineral found at Erſby, near Abo, in Finland. The following imperfect account is the only one we have of its character. It has a green colour; its form is an octahedron, with a cleavage in three directions; it is harder than fluor ſpar. The ſpecific gravity is 3.11. Before the blow-pipe, it melts into a maſs with a pearly-white luſtre. Its conſtituent parts are given as under:

Silex - - - - -	42.10
Magneſia - - - - -	18.27
Lime - - - - -	14.28
Alumine - - - - -	14.08
Oxyd of iron - - -	3.52
——— of manganeſe - -	1.02
——— of an unknown metal	0.33
Fluoric acid and water -	3.90
Loſs - - - - -	2.59
	100.09

PERIDOT *Chryſolite.* See CHRYSOLITE and OLIVINE.

PETALITE, a mineral recently diſcovered in Sweden; externally, it nearly reſembles ſome varieties of quartz, but the cleavage is two-fold, parallel to the ſides of a rhomboidal priſm; two of the planes are ſplendent, and two dull. The planes meet at angles of 100° and 80°, forming a four-ſided priſm with a rhomboidal baſe. Its colour is white with a ſlight tint of pink; it ſcratches glaſs, but yields with difficulty to the knife. When expoſed to the flame of a blow-pipe it remains for ſome time infuſible, but by continued heat it exhibits a glazed ſurface, which, on examination with a lens, appears full of minute bubbles. When triturated, the powder has the whiteneſs of ſnow. It is partially ſoluble in highly concentrated nitric acid, loſing its colour, and changing to a dingy hue; the acid at the ſame time becomes clouded. The pruſſiated alkali threw down a green precipitate, and the ſolution aſſumed an amethyſtine colour, which afterwards changed to brown. The conſtituent parts of this mineral are ſtated to be,

Silex - - - - - -	80
Alumine - - - - -	15
Manganeſe - - - - -	3
And a new alkali - - -	2

This alkali proves to be the oxyd of a new metal. The new alkali has been called lithia and lithion; it has a greater capacity of ſaturating acids than any other alkali, and forms a claſs of ſalts that are remarkably deliqueſcent. With alcohol, lithion yields a roſe-coloured flame, like that communicated by ſtrontian. The metal of lithion bears a ſtrong reſemblance to ſodium. The alkali found in petalite contains 44.84 oxygen, united to a metallic baſe.

PETROLEUM, *Liquid Bitumen*, or *Mineral Oil.* (See BITUMEN.)

BITUMEN.) It is eſſentially compoſed of carbon and hydrogen, containing leſs carbon than the ſolid bitumens, or than any kind of mineral coal. In Piedmont, Perſia, Japan, and other countries, it is uſed in lamps, in place of oil, for lighting ſtreets and public buildings; it is alſo mixed with earth, and burned for warming rooms. In Ava, numerous mines are worked for mineral oil or petroleum, the ſhafts are ſunk through coal ſtrata to the coal from whence the oil iſſues; it is intermixed with water, and is ſeparated by decantation.

PHARMACOLITE, *Arſeniate of Lime*, *Chaux arſeniatée*, Haüy. Its colours are ſnow-white and milk-white, ſometimes inclining to reddiſh or yellowiſh-white. It occurs in ſmall reniform botryoidal and globular maſſes; ſometimes it incruſts other minerals, or is cryſtallized in ſmall diverging capillary cryſtals. Externally, it has a ſilky glimmering luſtre; internally, it is ſhining or gliſtening. The ſtructure is delicately radiated, either ſtraight, diverging, or ſtellular, and ſometimes fibrous. It yields to the nail, and is eaſily frangible. The ſpecific gravity is 2.5. According to Klaproth, the conſtituent parts are,

Lime - - - -	25.00
Arſenic acid - - -	50.54
Water - - - -	24.46
	100.00

According to John,

Lime - - - -	27.28
Arſenic acid - - -	46.58
Water - - - -	23.86
	97.72

There is an earthy variety of pharmacolite, which occurs in thin cruſts, and is dull and opaque. Pharmacolite is found in veins in granite, with ores of cobalt and native arſenic.

PHOSPHATE *of Copper*, *Cuivre phoſphatée*, Haüy. Under the ores of copper, one ſpecies of this mineral is deſcribed, which was the only one then known. Mr. Jameſon makes three ſub-ſpecies of phoſphate of copper; foliated phoſphate of copper, fibrous phoſphate of copper, and compact phoſphate of copper.

Foliated Phoſphate of Copper, *Cuivre phoſphatée rhomboidal*, Haüy, has a greyiſh-black colour externally, but internally is emerald-green, verdigris-green, and leek and olive-green. It occurs cryſtallized in octahedrons, which are ſometimes lengthened or cuneiform; alſo in rhomboids with ſmall curvilinear faces; the edges and angles are ſometimes truncated. The ſtructure is lamellar, the luſtre ſhining, between vitreous and pearly; it is tranſlucent. This ore is inſoluble in water, but diſſolves without effervеſcence in nitric acid. Before the blow-pipe, it fuſes into a browniſh globule, which ſpreads on the ſurface of the charcoal by a continuance of the heat, and acquires a reddiſh-grey metallic luſtre. The globule on cooling cryſtallizes into three-ſided and ſix-ſided facets. According to Bucholz, it is a compound of copper and phoſphoric acid. It has been found in the neighbourhood of Neuſotil in Hungary, and at Virneberg, near Rheinbrectenbach, on the Rhine; at the latter place it occurs with *fibrous phoſphate of copper*; the latter mineral is found maſſive, botryoidal, and in cruſts; it has a divergingly fibrous or radiated ſtructure.

Compact Phoſphate of Copper, *Cuivre phoſphatée compacte*, Haüy, has the ſame localities as the foliated ſub-ſpecies; it occurs maſſive, reniform, botryoidal, and incruſting; it has a flat conchoidal fracture, a fibrous ſtructure may ſometimes be obſerved. It contains near 1.81 parts of phoſphoric acid united with 68 of copper.

PHOSPHATE *of Manganeſe*. See MANGANESE-*Ores*.

PHOSPHORITE, *Common*, and PHOSPHORITE, *Earthy*. Theſe minerals have been claſſed by mineralogiſts as varieties of apatite; but Mr. Jameſon makes phoſphorite a diſtinct ſpecies, which he divides into two ſub-ſpecies.

Common Phoſphorite, *Maſſive Apatite*, Aikin; *Chaux phoſphatée terreuſe*, Haüy; has generally a yellowiſh, greeniſh, or reddiſh-white colour; it occurs maſſive, ſtalactitic, reniform, and incruſting, alſo cryſtallized in ſix-ſided tables; it is opaque, ſoft, and eaſily frangible. The ſpecific gravity is 2.81. When rubbed in an iron mortar, or laid on hot coals, it emits a greeniſh light. According to Pelletier, its conſtituent parts are,

Lime - - -	59.0
Phoſphoric acid - -	34.0
Silex - - -	2.0
Fluoric acid - -	2.5
Muriatic acid - -	0.5
Carbonic acid - -	1.0
Oxyd of iron - -	1.0
	100.

In part of Eſtramadura in Spain near Lagroſan, it forms whole beds that alternate with lime-ſtone and quartz.

Earthy Phoſphorite conſiſts of dull earthy particles, looſely cohering, and appears to be the preceding mineral in a decompoſing ſtate, intermixed with earthy matter. We think the characters and conſtituent parts of theſe minerals entitle them to be claſſed merely as varieties of apatite. The multiplication of ſpecies, where no ſufficient ſpecific difference exiſts, tends to retard the progreſs of uſeful knowledge, and ought not to be unneceſſarily introduced.

PHOSPHORMANGAN. Phoſphate of manganeſe. See MANGANESE.

PICROLITE, a mineral deſcribed by Hanſmann. It is principally compoſed of the carbonate of magneſia. According to the deſcription of Mr. Jameſon, (Mineralogy, vol. ii. p. 537.) its colours are leek-green, mountain-green, or ſtraw-yellow. It occurs maſſive; internally it is dull or glimmering and pearly. The fracture is long, ſplintery, which paſſes by gradation to flat conchoidal. In ſome inſtances, it ſhews a delicate concentric fibrous ſtructure. It ſometimes occurs in concretions which are either concealed or have undulating lamellæ. It is tranſlucent on the edges, and is rather hard, and difficultly frangible. It feels meagre, and is infuſible. The ſpecific gravity is 2.53. It appears to be allied to ſerpentine and talc.

PINITE. This mineral is nearly allied to mica. It occurs cryſtallized in regular ſix-ſided priſms, which, according to Haüy, is the primitive form. The priſms are ſometimes truncated on the edges and angles. Maſſive varieties of pinite alſo occur in thick and ſtraight lamellar concretions. (See PINITE.) This mineral is found in the granite veins at St. Michael's Mount, Cornwall, and in ſome parts of Scotland in porphyry.

PIPE-CLAY. See CLAY, and PORCELAIN CLAY, *Addenda*.

PISTACITE, or *Epidote*. See PISTAZITE, and EPIDOTE, *Addenda*.

PITCH-COAL, or *Jet*. See JET.

PITCH-ORE, or *Pitch-blende*, an ore of Uranium. See URANIUM, and PITCH-ORE.

PITCH-STONE, *Reſinite*, and *Petro-ſilex reſinite*, Fr. This mineral is named from the ſtriking reſemblance which ſome varieties have in colour and luſtre to pitch. Its prevailing colours are dark-green, from which it paſſes into black, grey, and blue, to brown and red. It is feebly tranſlucent, and has a gliſtening or ſhining vitreo-reſinous luſtre. It occurs maſſive in veins and beds of conſiderable magnitude. Pitch-ſtone is ſometimes columnar, and ſometimes in thick and wedge-ſhaped concretions, or in ſomewhat globular or curved lamellar diſtinct concretions, and ſometimes it has a ſlaty ſtructure. The fracture is more or leſs perfectly conchoidal, or paſſing into ſplintery. The fragments are angular and ſharp-edged. It ſcratches glaſs, is rather eaſily frangible, and is fuſible into a grey ſpongy enamel. Some varieties of this mineral, however, fuſe with great difficulty by the blow-pipe. The ſpecific gravity of pitch-ſtone is about 2.3. According to Klaproth, its conſtituent parts are,

Pitch-ſtone of Meiſſon.

Silex - - -	73.00
Alumine - - -	14.50
Lime - - -	1.00
Oxyd of iron - -	1.00
Oxyd of manganeſe -	10
Soda - - -	1.75
Water - - -	8.50
	99.85

Pitch-ſtone is found in various parts of Scotland, and in the iſlands of Rum, Egg, and Arran. It bears a near reſemblance to obſidian, or volcanic glaſs, into which it appears to paſs, and alſo into pearl-ſtone. It is regarded by many geologiſts as a volcanic product. Like baſalt, it interſects rocks of different formations, from granite to ſand-ſtone, and is intimately aſſociated with baſaltic rocks.

PLASMA has generally a dulliſh-green colour, with yellowiſh or whitiſh dots, a gliſtening luſtre, a conchoidal fracture, is tranſlucent, and rather harder than quartz. It conſiſts of about ninety-ſeven parts of ſilex, and appears to be properly a green variety of flint. It was conſidered by the Romans as a gem, and figures were engraved upon it. Moſt of the ſpecimens in collections were found in the ruins of Rome.

PLATINA. See PLATINA.

PLEONASTE. See CEYLANITE, *Addenda*.

PLUMBAGO. Graphite or black-lead. See PLUMBAGO, and GRAPHITE.

PORCELAIN-CLAY. (See PORCELAIN.) The porcelain-clay of Cornwall occurs in beds of conſiderable thickneſs in the pariſh of St. Stephen's. According to Wedgwood, it conſiſts of ſixty parts alumine, and forty of ſilex. Porcelain clay originates from the decompoſition of granitic rocks, abounding in felſpar, and frequently contains portions of quartz and mica. The abſence of iron in porcelain-clay is what conſtitutes one of its moſt eſſential properties,—that of remaining white after burning. The Kaolin or Chineſe porcelain-clay contains a much larger portion of ſilex than of alumine.

PORCELLANITE, or *Porcelain Jaſper*, (ſee JASPER,) appears to be formed accidentally by fires in coal-mines, which have indurated and ſemivitrified beds of coal-ſhale or ſlate-clay.

POT-STONE, *Lapis ollaris; Talc olaire*, Haüy. (See POT-STONE.) This mineral appears to be indurated talc, paſſing into ſerpentine; with the latter rock, it is frequently aſſociated. It has a curved and undulatingly-lamellar ſtructure, paſſing into ſlaty. It is very ſoft, ſectile, and greaſy to the feel, is tranſlucent on the edges, and affords a white-coloured ſtreak. It is infuſible before the blow-pipe. The analyſis of this mineral given by Tromſdorf is,

Silex - - -	39
Magneſia - - -	16
Oxyd of iron - -	10
Carbonic acid - -	20
Water - - -	10

Near Inverary there is a quarry of talcous ſlate, ſome of which appears to paſs into pot-ſtone, and can be turned in the lathe; of this ſtone, Inverary Caſtle is built. Pot-ſtone was extenſively uſed in Upper Egypt for culinary veſſels. They were found to reſiſt the action of fire, and did not communicate any taſte to the food boiled in them. Quarries of pot-ſtone were worked on the banks of the Lake of Como from the beginning of the Chriſtian era to the year 1618, when the mountain fell down on the 25th of Auguſt, and deſtroyed the neighbouring town of Pleurs. This town had annually raiſed ſtone from theſe quarries to the value of 60,000 ducats. Pot-ſtone is alſo uſed for lining ovens and furnaces, and is remarkably durable.

PRASE, *Quarz hyalin vert obſcur*, Haüy, is tranſlucent green quartz, the green colour being derived from an intimate intermixture of quartz and actinolite. See QUARTZ, and PRASIUS.

PRECIOUS *Garnet*. See GARNET.

PREHNITE. (See PREHNITE.) This mineral is divided into two ſub-ſpecies by Mr. Jameſon; foliated prehnite and fibrous prehnite. The prevailing colours are, green, greeniſh-white, and yellowiſh-white. It occurs both maſſive and cryſtallized in oblique four-ſided tables, or in ſix or eight-ſided tables; alſo in four-ſided and ſix-ſided priſms. The cryſtals are generally attached by their lateral plains, and form diverging groups. The cleavage is ſingle, parallel to the ſhort diagonal of a rhomboidal priſm, the planes of which are inclined at angles of 103° and 77°. The luſtre is ſhining and pearly; it is tranſlucent or tranſparent, ſcratches glaſs with difficulty, and intumeſces before the blow-pipe. Prehnite was diſcovered by Mr. Bakewell in a rock baſaltic amygdaloid, near Berkley in Glouceſterſhire, accompanied with green earth and maſſive lamellar prehnite, or kenpholite. This is the only Engliſh locality of theſe minerals at preſent known. It was firſt brought from the Cape of Good Hope.

Fibrous Prehnite has a delicate fibrous ſtructure, either ſtraight, diverging, or ſtellular. According to Langier, its conſtituent parts are,

Silex - - -	42.50
Alumine - - -	28.50
Lime - - -	20.40
Soda and Potaſh - -	0.75
Oxyd of iron - -	3.00
Water - - -	2.00
	97.15

Both ſub-ſpecies of prehnite bear a near reſemblance to zeolites, but they do not gelatinize with acids, and they become electric by heating.

PUMICE. See PUMICE-STONE, and VOLCANIC *Products*.

PYCNITE *Schorlite*, or SCHORLACEOUS *Beryl*. (See PYCNITE.)

PYCNITE.) The cryſtals of this mineral are long hexahedral priſms, and are deeply ſtreaked longitudinally. They have a cleavage at right angles to the axis of the priſm. Pycnite is now conſidered by Haüy as a variety of the topaz.

PYRITES. See PYRITES.

PYROPE. This mineral is now regarded by Haüy as a variety of the precious garnet, with an accidental portion of magneſia derived from the rock in which it is imbedded.

PYROPHYSALITE. See PYROPHYSALITE.

PYROSMALITE. Native muriate of iron. See IRON-ORES, *Addenda.*

PYROXENE, Augit. See PYROXENE and AUGIT, *Addenda.*

QUARTZ, *Quarz hyalin*, Fr. See QUARTZ.

Common Quartz, *Rock Cryſtal*, *Amethyſt*, and *Cairngorm Stone*, or *Clove-brown Quartz*, *Aventurine Quartz*, and *Roſe* or *Milk Quartz*, are eſſentially the ſame mineral ſubſtance or pure ſilex, varying only in tranſparency or colour, owing probably to a very ſlight admixture of the other earths or metallic oxyds, an admixture which may be regarded as accidental, and which is ſcarcely appreciable by chemical analyſis. According to Bucholz, rock-cryſtal is compoſed of $99\frac{3}{8}$ of ſilex. It is probable, however, that many minerals, which have hitherto been claſſed with quartz from bearing in many characters a cloſe reſemblance to it, may contain other ingredients beſides ſilex in ſuch proportions as to conſtitute them diſtinct ſpecies. This opinion is rendered more probable from the recent diſcovery of a mineral in Sweden, called petalite, which might eaſily be miſtaken for a variety of quartz, but which contains a conſiderable portion of alumine, and two parts in the hundred of an alkali heretofore unknown. See PETALITE, *Addenda*, and ROCK-*Cryſtal.*

QUICKSILVER. See MERCURY, *Ores of.*

REALGAR. See ARSENIC-*Ores*, and REALGAR.

RED *Antimony Ore.* (See ANTIMONY-*Ores*, and RED *Antimony.*) A variety of red antimony-ore, called tinder-ore, is deſcribed by Mr. Jameſon as occurring in delicate flexible leaves, which are opaque and friable, ſoil ſtrongly, and ſwim on water. Tinder-ore contains a portion of ſilver.

RED *Cobalt-Ore.* (See COBALT-*Ores.*) This ſpecies of ore is divided by Mr. Jameſon into three ſub-ſpecies, *earthy red cobalt-ore* or *cobalt ochre*, *ſlag red cobalt ochre*, and *radiated red cobalt-ore* or *cobalt bloom ; Cobalt arſeniaté aciculaire*, Haüy. The analyſis of this ore by Bucholz gives

Cobalt - - - - - -	39
Arſenic acid - - - - -	38
Water - - - - - -	23
	100

This ore has been found at Alva, in Stirlingſhire, and at Tyndrum; alſo in lime-ſtone in Linlithgowſhire, and at the Dolcoath mine in Cornwall. Slaggy red cobalt ochre has a muddy crimſon-red colour, or dark hyacinth-red, which paſſes into cheſnut-brown. It occurs in thin cruſts, and ſometimes reniform. It has a ſhining and reſinous luſtre, a conchoidal fracture, and is tranſlucent, ſoft, and brittle.

RED *Iron-ſtone.* See IRON-ORES, *Addenda.*

RED *Lead-ore*, or *Chromate of Lead.* See LEAD-ORES.

RED *Mangaueſe-ore.* See MANGANESE.

RED *Silver-ore*, or *Ruby Silver*, where read—before the blow-pipe *on* charcoal.

REDDLE, *Red Chalk*, or *Red Ochre.* See REDDLE.

RETINASPHALTUM. See RETINASPHALTUM.

REUSSITE, the name given to a ſalt which occurs in the country round Sedlitz, and at Piln near Brux. It forms a mealy effloreſcence, and is alſo cryſtallized in flat ſix-ſided priſms and in acicular cryſtals. According to Reuſs, it conſiſts of

Sulphate of ſoda - -	66.04
Sulphate of magneſia -	31.35
Muriate of magneſia - -	2.19
Sulphate of lime - -	0.42
	100

RHOMB *Spar.* See BROWN *Spar*, *Addenda.*

ROCK *Butter.* (See ROCK *Butter.*) This mineral appears to be a ſub-ſulphate of alumine. It oozes from aluminous rocks.

ROCK *Cork ; Aſbeſte Trepe*, Haüy. See ROCK *Cork.*

ROCK-CRYSTAL. (See QUARTZ.) This is the pureſt variety of quartz. Very large and brilliant rock-cryſtals occur in various parts of Scotland. The ſmoke-grey or clove-brown cryſtals are called cairngorm, from a place in the upper part of Aberdeenſhire, where they occur in alluvial ſoil along with beryl and topaz. The largeſt rock-cryſtals hitherto found come from the iſland of Madagaſcar. Faujas St. Fond mentions a cryſtal imported from thence into France, which weighed upwards of one hundred and fifty pounds. Very brilliant groups of rock-cryſtal occur in Dauphiny. Vaſes of rock-cryſtal were highly prized by the ancients. A vaſe, broke by the emperor Nero in a fit of deſpair, was eſtimated at 15,000 livres. Different colours may be communicated to rock-cryſtals artificially, by heating them and plunging them into different-coloured ſolutions.

ROCK-SALT. (See ROCK-SALT.) According to the analyſis of Dr. Henry, the rock-ſalt of Cheſhire contains, in 1000 parts,

Muriate of ſoda - - -	$983\frac{1}{4}$
Sulphate of lime - - -	$6\frac{1}{2}$
Muriate of magneſia - -	$0\frac{3}{16}$
Muriate of lime - - -	$0\frac{1}{16}$
Inſoluble matter - - -	10
	1000

ROCK-WOOD, or *Ligniform Aſbeſtus.* See ASBESTUS.

ROE-STONE, or *Oolite ; Chaux carbonatée globuliform*, Haüy. See ROE-STONE.

ROSE *Quartz*, or *Milk Quartz.* See QUARTZ.

RUBELLITE, called *Red Schorl*, a variety of tourmaline. See RUBELLITE, and TOURMALINE.

RUBY, *Oriental*, or *Red Sapphire.* See GEMS, and SAPPHIRE.

RUBY *Spinelle.* (See GEMS and RUBY.) The ſpinel ruby is the common ruby of the jewellers. It differs from the oriental ruby in the form of its cryſtallization, and contains a portion of magneſia and chromic acid. The former is nearly unmixed alumine. When theſe two gems are cut, it is, however, difficult to diſtinguiſh them. The oriental ruby is harder than ſpinel. Though the prevailing colour of the common ruby or ſpinel is red, yet it is ſometimes blue-green or yellowiſh-brown. The carmine-red is called the ſpinel ruby ; the cochineal ruby is called the balais ruby, from Balachan, the Indian name of Pegu, where it is found. The ſpecific gravity varies from 3.50 to 7.30 ; that of oriental ruby from 3.97 to 4.28. The latter is a true ſapphire.

RUTILE, or *Sphene; Titane oxidé*, Haüy. (See RUTILE.) This mineral, which appears to be on analyſis a pure oxyd of titanium, (ſee TITANIUM,) is of a dark blood-red colour, or light-red and browniſh-red. It occurs maſſive, diſſeminated, membranous, and in cryſtals. The cryſtals are rectangular four-ſided priſms, oblique four-ſided priſms, and alſo ſix and eight-ſided priſms. The cryſtals are ſmall and often capillary. It occurs imbedded in druſy cavities, in granite, ſienite, gneiſs, mica-ſlate, chlorite-ſlate and hornblende-ſlate, and in lime-ſtone. It has been found in the granite of Cairngorm, the lime-ſtone of Rannech, and at Craig Cailleach, near Killin, imbedded in quartz, alſo near Bedgalleſt, in Caernarvonſhire.

RUTILITE, *Titane ſiliceo calcaire*, or *ſphene*. See RUTILITE and SPHENE.

SAHLITE. (See SAHLITE.) *Pyroxene laminaire gris verdatre*, Haüy. According to Bournon, the primitive form of ſahlite is a rectangular four-ſided priſm, having rectangular baſes, which are inclined on the two oppoſite ſides of the priſm, ſo as to form angles of 109°,15, and 73°,45: hence he conſiders it as a diſtinct ſpecies from augit. According to Jameſon, the cleavages of ſahlite are five-fold, one parallel with the terminal planes, two with the lateral planes, and two with the diagonals of the priſm; the three firſt are made with great facility. The croſs fracture of ſahlite is uneven and dull; that of augit, though uneven, generally inclines to conchoidal, and has a conſiderable degree of luſtre.

SAL AMMONIAC, *Native; Ammoniaque muriatée*, Haüy. (See SAL AMMONIAC.) This ſalt is divided into two ſub-ſpecies by Werner, *volcanic ſal ammoniac* and *conchoidal ſal ammoniac*. The former occurs in fiſſures, or coating volcanic rocks, and alſo in the vicinity of burning beds of coal. The latter occurs with ſulphur, in indurated clay, or clay-ſlate, in Bucharia. According to Klaproth, it contains 2.50 of ſulphate of ammonia, with 97.50 of the muriate.

SAPPACE, *Kyanite; Diſthene*, Haüy. See SAPPACE, and KYANITE, *Addenda*.

SAPPHIRE, *Teleſie*, and *Corindon hyalin*, Haüy. The common forms of the cryſtals of ſapphire are the perfect ſix-ſided pyramid and ſix-ſided priſm, or the double ſix-ſided pyramid. Theſe forms are frequently variouſly modified by truncations on the angles and extremities. (See GEMS, SAPPHIRE, and RUBY, *Addenda*.) The red ſapphire is the oriental ruby; it differs a little from the blue ſapphire in its conſtituent parts, which, according to Chenevix, are,

Alumine	90
Silex	7
Oxyd of iron	1.2
	98.2

Sapphire occurs in alluvial ſoil along with pyrope, zircon, and iron-ſtone, at Podſedlitz and Trziblith, in Bohemia; in the banks of the ſtream Riou, near Expailly, in France; alſo at Brendole, in the Vicentine, and in Portugal.

SARCOLITE, *Red Zeolite*. See SARCOLITE and ZEOLITE.

SARDE, *Sardoine*, a reddiſh-brown cornelian, which appears of a deep blood-red when held between the eye and the light.

SARDONIX is a cornelian compoſed of white and red layers.

SASSOLIN, *Native Boracic Acid*. See SASSOLIN.

SATIN-SPAR, *Chaux carbonatée fibreuſe conjointe*, Haüy. See SATTIN-SPAR.

SAUSSURITE, *Felſpath Tenace*, Haüy; a mineral ſo called after the older Sauſſure. It was conſidered by him as nearly allied to nephrite or jade, (ſee NEPHRITE, *Addenda*,) but is now claſſed with the felſpar family. It occurs maſſive, diſſeminated, and in rolled pieces, in various parts of Switzerland and Norway, Finland, Italy, France, and Savoy, and it forms a conſtituent part of the well-known rock in Corſica, called the *Verde di Corſica*, which is compoſed of diallage and ſauſſurite. It occurs with diallage metalloide near the Lizard Point, in Cornwall. The colours are white-grey and green, of various tints; green or yellowiſh, or greeniſh-white, are the moſt prevailing colours. Internally the luſtre is dull or faintly glimmering.

The fracture is ſplintery; but according to Mr. Jameſon, an imperfectly foliated ſtructure may be diſcerned with a double rectangular cleavage. It is faintly tranſlucent on the edges, is extremely tough, and ſo hard, as to ſcratch glaſs; the feel is ſomewhat unctuous. The ſpecific gravity of ſauſſurite is 3.20 to 3.31. According to Sauſſure, the conſtituent parts are,

Silex	44
Alumine	30
Lime	4
Soda	6
Potaſh	0.25
Iron	12.50
Manganeſe	0.05
	96.80

According to Klaproth,

Silex	49
Alumine	24
Lime	10.50
Magneſia	3.75
Soda	5.50
Iron	6.50
	99.25

Before the blow-pipe, ſauſſurite melts on the edges and angles; but according to Mr. Jameſon is not entirely fuſible.

SCAPOLITE, *Paranthine*, Haüy. (See SCAPOLITE.) This mineral has been divided by Mr. Jameſon into three ſub-ſpecies; radiated ſcapolite, foliated ſcapolite, and compact ſcapolite. *Foliated ſcapolite* has a three-fold and rather oblique-angular cleavage; the croſs fracture is ſmall and fine-grained, uneven or ſmall conchoidal. This mineral, beſides occurring with the other ſub-ſpecies in Scandinavia, is found along with ſchorl in granitic maſſes that are imbedded in compact felſpar, or white-ſtone, on the north-weſtern acclivity of the Saxon Erzgebirge. *Compact green ſcapolite* is the wernerite of Haüy. It occurs both maſſive and cryſtallized in rectangular four-ſided priſms, acuminated by four planes ſet on the lateral edges. Compact red ſcapolite occurs along with the green ſub-ſpecies, but is of a blood-red colour. All the varieties of ſcapolite decay very readily on expoſure to the air.

SCHORL, *Tourmaline noir*, Haüy. (See SCHORL.) The conſtituent parts of ſchorl, as ſtated by Klaproth, vary conſiderably from the analyſis of Gerhard, which we have given, and are,

Silex	36.75
Alumine	34.50
Magneſia	0.25
Oxyd of iron with a trace of manganeſe	21
	92.50

According to Gerhard,

Silex	36.50
Alumine	31.0
Magneſia	1.25
Oxyd of iron with a trace of manganeſe	23.50
	92.25

The cryſtals of ſchorl are longitudinally ſtreaked, and have externally a ſhining luſtre. It occurs in the granite rocks of Cornwall, and intermixed with quartz, when it forms a compound rock, known to Corniſh miners by the name of *cockle*. Very magnificent cryſtals of ſchorl have recently been diſcovered near Bovey Heathfield, in Devonſhire. See TOURMALINE.

SCHILLER-SPAR, *Diallage metalloide*, Haüy, occurs moſt frequently in laminæ diſſeminated in ſerpentine, and is regarded by ſome mineralogiſts as cryſtallized ſerpentine. The colours are, olive-green, pinchbeck-brown, and yellowiſh-brown. The luſtre of the principal fracture is ſplendent and pſeudo-metallic; the croſs fracture is dull and glimmering. The cleavage is diſtinct in the direction of the laminæ. According to Bournon, the primitive form is a rectangular four-ſided priſm, in which the baſes are ſet on the broadeſt lateral planes, forming with them angles of 85° and 95°. The priſm is diviſible both in the direction of the lateral and terminal planes, but moſt eaſily parallel with the latter. Schiller-ſpar is tranſlucent in thin laminæ; it yields a greeniſh-grey ſtreak, is ſectile, and ſofter than hornblende.

SCHORLACEOUS *Beryl*. See PYCNITE.

SELENITE, or *Cryſtallized Gypſum*. See GYPSUM.

SERPENTITE, *Noble and Common*. See SERPENTINE.

SHALE, *Coal-Shale and Bituminous Shale*, a name given to the argillaceous ſtrata which accompany coal. Theſe conſiſt of clay more or leſs indurated and ſlaty, and intermixed with a portion of carbonaceous or bituminous matter.

SIBERITE, a name given by ſome mineralogiſts to *Rubellite*; which ſee.

SILVER-ORES. (See SILVER.) A ſpecies of native ſilver occurs in Norway, which contains 28 parts in the 100 of gold, and is called *auriferous native ſilver*. On account of the gold, its ſpecific gravity is greater than native ſilver. Its other characters, except the colour, (which inclines to braſs-yellow,) agree with *native ſilver*; which ſee, under SILVER-ORES.

An ore of ſilver containing biſmuth has been found in one mine on the Schapbach, in the Black Foreſt. It is called *biſmuthic ſilver*. It is a pale lead-grey, is ſoft, ſectile, and eaſily frangible. Before the blow-pipe metallic globules ooze out, which, on the addition of borax, unite in one metallic button, which is brittle, and of a tin-white colour. It contains 27 parts of lead, 33 of biſmuth, and 15 of ſulphur, combined with a portion of iron and ſulphur, and one part copper.

Corneous Silver-Ore, or *Horn Silver*, is divided by Mr. Jameſon, in the laſt edition of his Mineralogy, into four ſub-ſpecies; *conchoidal*, *radiated*, *common*, and *earthy corneous ſilver-ore*.

Conchoidal corneous Silver-Ore.—Its colours are greyiſh or greeniſh-white. It occurs maſſive in compact lime-ſtone, at Guantahoygo in Peru; it has an adamantine luſtre, and is the pureſt kind of corneous ſilver known, containing

Silver	76
Oxygen	7.6
Muriatic acid	16.4

The radiated corneous Silver-Ore has a dark-green colour, and, like the preceding, has hitherto been found only in South America.

Common corneous Silver-Ore, (ſee SILVER-ORES,) has been found in ſome of the mines in Cornwall, particularly at Huel-Mexico, and in a mine near Peranzabula, on the north-eaſt of Cornwall. In the analyſis of this ore, we have ſtated the conſtituent parts at 68 of ſilver, and 28 of muriatic acid; but 6 parts of the latter are oxygen.

Earthy corneous Silver-Ore is very ſoft, and almoſt friable. This mineral is an intermixture of corneous ſilver-ore and alumine.

Earthy Silver-Glance appears to be a decompoſing ſulphuret of ſilver. It has a blueiſh-black colour, and varies from friable to ſolid; it is dull or glimmering, but yields a metallic ſtreak; it occurs with other ores of ſilver in veins.

Under the localities of ſilver in England, in the article SILVER-ORES, for Benalſten *r.* Beeralſten, Devonſhire. One of the richeſt repoſitories of ſilver is the Weal Duchy Mine, on the banks of the Tamar, above Plymouth. Silver-ores occur there in regular veins, but are alſo diſſeminated in nodules, through the rock itſelf, which is killas or clay-ſlate. The ores are, native capillary ſilver in conſiderable branches, vitreous ſilver-ore, black ſilver, and ruby ſilver-ore. Under the article SILVER, we have given the annual quantity of gold and ſilver obtained in Europe, South America, and part of Aſia, as given by Humboldt, in killogrammes, which reduced to the value of the pound ſterling is as under:

	Gold.	Silver.
Europe	178,697	468,177
Northern Aſia	74,124	192,966
America	2,382,315	7,071,830
	£2,635,136	7,732,973

Total annual value 10,368,109*l.*; a ſum not equal to the payment of one-half of the intereſt of the national debt of Great Britain!

SLATE, or *Slate-Clay*, Werner. See SLATE.

SLATE-SPAR, *Chaux carbonatée nacré*, Fr. (See SLATE-*Spar*.) Though this is made a diſtinct ſpecies of the lime-ſtone family by ſome mineralogiſts, it is compoſed of carbonate of lime with an admixture of about three or four parts in the hundred of manganeſe or iron with water, to which probably its nacry luſtre may be owing. It occurs in ſome parts of Cornwall, and in Scotland.

SLIKENSIDES, a name given by the Derbyſhire miners to galena or lead-glance, when it forms a ſmooth poliſhed ſurface or lining to veins.

SMARAGDITE, green diallage; *Diallage verte*, Haüy. See DIALLAGE.

SOAP-STONE, a variety of ſteatite, is found in Cornwall, and extenſively uſed in the porcelain manufacture at Worceſter. It has a milk-white or greeniſh-grey colour, mottled with a muddy-purple: it is very unctuous to the touch, yields to the nail, and falls to pieces in hot water. Before the blow-pipe, it is friable into a ſomewhat tranſlucent enamel. According to the analyſis of Klaproth, it contains

Silex	45.00
Alumine	9.23
Magneſia	24.75
Oxyd of iron	1.00
Potaſh	0.75
Water	18.00
	98.73

Under the article Steatite, it is ſtated to differ from common ſteatite by the abſence of alumine; it ſhould have been by the exceſs of alumine. Some varieties of ſteatite ſcarcely contain a trace of the latter earth.

Soda, *Native*, or *Natron*. See Natron, *Addenda*.

Sodalite. (See Sodalite.) This mineral is claſſed by Mr. Jameſon with the felſpar family, on account of its external characters; it differs from felſpar in the proportions of its conſtituent parts, and ſoda ſupplies the place of potaſh, which is a conſtituent of moſt felſpars.

Sommite, or *Nepheline*. See Sommite and Nepheline, *Addenda*.

Sparry *Iron-ſtone*. See Iron, and Iron, *Addenda*.

Specular *Iron-Ore*. See Iron.

Sphene. See Sphene, Rutile, and Titanium.

Spinel. See Gem, Ruby, and Spinel.

Spodumene. (See Spodumene.) According to D'Andrada, this mineral before the blow-pipe firſt ſeparates into gold-coloured ſcales, and then into a kind of powder or aſh. It is recently found to contain 8 *per cent.* of the new alkali lithia.

Staurolite, or *Grenatite*. See Staurolite and Grenatite, *Addenda*.

Staurotide, the name given by Haüyto ſtaurolite.

Steatite. See Steatite and Soap-stone, *Addenda*.

Stilbite. See Zeolite.

Striped *Jaſper*. See Jasper.

Strontianite, or *Strontian; Strontian carbonatée*, Fr. See Strontian.

Sulphate *of Cobalt*, *of Copper*, *of Iron*, *of Lead*, *of Manganeſe*, *of Zinc*. See the ores of each of theſe metals, where the native metallic are deſcribed.

Sulphate *of Soda*, *Native*. See Soda.

Sulphur, *Common* and *Volcanic*. See Sulphur.

Sulphurets, *Native*, are combinations of the different metals with ſulphur. See Pyrites and the different metals.

Surturband, or *Fibrous Brown Coal*, or *Bituminous Wood*, *Fibreux*, Fr. See Coal and Wood-Coal.

Swine-stone, or *Fœtid Lime-ſtone*. See Swine-stone.

Tabular Spar. *Spath en Tables*, Haüy. See Tabular Spar.

Talc. See Talc.

Tantalite. See Tantalite.

Telesia, the name given by Haüy to the ſapphire.

Tellurium *Ores*, and *Tellurium*. See Tellurium.

Thallite, or *Epidote*. See Thallite.

Thummerstone, or *Axinite*. See Thummerstone.

Tile-Ore, *Earthy* and *Indurated*, an ore of copper (ſee Copper); the latter is conſidered by Werner as an intimate combination of red copper-ore and brown iron ochre, containing from 10 to 50 *per cent.* of copper; the red varieties contain the greateſt quantity of copper. The dark-brown variety, on account of the reſemblance of its fracture to pitch, has been called pitch-ore (*Paherz*, Werner.)

Tin-stone. See Tin.

Tin Pyrites, or *Bell-Metal Ore*. See Tin.

Titanium. See Titanium.

Topaz, *Topaze*, Fr. See Topaz and Gem.

Tourmaline, *Tourmaline*, and *Le ſchorl electrique*, Fr. See Tourmaline.

Tremolite, *Grammatite*, Haüy. See Tremolite.

Tripoli, or *Rotten-ſtone*. See Tripoli.

Tufa. See Tufa.

Tungsten. See Tungsten.

Variegated *Copper-Ore*, *Cuivre pyriteux hepatique*, Haüy, a native ſulphuret of copper, which has a variegated or irrideſcent tarniſh. See Copper-Ores.

Vesuvian, *Idocraſe*, Haüy. (See Vesuvian.) The primitive form of the cryſtals of Veſuvian is a right priſm with ſquare baſes, differing little from the cube. Veſuvian is cut for ornamental purpoſes by the lapidaries at Naples, and is called the chryſolite of Veſuvius.

Umber, *Argile ocreuſe buin*, Fr. See Umber.

Uran Mica, or *Uranite*, and *Uran Ochre*. See Uranium, *Ores of*.

Wacke, or *Wacken*. See Wacke.

Wad. See Wad and Manganese.

Wavellite, or *Hydragillite*, *Diaſpore*, Haüy. See Wavellite.

Whet-Slate, or *Whetſtone-Slate*, *Noverculite*, Fr. See Slate and Whet-slate.

White *Antimony-Ore*, *White Copper-Ore*, *White Manganeſe-Ore*, *White Silver-Ore*, and *White Vitriol* or *Sulphate of Zinc*. See each of theſe metals, and *Ores of*.

Witherite, or *Carbonate of Barytes*. See Witherite and Barytes.

Wolfram, *Schelin Ferrugine*, Haüy. (See Wolfram.) This mineral occurs moſt abundantly in many of the mines of Cornwall, but has not yet been applied to any uſe.

Yenite, *Lievrit*, Werner. See Yenite.

Yttro-tantalite. See Tantalite and Yttro-tantalite.

Zeolite. See Zeolite.

Zinc. See Zinc, *Ores of*.

Zircon and Zirconite. See Zircon.

Zoisite. See Zoisite.

MINGRELIA, l. 12, after gom, add—a kind of paſte made of. At the cloſe, add—According to Reineggs, it contains four millions of ſouls, and annually exports 12,000 ſlaves.

MINKALLI, an African term, denoting a quantity of gold, nearly equal to 10*s.* ſterling.

MINOT, in *Geography*, a town of America, in the diſtrict of Maine, and county of Cumberland, having 2020 inhabitants.

MIRZIN, *r.* Wolein.

MODBURY, l. 33, *r.* 1811—1890—863 males; l. 34, 1027 females, 190 families, and 156.

MOFFAT, col. 2, l. 13, *r.* 1811; l. 14, *r.* 1824 perſons, occupying 334 houſes; 850 being males, and 974 females.

MOGO, l. 2, after gulf, add—which has one of the moſt ſecure roadſteads in the gulf, formed by Cape Boſtana to the E. and the point improperly called Certes to the W. and capable of holding the largeſt fleets.

MOHOCKS, a denomination given to a mob of diſorderly people, who traverſed the ſtreets of London at night, and amuſed themſelves with wounding and disfiguring the men, and indecently expoſing the women, in the year 1711. A reward of 100*l.* was offered by royal proclamation for apprehending any one of them.

MOLD, l. 6, *r.* 1811, the pariſh, &c. 5083 perſons, occupying 1026 houſes ; 2465 being males, and 2618 females : of whom 217 families are employed in trade and manufactures, and 180 in agriculture.

MOLE. See NÆVUS.

MOLLIA, in *Botany*, Ait. Hort. Kew. v. 2. 62. See POLYCARPÆA and HAGÆA.

MOLTON, SOUTH, col. 2, l. 15, *r.* 1811—520—2739.

MOLTON, *North*, an adjoining pariſh, containing 329 houſes, and 1526 inhabitants.

MOLYBDENA. See MINERALOGY, *Addenda*.

MOLYBDENUM, in *Chemiſtry*. The ſpecific gravity of this metal, according to Hjelm, is 7.400 ; but according to Bucholz, who, from the greater heat he employed, obtained it in a more compact ſtate, it is as high as 8.611. According to the experiments of this latter chemiſt, there are three oxyds of this metal, the *brown protoxyd*, the *blue* or *molybdous acid*, and the *white* or *molybdic acid*. Dr. Thomſon, from the experiments of Bucholz, deduces the weight of the atom of this metal to be 60.

MONAHAN, or MONAGHAN. Add—containing 725 inhabitants.

MONEY. See POLITICAL *Economy*.

MONFALOUT, *r.* See MANFALOUT.

MONKTON, l. 2, *r.* 1248.

MONMOUTH, l. 3, *r.* ſeven for ſix ; l. 4, *r.* 22,150 —1501.—Alſo, a town of the diſtrict of Maine, in the county of Kennebeck, containing 1262 inhabitants.

MONMOUTH, col. 3, l. 37, *r.* 1811 ; l. 38, *r.* 3503. Add —The number of houſes is 661 ; that of males 1630, and of females 1873, of whom 375 families are employed in trade and manufactures, and 146 in agriculture.

MONMOUTHSHIRE, l. 10.—In 1811, the county was returned as containing 11,766 houſes, and 62,127 perſons ; 30,987 males, and 31,140 females : 5815 employed in agriculture, and 4812 in trade, manufactures, and handicraft.

MONONGALIA, l. 2, *r.* 12,793 perſons, of whom 351 were ſlaves in 1810.

MONOPTERUS, in *Ichthyology*, a genus of fiſhes of the order Apodes ; the characters of which are, that the body is anguilliform, the noſtrils placed between the eyes, and the fin caudal. The only animal of this genus hitherto diſcovered is the M. *Javanicus*, blackiſh, with a very ſharp-pointed tail. It is a native of the Indian ſeas, and is very common about the coaſts of Java, where it is conſidered as excellent food.

MONROE. Add—containing 5444 inhabitants, of whom 376 were ſlaves in 1810.

MONSON. Add—containing 1674 inhabitants.

VOL. XXIV.

MONTAGUE, EDWARD, col. 2, l. 8, for fine ſhips *r.* fire-ſhips.

MONTAGUE, l. 4, *r.* 934.

MONTAGUE. See MOUNTAGUE.

MONTENEGRINS, ſo called from the Monte Negro, or Black mountain, near Cantaro, have been reckoned amongſt the moſt daring inhabitants of *Dalmatia;* which ſee. The whole amount of theſe, who are ſcattered over mountains, has been eſtimated at about 60,000. All profeſs the Greek religion, but with ſeveral remains of ſuperſtition. The Morlacs, and other inland tribes of Dalmatia, are honeſt and ſincere barbarians, and the dreſs of their vaivodes ſomewhat reſembles the Hungarian. The general peace of Europe has reſtored tranquillity and preſent ſecurity to them.

MONTGOMERY, in America, l. 3, *r.* 2954, of whom 747 were ſlaves in 1810; l. 6, *r.* 41,214, of whom 712 were ſlaves ; l. 10, *r.* 237 ; l. 12, *r.* 595 ; l. 14, *r.* 30 ; l. 15, *r.* 29,703 ; l. 16, add—containing 580 inhabitants ; l. 17, having 2693 inhabitants ; l. 18, *r.* 8430 ; l. 19, *r.* 1696 ſlaves ; l. 21, *r.* 8409 inhabitants, of whom 1099 were ſlaves ; l. 24, *r.* 17,980—7572 ; l. 28, *r.* 8026 inhabitants, of whom 2629 are ſlaves ; l. 29, *r.* 12,650 inhabitants, of whom 1691 are ſlaves. Add—Alſo, a town of Somerſet county, in New Jerſey, having 2282 inhabitants. —Alſo, a townſhip of Franklin county, in Ohio, having 556 inhabitants.—Alſo, a county of Ohio, containing 7 townſhips, and 7722 inhabitants.

MONTGOMERY, in Wales, col. 2, l. 35, *r.* 1811 ; l. 36, the borough and—932—442 males, and 490 females.

MONTGOMERYSHIRE, col. 6, l. *ult.* *r.* 1811—51,931—25,373—26,558. Col. 7, l. 1, *r.* 3164 families ; l. 3, *r.* 6369.

MONTICELLO, a town of Georgia, in Randolph county, having 89 inhabitants.

MONTIQUE, a town of Suſſex county, in New Jerſey, containing 661 inhabitants.

MONTROSE. In 1811 the burgh and pariſh contained 1064 houſes, and 8955 perſons ; *viz.* 3837 males, and 5118 females : 170 families being employed in agriculture, and 1529 in trade, manufactures, and handicraft.

MONTVILLE, l. 3, *r.* 2187.—Alſo, a town in Maine, in Lincoln county, with 864 inhabitants.

MONTVILLE *Plantation*, a townſhip of the ſame, having 130 inhabitants.

MOON, a townſhip of Alleghany county, in Pennſylvania, having 1622 inhabitants.

MOON, *Half*, a townſhip in Centre county, in Pennſylvania, having 560 inhabitants.

MOON, *Firſt* and *Second*, two townſhips of Beaver county, in the ſame ſtate, the former having 1035, and the latter 1245 inhabitants.

MOONSHEE, an Indian term ſignifying a letter-writer or ſecretary, and applied by Europeans to the native who inſtructs them in the Perſian language.

MOONSTERLING, in *Geography*, a townſhip of Kentucky, in Montgomery county, with 325 perſons, of whom 76 were ſlaves in 1810.

MOORE, a townſhip of Northampton county, in Pennſylvania, having 1108 inhabitants.

MOOSH, the ancient Moxoene, called alſo Daran, a town of Armenia, occupying a ſmall eminence, waſhed by the Euphrates, over which is a bridge of fifteen arches : badly built and thinly inhabited ; but the adjoining country is fertile and populous. The natives of this diſtrict, which is one of the Turkiſh pachalics of Armenia, are a degenerate race, and ſaid to amount to 80,000 ſouls ; 12,000 of whom are Yezedis. Conſiderable quantities of tobacco and manna are exported from hence.

MORAYSHIRE, col. 4, l. 32, *r.* 1811—6268—28,108 ; *viz.* 12,401 males, and 15,707 females : l. 32, *r.* 2635 families ; l. 34, *r.* 1886.

MORELAND, l. 2, having 400—the other having 1692 inhabitants.

MORETON-HAMPSTEAD. In 1811 this pariſh contained 337 houſes, and 1653 perſons ; *viz.* 770 males, and

883 females: 263 families being employed in agriculture, and 43 in trade, manufactures, &c.

MORETON *in the Marſh*. In 1811 this pariſh contained 194 houſes, and 928 perſons; *viz.* 457 males, and 471 females: 60 families being employed in agriculture, and 91 in trade, manufactures, &c.

MORETOWN, a town of Chittenden county, in Vermont, having 405 inhabitants.

MORGAN, a town of Orleans county, in Vermont, having 135 inhabitants.—Alſo, a townſhip of Greene county, in Pennſylvania, having 1621 inhabitants.—Alſo, a townſhip of Knox county, in Ohio, having 388 inhabitants.—Alſo, a county of Georgia, having 2294 inhabitants.

MORIEVILLE PLANTATION, a townſhip of Maine, in the county of Hancock, having 224 inhabitants.

MOROKINNEC, *r.* MOROKINNEE or MOROTINNEE.

MOROXYLIC ACID, in *Chemiſtry*, a name given by Klaproth to an acid principle obtained from a ſaline exudation from the *morus alba*, collected by Dr. Thompſon in Sicily. This exudation contained the acid in queſtion in combination with lime. When ſeparated, it was found to poſſeſs the following properties:—It exiſts in the form of needle-like cryſtals, having the taſte of ſuccinic acid. It is not altered by expoſure to the air. It diſſolves readily in water and alcohol, and does not, like the moroxylate of lime, precipitate the metallic ſolutions. It is volatile, and may be ſublimed without change; hence this is probably the beſt mode of obtaining it in a ſtate of purity. The *moroxylates* are little known, and do not appear to poſſeſs remarkable properties.

MORPETH. In 1811 the borough contained 464 houſes, and 3244 perſons; *viz.* 1470 males, and 1774 females: 77 families being employed in agriculture, and 529 in trade, manufactures, or handicraft.

MORPHIA, the name which has been given to an alkaline principle exiſting in opium; the deſcription of which, and of the other principles exiſting with it, will be found under opium. See OPIUM.

MORRIS, l. 3, for five *r.* ten. Col. 2, l. 6, *r.* 21,828—856 were ſlaves in 1810.—Alſo, a townſhip of Waſhington county, in Pennſylvania, having 1679 inhabitants.—Alſo, a townſhip of Greene county, having 944 inhabitants.

MORRISTOWN, l. 4, *r.* and in 1810, 3753 inhabitants, 214 being ſlaves.—Alſo, a town of Orleans county, in Vermont, having 550 inhabitants.

MORRISVILLE, l. 2, *r.* Bucks; add—having 961 inhabitants.

MORTLAKE. In 1811 the pariſh contained 346 houſes, and 2021 perſons; *viz.* 832 males, and 1189 females.

MOSUL, l. 2, after Nineveh, add—though others think that the village of Nunia, on the oppoſite bank of the Tigris, preſents the poſition of this ancient city. It is ſituated in the pachalic of Bagdad; *dele* in the province of Diarbekir, ſituated:—l. 12, inſert—The inhabitants are ſaid to amount to 35,000 ſouls.

MOTACILLA, *r.* RUBECULA.

MOTHER-KILL. Add—containing 7445 inhabitants.

MOULTONBOROUGH. Add—It contained, by the cenſus of 1810, 994 perſons.

MOUNT HOLLY, l. 3, *r.* 922.

MOUNT *Joy*, after Lancaſter *r.* county, having 1551; at the cloſe, add—having 636 inhabitants.

MOUNT *Pleaſant*, l. 4, add—having 1105 perſons.—Alſo, a townſhip of Wayne county, with 522 perſons.—Alſo, a townſhip of Waſhington county, having 1165 inhabitants.—Alſo, a townſhip of the ſame ſtate, in Weſtmoreland county, having 1788 inhabitants.—Alſo, a townſhip of Jefferſon county, in Ohio, with 846 perſons.

MOUNT *Tabour*, a town of Rutland county, in Vermont, with 209 inhabitants.

MOUNT *Vernon*. Add—containing 1098 inhabitants.—Alſo, a town of Hillſborough county, in New Hampſhire, containing 762 perſons.

MOUNTAGU. Add—See MONTAGUE.

MOUNTAIN CORK. See MINERALOGY, *Addenda*.

MOUNTAINS, col. 7, under *Ireland*, inſtead of l. 3, inſert—Sliebh Donard, a mountain in the county of Down—2500. Col. 13, l. 10, *r.* Varenius.

MUCILAGE, *Chemical Properties of*. See GUM.

MUCOUS ACID, in *Chemiſtry*. See SACLACTIC *Acid*.

MUCOUS *Membrane*, &c. See MEMBRANE.

MUMBO-JUMBO, a kind of bugbear dreſſed in a maſquerade habit, formed of the bark of trees, and ſuſpended upon a tree at the entrance of the Mandingo towns in Africa. It is much employed by the Pagan natives in keeping their women in ſubjection; for as the Kafirs, or infidels, are not reſtricted in the number of their wives, every one marries as many as he can conveniently maintain; and as it frequently happens that the ladies diſagree, family quarrels ſometimes riſe to ſuch a height, that the authority of a huſband can no longer preſerve peace in his houſehold. In ſuch caſes, the interpoſition of Mumbo-Jumbo is called for, and is always deciſive. This ſtrange miniſter of juſtice, who is ſuppoſed to be either the huſband himſelf, or ſome perſon inſtructed by him, diſguiſed in the above-mentioned dreſs, and armed with the rod of public authority, announces his coming, when called for, by loud and diſmal ſcreams in the woods near the town. He begins the pantomime at the approach of night, and as ſoon as it is dark enters the town, and proceeds to the *bentang* (a kind of ſtage erected in every town, anſwering the purpoſe of a town-hall), at which all the inhabitants immediately aſſemble. Every married female, not knowing for whom the viſit is intended, is alarmed, but when ſummoned muſt appear; and the ceremony commences with ſongs and dances, which continue till midnight, about which time Mumbo fixes on the offender. This unfortunate victim being thereupon immediately ſeized, is ſtripped naked, tied to a poſt, and ſeverely ſcourged with Mumbo's rod, amidſt the ſhouts and deriſion of the whole aſſembly; and it is remarkable, that the reſt of the women are the loudeſt in their exclamations on this occaſion againſt their unhappy ſiſter. Day-light terminates this indecent and unmanly revel.

MUNI, col. 2, l. 3 from bottom, for many-mothered, for *r.* many-mothered ſon.

MURÆNA, col. 3, *r.* MYRUS.

MURIATE *of Ammonia*. See SAL *Ammoniac*.

MURIATIC ACID, MURIATES, in *Chemiſtry*. See CHLORINE.

MUSCI, col. 8, l. 18, *r.* ſhrinks; l. 7 from bottom, *r.* eſexual.

MUSHROOMS, *Chemical Properties of*. See FUNGI.

MUSKINGUM, l. 5, add—This county has 11 townſhips, and 10,036 inhabitants.

MUSOPHAGA, PLANTAIN-*Eater*, in *Ornithology*, a genus of birds of the Picæ order; the characters of which are, bill ſtout, triangular; the upper mandible elevated at the baſe, above the front; both mandibles dentated at the edges; noſtrils in the middle of the bill; tongue entire, thickiſh; feet with three toes before and one behind. This genus is conſtituted by the blackiſh-violet plantain-eater, with crimſon crown and quill-feathers, and a white ſtripe beneath the eyes. The bird, which is highly elegant, is of African origin, and is found in the province of Acra in Guinea, and is ſaid to live principally on the fruit of the muſa or plantain-tree. Dr. Shaw, in the Muſeum Leverianum, has deſcribed this bird as a ſpecies of cuckoo, under the name of Cuculus regius; but in his Zoology it is a diſtinct genus.

MUSTELA, col. 3, under B. *r.* BARBARA, Guiana weaſel; l. 3, *r.* Guiana.

MUSTELIA, in *Botany*, in memory of Mr. Muſtel, who wrote, in Phil. Tranſ. v. 63, ſome "New Obſervations upon Vegetation."—Sprengel Tr. of Linn. Soc. v. 6. 152. t. 13.—This plant is ſaid to differ from EUPATORIUM, (ſee that article,) in having five minute ſcales accompanying the briſtly ſeed-crown. How far ſuch exiſt in any *Eupatorium*, or not, and whether they ought to make a generic diſtinction, merits inquiry.

MYLOCARYUM, from μυλος, *a mill*, and καρυον, *a nut*, alluding to the four ſpreading wings of the ſeed.—Willd. Enum. 454. Purſh 303. (Walteriana; Fraſer's Cat.)—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Ericæ*, Juſſ.

Eſſ. Ch. Calyx of five leaves. Petals five. Filaments ſwelling and angular in the middle. Stigma ſeſſile. Capſule winged, of three cells. Seeds ſolitary.

1. M. *liguſtrinum*. Privet-leaved Buck-wheat-tree. Willd. n. 1. Purſh n. 1. t. 14. Sims in Curt. Mag. t. 1625. Ait. Epit. 371. Sm. Inſ. of Georgia, v. 2. 135. t. 68, without a name.—On the dry borders of ſwamps in Georgia, flowering in May and June. An elegant evergreen *ſhrub*, eight to twelve feet high. *Purſh*. *Leaves* alternate, ſtalked, obovate, acute, entire. *Flowers* white, ſweet-ſcented, in terminal cluſters. *Fruit* pendulous, reſembling ſeeds of Buck-wheat, with three or four wings.

MYOXUS. At the cloſe, add—Dr. Shaw enumerates ſome other ſpecies, ſuch as the Chryſurus, or gilt-tailed D., the M. guerlingus, or guerlinguet, and the African, or earleſs Dormouſe.

MYRIANDRUS. Add—According to Xenophon, it was a Phœnician city, a mart-town, and many merchant-ſhips lay at anchor before it.

MYRICIN, in *Chemiſtry*, a name given by Dr. John to the ſubſtance that remains after bees'-wax, or the wax of the *myrica cordifolia*, has been heated with alcohol. This ſubſtance is inſoluble in water, ether, and alcohol, both hot and cold. It is ſoluble in the fixed and volatile oils, and does not precipitate from the former of theſe. It melts between 100° and 140°, and is ſomewhat glutinous, but of the conſiſtence of wax. Its ſp. gr. is .900.

MYTHOLOGY *of the Hindoos*, l. 26 from bottom, for ſtories *r.* ſtores.

N.

NACHITOCHES, l. 2, after Orleans, add—and in the territory of Orleans; its inhabitants in 1810 being 2870.

NACOGDOCHES, a ſmall town of Louiſiana, ſituated in N. lat. 31° 27'. W. long. 24° 17', on the Arroyo de la Nana, in a beautiful, healthy, well-watered country. This ſmall town, and a few farms in the vicinity, are hitherto the only improvement made by the Spaniſh emigrants after the revolution of 98 years. A tribe of Indians, called Nadacos, reſides about 30 miles N. of Nacogdoches, upon the head-waters of the Angelina, where they were found near a century ago by the French and Spaniards. The Nadacos are a poor inoffenſive race, in peace with all their neighbours, both white and black.

NAGA, a name of the Hindoo mythological ſerpent, otherwiſe called *Seſha;* which ſee.

NAGANTEKA, in *Hindoo Mythology*, is a name of the hypogriff Garuda, the vehicle of the god Viſhnu. It means the deſtroyer of ſerpents. Another of its names is *Superna;* which ſee.

NAIRIT, is one of the eight regents of the winds, or points of the heavens. He rules the ſouth-weſt quarter, and is ſubordinate to Indra, regent of the firmament. (See INDRA.) Theſe rulers of the cardinal and intermediate points are ſometimes called *Marut* (which ſee). See alſo VIRUPAKSHA, meaning with a diſagreeable countenance. Another of his names is Karbura. He has a *ſakti* or conſort aſſigned him, uſually named *Nirriti;* which ſee.

NAIRN, l. *ult.* for 632 *r.* 613.

NAIRNSHIRE, col. 2, l. 46, number of houſes was 1746, and the inhabitants, &c.

NAKAL, one of the champions of the Hindoo heroic poem, entitled the *Mahabarat* (which ſee). As that poem is ſuppoſed to be allegorical, and to repreſent the conflicts between man's virtues and vices, Nakal, one of the five ſons of Pandu, is ſaid to be a perſonification of temperance, and is made the twin-brother of Sahadeva, or chaſtity. Other commentators make them to repreſent beauty and wiſdom. Their mother was Maderi, a wife of *Pandu;* which ſee.

NAKSHATRA, in *Aſtronomy*, is the name given by the Hindoos to the manſions which they aſſign to the moon. They ſeem to be the ſame, though not exactly coinciding, with the lunar ſtages of the Arabians, which they call *manzil*. The "Nakſhatras, or aſteriſms, marking the moon's path," are twenty-ſeven or twenty-eight in number. A table of them is given in the ninth volume of the Aſiatic Reſearches, by Mr. Colebroke, the preſident of the Aſiatic Society. See alſo the ſecond volume of the ſame work, together with the Indian zodiac, accompanied by an eſſay on its antiquity, by ſir W. Jones.

The Hindoos aſcribe the invention of their ſolar and lunar zodiacs to Dakſha, who is mythologically repreſented as a ſon of Brahma, and they then give a free rein to their poetical imaginations, repreſenting the Nakſhatras as the daughters of Dakſha.

NALA, in *Hindoo Romance*, is a perſonage of conſiderable importance, though deſcribed as an ape. Others begat by the divine architect *Viſwakarma* (which ſee); and he is ſaid in the Ramayana to have been the builder of Rama's bridge, uſually called Adam's bridge, from the continent to the iſland of Ceylon, or Lanka. See CEYLON and LANKA.

NAMUKI, is the name of a friend and companion of Indra, the regent of the firmament.

NANCEMOND. See NANSEMOND.

NANDANA, the name of the garden, or city, aſſigned by Hindoo fabuliſts for the delightful reſidence of their demigod Indra, the regent of the firmament. (See INDRA.) There are four cities or gardens of this name, and three of them are ſometimes ſaid to belong to Ganeſa, or Pattear. One of them is called Swa-nandana-puri, the ſelf-delighting city; nandana meaning delightful or happy.

NANDI, in *Hindoo Mythology*, is the name of the bull on which the god Siva rides. The bull, with the Hindoos, is the ſymbol of divine juſtice, as it is alſo of generation or production. See SIVA.

NANSEMOND, l. 4, *r.* 10,324—4462.

NANTICOKE, l. 2, *r.* 2843 inhabitants, including 192 ſlaves in 1810.

NANTMILL for NANTRILL, l. 2, add—the former contains 1544, and the latter 1188 inhabitants.

NANTUCKET, l. 13, *r.* 6807.

NARAKA, one of the receptacles for ſinners, or hells of the Hindoos. Of theſe, they have at leaſt ſeventy-one; and their names are given in the Inſt. of Menu, c. iv. v. 88, 89, 90.

NARAMEDHA, a term in the Sanſkrit language ſignifying the ſacrifice of a man. It cannot be doubted that human ſacrifices were formerly offered by ſome tribes of Hindoos, although it is ſaid, and may be reaſonably believed, that in theſe days the practice is wholly diſcontinued. (See RUNEKA.) To the goddeſs Parvati, or Bhavani, the conſort of Siva, under her name of Kali, or the *black goddeſs*, theſe offerings, it would appear, were uſually, if not always, made. The rules and regulations for this horrid ſacrifice are laid down in a chapter, emphatically called the ſanguinary chapter of the Kalika-Purana, which has been tranſlated by Mr. Blaquiere, and publiſhed in the fifth volume of the Aſiatic Reſearches, art. xxiii. No religious rite can be more minutely ordained and detailed.

Although it muſt appear evident, that human ſacrifices were formerly legal and practiſed among Hindoos, they are moſt pointedly prohibited in very ancient, as well as in more modern books: ſuch prohibition is, indeed, a farther, and of itſelf ſufficient proof of the exiſtence of the practice. In the Brahma Purana, (ſee PURANA,) every Naramedha, or man-ſacrifice, is expreſsly forbidden; and in the fifth book of the *Sri-Bhagavat*, (ſee that article,) ſir W. Jones has pointed out the following emphatical words: "Whatever men in this world ſacrifice human victims, and whatever women eat the fleſh of male cattle, thoſe men and thoſe women ſhall the animals here ſlain torment in the manſions of Yama, (ſee YAMA,) and, like ſlaughtering giants, having cleaved their limbs with axes, ſhall quaff their blood." Aſiatic Reſearches, vol. iii.

In the firſt Veda an emblematical or vicarial ſacrifice is ordained, in which men and animals are the victims, but are releaſed after certain ceremonies.

NARA-SINGHA, in *Mythology*, is the deſignation of the fourth avatara or incarnation of the Hindoo deity Viſhnu. It means literally *man-lion*, ſuch being the form in which this deſcent is related to have taken place.

Sir W. Jones ſurmiſed that this avatara, and the following of Vamana, (ſee VAMANAVATARA,) were allegorical references to the two preſumptuous monarchs Nimrod and Belus, under the names of Hiranyakaſipu and Beli, the former name meaning *with a golden axe*, or, according to other authorities, *clad in gold*. Hind. Panth. Aſ. Reſ.

The three avataras, or deſcents of Viſhnu on earth, that preceded that which is the ſubject of this article, were the Matſya or fiſh, the Kurma or tortoiſe, and the Varaha or the boar; under each of which words, having the common denomination of avatara poſtfixed, ſome account of them will be reſpectively found. A liſt of the ten grand deſcents, or *daſavatara*, will be found under the article VISHNU. This is ſometimes written Nri Sinha.

NARASINHI, or NARSINHI, or *Nriſinhi*, is the name given to the Hindoo goddeſs Lakſhmi, who became thus incarnated to accompany her lord Viſhnu in his avatara or deſcent of Naraſingha, as ſufficiently explained under that article, and the others thence referred to.

NARAYANA, is a perſonification of rather a bold and apparently reprehenſible nature. "The waters are called *nara*, becauſe they were the firſt production of Nara, or the Spirit of God; and ſince they were his firſt *ayana*, or place of motion, he is thence named Narayana, or moving on the waters." Inſt. of Menu, c. l. v. 10. See MENU.

On the whole, Narayana ſeems to refer in character more to Viſhnu than to any other of the Hindoo deities.

NARAYANI, a name and form of the Hindoo goddeſs Lakſhmi. In this character, ſhe is conſidered as the Sakti or conſort of Narayana; which ſee, and MATRI.

NARBETH, l. 9, *r.* 388.

NAREDA, or NARADA, in *Hindoo Mythology*, a perſonage among the Hindoos, deemed the mythological offſpring of Brahma and Saraſwati. In the popular hiſtories of Kriſhna, Nareda is repreſented as his humble friend, on whom he paſſes many practical and whimſical jokes, metamorphoſing him into a woman, &c. But in more ſerious books, his character is more correſponding with the magnificence of his origin. He is repreſented as a wiſe legiſlator, great in arms, arts, and eloquence; and, indeed, of ſuch hiſtorical celebrity, that his actions are the ſubject of a Purana, named after him; ſome account of which is given under PURANA. He was alſo an aſtronomer, and an exquiſite muſician. Hence Saraſwati, the patroneſs of ſcience and harmony, is ſaid to have been his mother. He farther invented the vina, a ſort of lute, which ſir W. Jones remarks as a ſingular fact, is otherwiſe called *katchapi*, having the ſame meaning as *teſtudo*; and Nareda being alſo a frequent meſſenger of the gods, to one another, or to favoured mortals. His character, in theſe and other points, reſembles that of Hermes, or Mercury.

NASH, l. 2, *r.* 7268—2897.

NASTICK, in *Philoſophy*, the name of a ſceptical ſect of Hindoos. The word in the Sanſkrit tongue means *negative*, and is intended to deſignate thoſe who do not believe the Veda. Individuals of more orthodox ſects call the Naſticks, materialiſts and atheiſts.

NASTURTIUM, in *Botany*, (ſee our former article,) is now adopted to deſignate the Water-creſs and its allies, ſeparated by Mr. Brown from SISYMBRIUM, (ſee that article,) ſect. 1.—Br. in Ait. Hort. Kew. v. 4. 109.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſa*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pod nearly cylindrical; valves concave, without rib or keel. Cotyledons accumbent. Calyx ſpreading.

N. *officinale*, (Siſymbr. Naſturtium; Linn. &c.), with *ſylveſtre*, *terreſtre*, *amphibium*, *pyrenaicum*, and *ſagittatum*, are the ſpecies mentioned in Hort. Kew. We have already deſcribed all but *pyrenaicum*, which is a well-known ſpecies.

NATICK, l. *ult.* *r.* in 1810, contained 766.

NATRON. See MINERALOGY, *Addenda*.

NATUNZ, in *Geography*, a town of Perſia, in the province of Irak, 63 miles from Iſpahan, and 43 from Caſhan, ſituated on a very delightful ſpot, in a valley ſurrounded by high and rugged mountains; and famous for the ſalubrity of its climate, pears, peaches, and handſome females. It has a fort in the centre of the valley, an excellent warm bath, and an old moſque, with a very handſome mineral, ſaid to have been built 300 years ago.

NAVY. Add—having 56 inhabitants.

NAXIA, l. 10 from bottom, after villages, add—Dr. Clarke (in vol. vi. of his Travels) ſtates the whole population of the iſland, including women, at 18,000 perſons, about 3000 of whom are Latins, and the reſt Greeks.

NAZARETH, col. 2, at the cloſe, l. 34, add—*Lower* Nazareth is a townſhip containing 758, and *Upper* Nazareth is a townſhip in the ſame county and ſtate, containing 535 inhabitants.

NEATH, col. 2, l. 5, *r.* Saturday for Thurſday; l. 6, add—It has three fairs; l. 12, *r.* was for is.

NECYDALIS, MINOR, add—in fields and about hedges in the ſummer months. CÆRULEA, add—in woods during the ſummer months.

NEEDHAM, l. 7, *r.* 1097.

NEJIFF, or MESHED ALI, a holy city, being the ſuppoſed burying-place of the caliph Ali, a town of the pachalic of Bagdad, nine furſungs from Hilleh, and four miles from Kufa, ſituated on a hill, at the bottom of which is an artificial lake. It was founded by Alexander the Great, and bore the name of Alexandria, which was afterwards changed into that of Hira, when it became the reſidence of a dynaſty of Arabian princes, who fought under the Parthian banners againſt the emperors of Rome. Nejiff is not ſo large as Kerbela, but better built, and defended by a good wall, deep ditch, and lofty towers, lately renewed, under the apprehenſion of an attack from the Wahabees, who extend their ravages to the gates of the town. The tomb and moſque of Ali occupy an ample ſpace in the middle of the city, and form a handſome ſtructure, within a high wall, which an infidel ſubjects himſelf to death for attempting to paſs. The governor of Meſhed Ali is a Turk, but the population, not eaſily eſtimated on account of the conſtant influx of pilgrims, is like that of Kerbela, chiefly compoſed of Perſian fanatics. The relics of almoſt all perſons of rank are tranſported from the moſt remote parts of Perſia to be interred either here, or at Kerbela, Kazameen, Koom, or Meſhed in Khoraſſan.

NELSON, l. 2, *r.* 13,257—2908. Add—Alſo, a county of Virginia, containing 9684 inhabitants, of whom 4678 were ſlaves in 1810.

NEMESIA, in *Botany*, a name borrowed by Ventenat from Dioſcorides, who is ſaid to have applied it to ſome kind of *Antirrhinum*, we know not in what part of his writings. The preſent genus is nearly allied to *Antirrhinum*.—Venten. Malmaiſ. 41. Ait. Hort. Kew. v. 4. 10.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Scrophulariæ*, Juſſ.

Eſſ. Ch. Calyx in five deep ſegments. Corolla ſpurred at the baſe; throat cloſed by the palate. Capſule compreſſed, of two cells, and two boat-like valves; partition linear, covered with ſeeds.

1. N. *chamædrifolia*. Germander-leaved Nemeſia. Vent. n. 3. Ait. 1. (Antirrhinum macrocarpum; Ait. ed. 1. v. 2. 335. Willd. Sp. Pl. v. 3. 249.)—Leaves ovate, ſerrated, ſtalked. Flowers on axillary ſtalks, ſolitary.—Native of the Cape of Good Hope. A perennial, herbaceous, ſmooth, green-houſe plant, flowering all ſummer. *Flowers* deep crimſon.

2. N. *bicornis*. Horned Nemeſia. Ait. n. 2. See ANTIRRHINUM, n. 24. (Linaria; Burm. Afr. 211. t. 75. f. 3.)—Leaves lanceolate, with tooth-like ſerratures. Cluſter terminal, rather lax.—From the ſame country. Annual. The ſpecific name applies to the *capſule*.

3. N. *fœtens*. Fœtid Nemeſia. Vent. n. 1. t. 41.—Leaves linear-lanceolate; upper ones entire. Cluſters terminal, denſe. Stem ſhrubby.—From the Cape. *Flowers* white, ſtreaked with red; palate yellow.

4. N. *linearis*. Linear Nemeſia. Vent. n. 2.—Leaves linear, entire, ſeſſile. Cluſters corymboſe.—Deſcribed by Ventenat from Juſſieu's herbarium.

NEPANESE, in *Geography*, a townſhip of Lycoming county, in Pennſylvania, having 298 inhabitants.

NEPER, col. 1, l. 22 from bottom, for *Neper's rods* r. *Neper's bones*.

NEPHELINE, or SOMMITE. See MINERALOGY, *Addenda*.

NEPHRITE. See MINERALOGY, *Addenda*.

NERANTEKA, in *Hindoo Mythology*, is the name of a malignant demon, mentioned often in their heroic poems, ſlain by Kriſhna, and by other divine warriors. The name generally means deſtroyer of men.

NERKA, one of the many hells of the Hindoos. See NARAKA.

NEROS, in *Chronology*, an ancient Chaldæan period of 600 years, and equal to the Soſos of 60 years multiplied by 10.

NESENPACK, in *Geography*, a townſhip of Luzerne county, containing 460 inhabitants.

NESHANSACK, a townſhip of Mercer county, in Pennſylvania, having 700 inhabitants.

NETCHEZ, or weſtern branch of the Sabine, a river of Louiſiana, formed from the united ſtreams of the Angelina, Attoquaque, Nena, and the Attaſcocito. The Netchez, though not ſo long as the Sabine, exceeds it as to quantity of water. The lands watered by this river, and its tributaries, are of ſuperior quality to the country on the Sabine; but ſterile compared with thoſe on the margin of many rivers in Louiſiana.

NETTING. Add—The *netting* is uſed in different parts of a ſhip; thus, the *boarding-netting* is thrown over the ſides, to prevent the enemies boarding. *Bowſprit-netting* is faſtened near the outer end of the bowſprit, to the man-ropes or horſes, to ſtow away the fore-topmaſt-ſtayſail and jib. *Breaſtwork quarter and waiſt nettings* are uſed to keep the hammocks in the ſtantions. *Head-netting* is faſtened to the horſes in the head and upper rail, to prevent the men from ſlipping overboard. *Quarter-deck netting* is ſuſpended over the officers' heads, to prevent any thing falling thereon. *Top-netting* is faſtened to the rail, ſhrouds, and top, to preſerve the men from falling.

NEWARK, in America, l. 2, add—having 88 inhabitants; l. 12, add—and in 1810 contained 8008 inhabitants, of whom 369 were ſlaves.

NEW BRAINTREE, l. 2, after Worceſter, inſert —

—Maſſachuſetts; l. 5, add—in 1810 contained 912 inhabitants.

NEWBURY, or Newberry, l. 2, add—It contained, in 1810, 13,964 perſons, of whom 4006 were ſlaves; l. 3, *r.* 1796; l. 10, *r.* 1363; l. 13, *r.* 5176.

Newbury Port, l. 4, *r.* 7634.

NEW CANAAN, a town of Fairfield county, in Connecticut, containing 1599 perſons.

NEWCASTLE, l. 5, *r.* 9 hundreds, and 24,429; l. 6, *r.* 1087; l. 16, add—It contained 2340 inhabitants, including 174 ſlaves; l. 19, *r.* 592; l. 26, *r.* 1232. At the cloſe, add—Alſo, a townſhip of Muſkingum county, in Ohio, having 370 perſons.

Newcastle-*in-Emlyn*, col. 2, l. 2, for Saturday *r.* Friday. Add—A few miles below the town is a beautiful ſalmon-leap.

NEW CHESTER. Add—containing 895 inhabitants.

NEW DURHAM, a town of Strafford county, in New Hampſhire, having 888 inhabitants.

NEW FAIRFIELD, a town of Connecticut, in the county of Fairfield, having 772 inhabitants.

NEW-FANE, l. 3, *r.* 1276.

NEWFIELD, a town of Maine, in the county of York, with 815 inhabitants.

NEW GRANTHAM. Add—containing 864 inhabitants.

NEW HAMPSHIRE. Add—See United States.

NEW HAMPTON, l. 4, add—and contains 1293 inhabitants.

NEW HARTFORD. Add—containing 1507 inhabitants.

NEW HAVEN, in America, l. 4, *r.* 18; l. 5, *r.* 1810; containing 37,064 perſons. For other particulars, beſides thoſe which have been mentioned, ſee *New* Haven, and United States.

NEWINGTON, l. 3, *r.* 508.

Newington, *Stoke*, a village of the county of Middleſex, in the Finſbury diviſion of Oſſulſtone hundred, and pariſh of St. Mary's. In 1811 the pariſh contained 342 houſes, and 2149 perſons; *viz.* 890 males, and 1259 females.

NEW KENT, l. 3, *r.* 6478 inhabitants, of whom 3725 were ſlaves in 1810.

NEWLIN. Add—containing 780 inhabitants.

NEW LONDON, l. 4, *r.* 14; l. 6, *r.* 1810—34,707—77; l. 14, *r.* 3238; l. 26, *r.* 692. At the cloſe, add—Alſo, a townſhip of Pennſylvania, in Cheſter county, containing 1018 perſons.

NEWMARKET, in America, l. 3, *r.* 1061. Col. 2, l. 1, add—Alſo, a townſhip of Highland county, in Ohio, containing 978 inhabitants.

NEW MILFORD, l. 7, add—In 1810, the inhabitants were 3537. At the cloſe, add—it has 797 inhabitants.

NEWPORT, in Cornwall. In 1811, the pariſh of St. Stephen's contained 159 houſes, and 896 perſons; *viz.* 433 males, and 463 females.

Newport, col. 1, l. 4, *r.* 1427; l. 7, *r.* 16,294; l. 19, *r.* 7907. Col. 2, l. 9, add—containing 566 inhabitants. Add—Alſo, a townſhip of Waſhington county, in Ohio, having 323 inhabitants.

NEWRY, a townſhip of the diſtrict of Maine, in the county of Oxford, having 202 inhabitants.

NEWTON, l. 3, *r.* 1709; l. 5, add—Alſo, a townſhip in Bucks county, having 902 inhabitants:—l. 8, *r.* 454; add—Alſo, a townſhip of Delaware county, in Pennſylvania, containing 601 inhabitants.—Alſo, a townſhip of Cumberland county, in the ſame ſtate, having 1312 inhabitants.—Alſo, a townſhip of Miami county, in Ohio, having 556 inhabitants.—Alſo, a townſhip of Muſkingum county, in Ohio, having 802 inhabitants.—Alſo, a townſhip of Trumbull county, in Ohio, having 490 inhabitants.

Vol. XXV.

NEWTON-NOTTAGE, a pariſh formed by the hamlets of Newton and Nottage, ſituated in the county of Glamorgan, near the Briſtol Channel. In 1811, the former hamlet, at a ſmall diſtance from Pyle, that lies in the road between Cowbridge and Neath, contained 55 houſes, and 254 perſons; *viz.* 117 males, and 137 females: and the latter contained 43 houſes, and 217 perſons; *viz.* 107 males, and 110 females.

NEWTOWN, l. 3, containing 2834 perſons; l. 14, having 1951 inhabitants; l. 17, and 2082 perſons; l. 25, add—See Newton; l. 27, add—See alſo Newton.

NEW VINEYARD, l. 1, for Kennebeck *r.* Somerſet. Add—containing 484 inhabitants.

NEW YORK. See *New* York.

NIAGARA, l. 1, inſert—a county, &c.; l. 2, add—the county including 8971 inhabitants.

NIBBED-Hooks, in *Rope-making*, are iron winches uſed to hang the yarn on to harden, and to lay ſmall ropes on.

NICHOLAS, l. 2, *r.* 4898 inhabitants, 509 being ſlaves.

NICKEL, in *Chemiſtry*. The weight of an atom of this metal, according to the recent determinations of Dr. Thomſon, is 33.75, from which datum the compoſition of its ſalts may be eaſily aſcertained. See Atomic *Theory*.

At the end of the article in the Cyclopædia, add—From the experiments of Tupputi, it appears that preparations of nickel poſſeſs poiſonous properties.

Nickel-*Ore*. See Mineralogy, *Addenda*.

NICOTIN, in *Chemiſtry*, the name which has been given to a peculiar principle in the leaves of the *nicotiana latifolia*, or *tobacco*, and to which that plant owes its peculiar properties. This ſubſtance was obtained by Vauquelin from the juice, by a proceſs ſufficiently complicated. When pure it is colourleſs. It has an acrid taſte, and the peculiar ſmell which diſtinguiſhes tobacco. It occaſions violent ſneezing. It is ſoluble both in alcohol and water; the ſolutions are colourleſs, and diſtinguiſhed by the peculiar taſte and ſmell of nicotin. It is precipitated from its ſolutions by tincture of nutgalls. It is volatile, and ſomewhat reſembles in ſhort the volatile oils in its properties. It poſſeſſes poiſonous properties. See further in the Annales de Chemie, lxxi. 139.

NIGER. Add—It has been ſuppoſed that the Niger terminates in the Nile; but this hypotheſis, though maintained by ſeveral modern travellers, *viz.* Hornemann, Jackſon, &c. is the moſt unfounded of any, and the leaſt conſiſtent with acknowledged facts. The ſuppoſition adopted by Mr. Park is, that the Niger terminates in the river Congo, or, as it is ſometimes called, the *Zaire;* which ſee. Another ſuppoſition, reſpecting the termination of the Niger, is that of a German geographer, Mr. Reichard, publiſhed in the "Ephemerides Geographiques," in Auguſt 1808, who repreſents the Niger, after reaching Wangara, as ſeeking a direction towards the ſouth, and being joined by other rivers from that part of Africa, taking a great turn from thence towards the ſouth-weſt, and purſuing its courſe until it approaches the north-eaſtern extremity of the gulf of Guinea, whence it divides and diſcharges itſelf by different channels into the Atlantic; after having formed a great Delta, of which the Rio del Rey conſtitutes the eſtuary of the Rio Formoſo, and Benin river the weſtern branch. Park's Travels, vol. ii. Appendix, N° iv. p. clxxxiv.

NILA, in *Mythology*, is one of the many names of the Hindoo goddeſs Parvati. The word means blue or dark-azure, and is one of the Sanſkrit names for the Nile, as is alſo Kali.

NILAKANT'HA, a name of the god Siva, meaning blue-throated, ſimilar to Shitakantha, or Shitakoontha, under which word ſome account is given of the origin, &c. of the appellation.

NILE, in *Geography*, a town of Ohio, in the county of Scioto, having 396 inhabitants.

NIMMISHITHAN, a townſhip of Ohio, in Stark county, having 385 inhabitants.

NIOBE, in *Ancient Mythology*, was, according to the hiſtorians who acquieſce in the authority of Diodorus Siculus and Apollodorus, the daughter of Tantalus, and ſiſter of Pelops. Pelops removing from Phrygia, carried his ſiſter with him to that part of Greece which afterwards took his name; and for the ſecurity of his new dominions, married her to Amphion, a prince eminently powerful and eloquent, who fortified Thebes with walls. Niobe became, in conſequence of that marriage, the mother of a numerous progeny; and was thus led to deſpiſe Latona, who in revenge induced Apollo and Diana to put all her children to death, in the manner related by Ovid and Plutarch. This epiſode, as it is ſaid by ſome writers, contains a hiſtory no leſs true than tragical. The city of Thebes was deſolated by a peſtilence, which deſtroyed all Niobe's children; and as contagious diſtempers have been attributed to the immoderate heat of the ſun, it was reported that Apollo ſlew them with his darts. Niobe, after the death of her children, and huſband, who, overpowered with grief, deſtroyed himſelf, returned to Lydia, and ended her days near mount Sipylus, upon which was ſeen, according to Pauſanias, a rock that, viewed at a diſtance, reſembled a woman in deep melancholy and diſtreſs. Sophocles, in his Antigone, ſays, that this princeſs was not at firſt transformed into a ſtone; but that the gods, at her requeſt, granted her that favour afterwards. The ſame poet, in his Electra, ſays, that Niobe ſheds tears in a tomb of ſtone.

NIPPER, in *Rope-making*, is formed of two ſteel plates, through which the yarn paſſes from the tar-kettle, which are ſo adjuſted by weights and a lever, that the yarn receives no more tar than is required, and what is ſqueezed out drops into a trough and returns into the kettle.

NIRRITI, is the name of a Hindoo deity, conſort or *ſakti* of Nirrit or Nairit. (See the latter article.) She ſhares with her huſband the regency of the ſouth-weſt quarter of the heavens.

NISHAPOUR, anciently the greateſt and richeſt city of Khoraſſan in Perſia, and one of the four royal cities of the province, is ſeated on a plain, formerly irrigated by about 12,000 aqueducts, which have fallen into decay. It is ſaid to have been founded by Taimuras, and deſtroyed by Alexander the Great. After the lapſe of many years, it was rebuilt by Sapor I., and his ſtatue was ſeen in it till the Arabs deſtroyed it. This city was taken in the 548th year of the Hegira by the Tartars, who ſo completely ruined it, that when the original inhabitants returned to take poſſeſſion of it, they could not diſtinguiſh their own houſes. After having regained its former ſplendour, it was again taken and pillaged by the Tartars under Gengis Khan; ſo that the preſent inhabitants do not exceed the number of 15,000. The ruins of the city are nearly ten furſungs in circumference. It is at preſent ſubject to the dominion of the king of Perſia, and has nine diſtricts dependent upon it, each of which has about ten walled villages. The fruits are abundant and delicious.

NITRE, *Native*. See Mineralogy, *Addenda*.

NITRIC Acid, Nitrates, &c. in *Chemiſtry*. The correct proportions in which azote and oxygen combine, will be found in the tables appended to Atomic *Theory*, to which therefore we refer our readers. We ſhall only ſtate here the compoſition of nitric acid, which is 5 atoms oxygen + 1 atom azote: hence the weight of its atom is 67.5, from which datum the compoſition of the nitrates can be accurately determined.

NIVENIA, in *Botany*, a noble genus, dedicated by Mr. Brown to Mr. James Niven, an intelligent obſerver and collector of Cape plants, ſent out by Mr. Hibbert.—Br. Tr. of Linn. Soc. v. 10. 133. Ait. Hort. Kew. v. 1. 201. (Paranomus; Saliſ. Parad. at p. 67.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Proteaceæ*, Juſſ. Br.

Eſſ. Ch. Corolla four-cleft, regular. Anthers ſunk in the concave tips of the ſegments. Nectary four ſcales. Stigma vertical. Nut ſuperior. Involucrum of four leaves, containing four flowers; hardened when in fruit.

Ten ſpecies are deſcribed, all ſhrubs, natives of hills at the Cape of Good Hope. *Leaves* ſcattered, doubly pinnatifid, thread-ſhaped; the upper ones, in ſix of the ſpecies, undivided and flat. *Flowers* ſpiked, capitate, bracteated, purpliſh.—Four ſpecies are mentioned in Hort. Kew.

1. N. *Sceptrum*. (Protea Sceptrum; Linn. Suppl. 116. Sparm. Stockh. Tranſ. for 1777. 53, not 55, t. 1.)—Upper leaves obovate or lanceolate, flattiſh; ſimple at the edges. Corolla ſilky, with cloſe hairs.

2. N. *ſpathulata*. (P. ſpathulata; Thunb. Prot. n. 58. t. 5.)—Upper leaves broader than long, hooded, bordered. Involucrum obtuſe. Corolla bearded. Style ſmooth. Stigma oblong-clubſhaped.

3. N. *ſpicata*, and 4. N. *crithmifolia*, the latter P. Lagopus; Andr. Repoſ. t. 243, have all the *leaves* doubly pinnatifid.

NOBLEBOROUGH, l. 3, *r*. 1206.

NOCK, the foremoſt upper corner of boomſails, and of ſtayſails cut with a ſquare tack.

NOCKAMIXON, l. 2, *r*. 1209.

NOCTURN, Liturgic, the divine office of the night, as diſtinguiſhed from that of the day. The latter conſiſted of the ſeven canonical hours, the former of three nocturns, each conſiſting of ſeveral pſalms, leſſons, &c.; and it was heretofore cuſtomary to interrupt the ſleep three different times for the performance of them.

NOOTH'S Apparatus. See Laboratory.

NORFOLK, col. 2, l. 15, add—By the parliamentary returns in 1811, this county contained 33 hundreds, 3 boroughs, *viz*. King's Lynn, Thetford, and Great Yarmouth, and one city, *viz*. Norwich; 51,774 houſes, occupied by 291,999 perſons; 138,089 being males, and 153,910 females: of whom 31,454 families are employed in agriculture, and 23,082 in trade and manufactures.

Norfolk, in America, l. 4, *r*. 22; l. 6, *r*. 31,245; l. 8, *r*. 18,679—5647; l. 4 from bottom, *r*. 1441.

NORMAN. Add—Alſo, a ſquare fid of oak, or ſhort carling, fixed through the head of the rudder of Eaſt India ſhips, to prevent the loſs of the rudder, in caſe of its being unſhipped. Alſo, a ſhort wooden bar with a head, uſed in one of the holes of the windlaſs when there is little ſtrain on the cable.

NORRIDGEWOCK, l. 2, add—and county of Somerſet; l. 3, *r*. 880.

NORTH Beaver. See Beaver.

North-*Weſt Fort*, a hundred of Suſſex county, in the ſtate of Delaware, containing 3293 perſons, of whom 382 were ſlaves in 1810.

North-*Weſt Paſſage*, l. 15, after Labrador coaſt, add—nor of the Cortelears of Portugal in 1500, nor of the Cartiers and others from France in 1508 and 1534; nor of Gomez, &c. from Spain in 1524, &c.; nor of ſir Hugh Willoughby in 1553, of Richard Chancellor and Steven Burrough in 1555 and 1556:—l. 19, ſuch as Edward Fenton in 1577, Arthur Pet and Charles Jenkinſon in 1580, ſir Humphry Gilbert in 1583, John Davis in 1585, 1586, and 1587, Cornelis Corneliſon, Brands Yſbrants, and William Barentz of the United Provinces, in 1594, of Barentz in 1595 and 1596, William Adams in 1596, George Weymouth in 1602, James Hall in 1605–6–7, John Knight in 1606, Henry Hudſon in 1607–8–9–10, ſir Thomas Batlon in 1612, James Hall in 1612, Gibbons in 1614, Robert Bylot in 1615, Bylot and William Baffin in 1616, Jens Mank, a Dane, in 1619:—l. 41, and, after the failure of Samuel Hearne in 1760, 1770, Conſtantine John Phipps (lord Mulgrave) in 1770, captain Cook, &c. Col. 2, l. 39, add—our limits will not allow our detailing the voyages of captain (now admiral) Lowenorn, lieutenant Egéde, and lieutenant Rothé, Danes, in 1786 and 1787, nor the travels of Alexander Mackenzie in 1789, nor thoſe of Charles Duncan in 1790 and 1791, nor the diſcoveries made by the Ruſſians on the northern coaſt of Siberia during the 18th century, nor the voyages for farther diſcovery, undertaken in the early part of the 19th century by lieutenant Kotzebue 1815 to 1818, of John Roſs, David Buchan, William Edward Parry, and John Franklin in 1818. Add to the references—Barrow's Chronological Hiſtory of Voyages into the Arctic Regions, &c. 8vo. London, 1818.

NORTHAMPTON, col. 9, l. 7, for 1623 *r.* 1576.

Northampton, in America, l. 4, *r.* 32—38,145; l. 5, *r.* 1176; l. 8, *r.* 710; l. 10, *r.* 13,082; l. 11, *r.* 7258; l. 17, *r.* 7474; l. 18, *r.* 3350. Col. 2, l. 2, *r.* 2631. Add at the cloſe—In 1810 it contained 4171 inhabitants.

NORTHAMPTONSHIRE, l. 24, *r.* 28,318. Add—68,279 being males, and 73,074 females, of whom 12,100 families were employed in trade and manufactures, and 15,235 in agriculture.

NORTHBOROUGH, l. 3, *r.* 794.

NORTHBRIDGE, l. 3, *r.* 713.

NORTHFIELD, l. 3, *r.* 426; l. 6, *r.* 1218; l. 10, *r.* 1057.

NORTH HAMPTON, l. 2, *r.* 651.

NORTH HAVEN, l. 4, *r.* 1239.

NORTH HERO. See Hero.

NORTH KINGSTOWN, l. 5, *r.* 2957; l. 6, *r.* 7 ſlaves in 1810.

NORTH PORT, l. 2, *r.* 780.

NORTH STANNINGTON, a townſhip of New London county, in Connecticut, having 2524 perſons.

NORTHUMBERLAND, in America, l. 1, for Grafton *r.* Coos; l. 4, *r.* 281; l. 7, *r.* 26, *r.* 36,327; l. 15, *r.* 8308 inhabitants, of whom 3847 were ſlaves in 1810.

NORTHWOOD, l. 5, *r.* 1095.

NORTH YARMOUTH, l. 5, *r.* 3295.

NORTON, l. 3, *r.* 1598.

NORWALK, col. 2, l. 1, *r.* 2983.

NORWAY, l. 3, *r.* Oxford; l. 4, *r.* 1010.

NORWEGAN, a townſhip of Berks county, in Pennſylvania, having 415 inhabitants.

NORWICH, col. 7, l. 39, add—By the parliamentary returns in 1811, the city of Norwich contained 8336 houſes, occupied by 37,256 perſons; the males being 15,664, and the females 21,592: of whom 8410 families were employed in trade, manufactures, and handicraft, and 388 in agriculture.

Norwich, in America, l. 3, *r.* 1812; l. 5, *r.* 968; l. 17, *r.* 2976 inhabitants. Norwich, except the city, contains 552 inhabitants.

NOTOCERAS, in *Botany*, from νωτος, *the back*, and κερας, *a horn*.—Brown in Ait. Hort. Kew. v. 4. 117.—Claſs and order, *Tetradynamia Siliquoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Valves of the pod horned at the back, near the top. Cotyledons accumbent. Stigma capitate. Calyx nearly erect, equal at the baſe.

1. N. *canarienſis*. Canary Horn-creſs. Ait. n. 1. (Eryſimum bicorne; Ait. ed. 1. v. 2. 394. Willd. Sp. Pl. v. 3. 514.)—Brought by Mr. Maſſon, from the Canary iſlands. A ſmall, branched, annual plant, covered with cloſe briſtles; the *leaves* lanceolate, entire; *flowers* yellow, minute.

NOTTINGHAM, in America, l. 3, *r.* 1063; l. 6, *r.* containing 2615 inhabitants. Add—Alſo, a townſhip of Waſhington county, in Pennſylvania, having 2037 inhabitants.—Alſo, a townſhip of Ohio, in Tuſcarawa county, having 452 inhabitants. Col. 2, l. 2, *r.* 1376.

NOTTINGHAMSHIRE, l. 16, *r.* 31,344; l. 17, after number, add—the males being 79,037, and females 83,843.

NOTTOWAY, a county of Virginia, containing 9273 inhabitants, of whom, in 1810, 6368 were ſlaves.

NUMBERS, col. 2, l. 2, after " and $\frac{220}{2}+$ inſert "$\frac{220}{4}+$." Col. 18, &c. $x^a - x$.

Numbers, *Planetary*, col. 5, l. 10, for $25^{d}\ 24^{h}\ 8^{m}$ *r.* $25^{d}\ 14^{h}\ 8^{m}$. Col. 6, l. 17 from bottom, for ſucceſsful *r.* ſucceſſive. Col. 21, l. 26, for $\frac{2064}{4355}$ *r.* $\frac{2064}{3355}$.

NUX Vomica, *Chemical Properties of*. MM. Pelletier and Caventou, in analyſing the nux vomica and St. Ignatius's bean, obſerved a new vegetable alkaline ſubſtance, having the following properties.

It is ſlightly ſoluble in water, very ſoluble in alcohol, reſtores the colour of turnſole after it has been reddened with an acid, does not redden turmeric, combines with acids which it ſaturates, and forms with them cryſtallizable ſalts. The diſcoverers have ſuggeſted the name *Vauqueline* for this ſubſtance, in honour of the celebrated chemiſt Vauquelin, who is ſaid to have firſt diſcovered the alkaline properties of a ſubſtance obtained by him from the *daphne alpina*.

NYCTERIUM, in *Botany*, a genus entirely artificial, made by Ventenat in Hort. Malmaiſ. 85, out of ſuch ſpecies of Solanum, (ſee that article,) as have irregular flowers.—Sims in Curt. Mag. 1801.—M. Dunal has very judiciouſly, as we preſume to think, kept *Solanum* entire.

O.

OAKHAM, in America, l. 3, *r.* 848.

OBSIDIAN. See MINERALOGY, *Addenda*.

OCATAHOOTA, in *Geography*, a pariſh of New Orleans, in Louiſiana, reſembling in its ſoil and produce *Ouachitta;* which ſee.

OCTOMERIA, in *Botany*, οκτω, *eight*, and μερις, *a portion, or ſupply*, becauſe of the eight maſſes of pollen.—Brown in Ait. Hort. Kew. v. 5. 211.—Claſs and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Eſſ. Ch. Lip articulated with a kind of claw which bears the petals. Anther a moveable deciduous lid. Maſſes of pollen eight.

We know not of how many ſpecies this genus is compoſed. One only occurs in Hort. Kew.

1. O. *graminifolia*. Graſs-leaved Octomeria. Ait. n. 1. (Dendrobium graminifolium; Willd. Sp. Pl. v. 4. 135. Epidendrum graminifolium; Linn. Sp. Pl. 1353. Helleborine graminea repens biflora; Plum. Ic. 171. t. 176. f. 1.)—Stem elongated, bearing one lanceolate leaf, and a pair of ſtalked flowers. Root creeping.—Native of the Weſt Indies; imported by rear admiral Bligh, in 1793. Few botaniſts have gathered or examined this plant. Burmann, without much ſagacity, thought it a *Convallaria*.

OGHAM, col. 3, l. 30, for Dfxtfrt *r.* Dfxtfrb, and for bfnfdkth *r.* bfnfdktb.

OGLETHORPE, l. 3, containing, with its town Lexington, 12,297 inhabitants, of whom the ſlaves in the county are 5322, and in the town 113.

OHIO, l. 8, add—Bradbury, in his "Travels," eſtimates the area of the Ohio ſtate at 43,860 ſquare miles, and its population at 230,760 ſouls; ſo that by this ſtatement there was, in 1810, only one inhabitant in one and a half ſquare mile, and allowing 640 acres to the ſquare mile, one inhabitant in every 900 acres. At the cloſe, add—For a later and more correct account of the number of counties and amount of population in this ſtate, ſee UNITED STATES. Col. 5, l. 3 from bottom, add—This river derives its waters from an area of 198,464 ſquare miles, four times the extent of England and Wales, the ſurface of which is ſuppoſed to be 49,450 ſquare miles, and comprehended between the parallels of 35 and 43 degrees of latitude.

OHIO, county of Virginia, l. 4, *r.* 8175 inhabitants, of whom 440 were ſlaves in 1810; l. 6, *r.* 3682; l. 7, *r.* 497. Add—Alſo, a townſhip of Alleghany county, in Pennſylvania, having 832 inhabitants.—Alſo, a townſhip of Beaver county, in Pennſylvania, having 1128 inhabitants.—Alſo, a town of Ohio, in the county of Clermont, having 1803 inhabitants.—Alſo, a town of Gallia county, in Ohio, having 350 perſons.—Alſo, a townſhip of Knox county, in Indiana territory.

OIL *of Caraway*, l. 1, for CARUA *r.* CARUM.

OIL *Creek*. Add—Alſo, a townſhip of Crawford county, in Pennſylvania, having 340 inhabitants.

OLEA, l. 4 from bottom, for Calyx *r.* Corolla.

OLEFIANT GAS, *Chemical Compoſition of*. See ATOMIC *Theory* and CARBON.

OLEÏC ACID, in *Chemiſtry*, obtained by Chevreul from a ſoap made by digeſting hog's-lard in potaſh ley. When this ſoap is put into water, a portion was depoſited in pearl-coloured ſcales, which was the *margarate of potaſh*. (See MARGARIC *Acid*.) Another portion, conſiſting of the *oleate of potaſh*, mixed with ſome *margarate* of potaſh, remained in ſolution. Theſe two were then ſeparated, and the oleïc acid obtained in a ſtate of purity. Oleïc acid when pure is an oily fluid, without taſte or ſmell. But moſt commonly it has a rancid odour, and a yellow or brown colour, ſomewhat reſembling olive-oil. Its ſpecific gravity is .899. Sometimes it remains liquid at 35°, though other varieties of it congeal at 43°, or even higher. When congealed it cryſtallizes in needles. It reddens litmus with great energy. It is inſoluble in water, but very ſoluble in alcohol. It combines readily with the alkalies and earths, forming ſalts, or rather ſoaps, none of which poſſeſs very remarkable properties. Dr. Thomſon, from Chevreul's experiments, eſtimates the weight of its atom at 360. It may be obtained from moſt other animal fats as well as hog's-lard.

OLEY, in *Geography*, a townſhip of Berks county, in Pennſylvania, having 1284 inhabitants.

OLIVINE. See OLIVINE, and MINERALOGY, *Addenda*.

O'M, col. 5, l. 31, for reſearches *r.* reſearchers; l. 42, *r.* monoſyllabic; l. 4 from bottom, *dele* of, and *r.* one of their. Col. 6, l. 24, *r.* compoſed of a, &c.

ONELEG, in *Geography*, a townſhip of Ohio, in Tuſcarawa, having 610 inhabitants.

ONONDAGO, l. 16, *r.* 25,987, of whom, in 1810, 50 were ſlaves.

ONSLOW, l. 3, *r.* 6669—2299.

ONTARIO, l. 3, number of inhabitants in 1810 was 43,032, of whom 212 were ſlaves.

OPÆTHUS, TOURACO, in *Ornithology*, a genus of birds of the order of Picæ; the characters of which are, beak ſhort, convex above, rather bent, compreſſed laterally, and denticulated from the middle to the tip; noſtrils covered with ſhort ſilky feathers; feet ſimple, with two toes before and two behind. One ſpecies of this genus is known, which is a native of Africa, and one of the moſt beautiful of the birds that are found in that quarter of the globe. It feeds on fruits, is eaſily tamed, and capable, as it is ſaid, of turning its exterior hinder toe either backwards or forwards. This is the CUCULUS *Parra* of the Linnæan ſyſtem. Shaw.

OPAL. See MINERALOGY, *Addenda*.

OPELOUSAS, in *Geography*, a county and pariſh of the territory of Orleans, containing, in 1810, 5048 inhabitants. This territory preſents a great variety of ſoil, or, if we except the ſugar-cane and orange-tree, the cultivation of moſt valuable vegetables has ſucceeded. Cotton, indigo, and tobacco, have been and the former now is the ſtaple commodity of the country; to which we may add, cattle, hides, leather, cheeſe, beef, and pork.

OPHIDIUM, l. 25, add—See Dr. Brouſſonet's deſcription of this fiſh in the Phil. Tranſ. vol. lxxi.

OPHIOPOGON, in *Botany*, from οφις, *a ſerpent*, and πωγων, *a beard*, a tranſlation of the Japaneſe name, *Riuno Fige*, but the application is not very evident.—Ker in Curt. Mag. 1063. Ait. Hort. Kew. v. 2. 281.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Sarmentaceæ*, Linn. *Aſparagi*, Juſſ.

Eſſ. Ch. Corolla half ſuperior, permanent. Anthers ſeſſile. Stigma ſimple. Berry with one ſeed.

1. O. *japonicus*. Japan Snake's-beard. Curt. Mag. t. 1063. (Convallaria japonica; Linn. Suppl. 204. Redout. Lil. t. 80. Mondo; Kæmpf. Am. Exot. 823. t. 824.)—Native of Japan, where it ſerves as edgings in flower-gardens. A hardy graſſy plant, with cluſters of greeniſh-white *flowers*, and blue *berries*. The knobs of the *root* candied, are eſteemed medicinal.

OPIUM, *Chemical Properties of*. M. Deroſne, in 1803, publiſhed an analyſis of opium, in which he announced the exiſtence of a peculiar cryſtallizable ſubſtance to which that drug owes its narcotic properties, whence it was named the NARCOTIC *Principle* (which ſee). Soon afterwards, M. Sertürner publiſhed an analyſis of the ſame ſubſtance, but the reſults of the two chemiſts were ſo different, as to render both doubtful. This latter chemiſt, however, purſued the ſubject, and at length ſucceeded in ſeparating a peculiar ſubſtance from opium, which he denominated *morphia*. It is to this principle that opium owes its narcotic properties; and the *narcotic principle* of Deroſne, according to Sertürner, is a compound of morphia, and a peculiar acid called the meconic, which opium contains. This latter circumſtance, however, has been ſince called in queſtion by Robiquet.

According to Sertürner, morphia occurs in opium combined with meconic acid. There are different methods of ſeparating morphia from opium. Sertürner effected it by adding acetic acid, and thus forming an impure acetate of morphia. The acetic acid was then ſeparated by ammonia, and the morphia thus obtained purified by means of alcohol. Others, after ſeparating the extraneous matter as much as poſſible, add at once to the watery ſolution of opium pure ammonia, to precipitate the morphia, which is to be purified as before.

Morphia thus obtained is cryſtallized in the form of double four-ſided pyramids, whoſe baſes are ſquares or rectangles, and ſometimes of four-ſided priſms with trapezoidal baſes. It diſſolves in eighty-two times its weight of boiling water, and the ſolution on cooling depoſits regular colourleſs tranſparent cryſtals. It is ſoluble in thirty-ſix times its weight of boiling alcohol, in forty-two times its weight of cold alcohol, and in eight times its weight of ſulphuric ether. All theſe ſolutions change the infuſion of Braſil wood to violet, and the tincture of rhubarb to brown, thus denoting diſtinct alkaline properties. They have a bitter and peculiar aſtringent taſte; and the ſaturated ſolutions, when rubbed upon the ſkin, leave a red mark. It acts with great energy on the animal economy. Half a grain being ſwallowed by a young man of ſeventeen, produced a fluſhing in the face and an augmentation of the muſcular energy; another half grain being ſwallowed half an hour afterwards, occaſioned a dull pain in the head, giddineſs, ſtupor, and nauſea. A third half grain aggravated the ſymptoms ſo much, that Sertürner became alarmed, and made his patient ſwallow a quantity of vinegar. But the ſymptoms were rather aggravated and continued all night, though they were removed next morning by the uſe of magneſia.

Morphia readily combines with the different acids, neutralizes them, and thus forms ſalts, of the properties of which the following is a brief ſummary. The *carbonate* of *morphia* cryſtallizes in ſhort priſms. The *acetate* of *morphia* cryſtallizes, but is very ſoluble in water. The *ſulphate* of *morphia* is likewiſe very ſoluble. The *muriate* of *morphia* aſſumes a plumoſe appearance, and is much leſs ſoluble than any of the other ſalts of morphia. The *nitrate* of *morphia* cryſtallizes in priſms.

Dr. Thomſon eſtimates the weight of the atom of morphia, from the experiments of Choulant, at 82.5; but this probably differs conſiderably from the truth.

Meconic Acid.—This acid may be obtained from the infuſion after the morphia has been ſeparated by ammonia as above-mentioned, by adding muriate of barytes as long as any precipitate falls, which is *meconiate of barytes*. To obtain the meconic acid from this ſalt, M. Choulant triturated it in a mortar with its own weight of glaſſy boracic acid. This mixture being put into a ſmall glaſs flaſk expoſed gradually to heat in a ſand-bath, the *meconic acid* ſublimed in the ſtate of fine white ſcales or plates.

Meconic acid thus obtained has a ſtrong ſour taſte, which leaves behind it an impreſſion of bitterneſs. It is readily ſoluble in water, alcohol, and ether. It reddens the greater number of vegetable blues, and changes the ſolution of iron to a *cherry-red* colour; when theſe ſolutions are heated, the iron is precipitated in the ſtate of protoxyd. This acid unites with the different baſes forming *meconiates*. The *meconiate of potaſh* cryſtallizes in four-ſided tables, and is ſoluble in twice its weight of water. The *meconiate of ſoda* cryſtallizes in ſoft priſms, and is ſoluble in five times its weight of water. It ſeems to effloreſce. The *meconiate of ammonia* cryſtallizes in ſtar-form needles, which when ſublimed loſe their water of cryſtallization, and aſſume the form of ſcales. The *meconiate of lime* cryſtallizes in priſms, and is ſoluble in eight times its weight of water. Dr. Thomſon eſtimates the weight of the atoms of this acid, from the experiments of Choulant, at 27.5; but this can only be conſidered as an approximation.

Such is a brief account of the principles which chemiſts have lately detected in opium, and which, from the importance of the ſubject, we have thought proper to inſert here.

ORANGE, l. 2, *r.* 25,247. Col. 2, l. 4, *r.* 1686; l. 7, *r.* 229; l. 11, *r.* 764; l. 13, *r.* 34,347; l. 14, *r.* 966; l. 22,—The number of inhabitants in 1810 was 2266, including 48 ſlaves; l. 27, *r.* 12,323 inhabitants, of whom 6516 were ſlaves in 1810.

ORANGEBURG, l. 6, *r.* 13,229—6564.

ORES, *Chemical Analyſis of*. See ANALYSIS.

ORFA, in *Geography*, the preſent name of the ancient *Edeſſa* (which ſee), from which the pachalic of Orfa derives its appellation. This pachalic is almoſt entirely encircled by the windings of the Euphrates and the river Khabour, and occupies a conſiderable portion of the moſt barren part of Meſopotamia. In the early ages of the Roman empire, this diviſion of Meſopotamia bore the name of Oſrhoene. It had ſubſiſted 843 years as an independent kingdom, when it was reduced under the form of a province by Caracalla, who led Abgarus, the laſt of its kings, in chains to Rome. The city of this name, after the expulſion of the princes of Oſrhoene, became a Roman colony, and was regarded as one of the bulwarks of Meſopotamia againſt the Parthians and Perſians. It was the reſidence of the Courtneys, counts of Edeſſa; and fell, together with the adjoining territory, into the hands of Zingi and Salladeen. In the thirteenth century it was ſacked by the Moguls, and by Timur in the 804th year of the Hegira. It is now ſubject to the grand ſeignior, and the reſidence of a pacha of two tails. It is ſituated in a barren country, 232 miles from Diarbekr, ſurrounded by a ſtone-wall, defended by a citadel, and a broad deep ditch. The houſes are well built, and the inhabitants, compoſed of Turks, Arabs, Armenians, Jews, and Neſtorians, amount to about 20,000 ſouls. The chief ornaments of the city are, a magnificent moſque, conſecrated to Abraham, and the cathedral of the Armenians, now fallen to decay. On an adjoining mountain are the ruins of a building, called the palace of Nimrood, and ſeveral extraordinary ſubterraneous apartments, apparently very ancient. M'Kinneir's Perſia.

ORFORD, l. 4, *r.* 1265.

ORGAN, col. 8, l. 12 from bottom, *r.* thoroughly repaired.

ORLAND. Add—It contains 480 inhabitants.

ORLANDO. See LASSUS.

ORLEANS, l. 4, *r.* 23; l. 10, *r.* 5830; l. *ult.* and in 1810 of 1248 perſons.

ORLEANS, *New*, l. 3, inſert 105 miles, &c.; l. 3, add—or, by the ſtatement of Mr. Darby, N. lat. 28° 57′. W. long. 90° 8′. At the cloſe, add—By the cenſus of 1810, it is ſtated as compriſing the following counties; *viz.* Orleans, German Coaſt, Acadia, La Fourche, Iberville, Point Coupee, Concordia, Ouachitta, Rapides, Nertchitoches, Opelouſas, and Arkanſas, which include a number of pariſhes, and a population of 76,556 ſouls. The city and ſuburbs of New Orleans contained 17,242, and its precincts 7310: the number of ſlaves in the former is ſtated at 5961, in the latter at 4863. Since the cenſus of 1810, there has been a rapid increaſe of population. Mr. Darby, in his "Deſcription of Louiſiana," publiſhed in 1816, ſtates, that 1000 may be added for the annual increaſe, ſo that the preſent population may be eſtimated at more than 23,242 perſons. No city perhaps on the globe, he ſays, preſents a greater contraſt of national manners, language, and complexion, than New Orleans. The proportion between the whites and men of mixed caſt or black is nearly equal. Among the whites, the French are hitherto moſt numerous and wealthy; next to theſe are the Anglo-Americans; and laſtly, the natives of the Britiſh iſlands. Here are but few Spaniards and Portugueſe, ſome Indians, and diſperſed individuals of all the nations of Europe. For a further account, ſee UNITED STATES.

ORNITHIDIUM, in *Botany*, from ορνις, *a bird*, and ειδος, *ſhape, or appearance.*—Saliſ. Tr. of Hort. Soc. v. 1. 293. Brown in Ait. Hort. Kew. v. 5. 210.—Claſs and order, *Gynandria Monandria.* Nat. Ord. *Orchideæ.*

Eſſ. Ch. Lip ſeſſile, hooded, united to the baſe of the column. Calyx and petals converging. Anther a moveable deciduous lid. Maſſes of pollen four, oblique, furrowed behind.

1. O. *coccineum.* Scarlet-flowered Ornithidium. Ait. n. 1. (Cymbidium coccineum; Swartz Act. Nov. Upſ. v. 6. 70. Willd. Sp. Pl. v. 4. 94. Curt. Mag. t. 1437. Epidendrum coccineum; Linn. Sp. Pl. 1348. Jacq. Amer. 222. t. 135. Helleborine coccinea multiflora; Plum. Ic. 175. t. 180. f. 1.)—Native of the Weſt Indies. Cultivated in a ſtove, among rotten bark, and flowering in June. The *leaves* are lanceolate, coriaceous, each proceeding from a bulb. *Flowers* ſcarlet, not large, each on a ſimple, axillary, ſcaly ſtalk, much ſhorter than the leaves.

ORONO. Add—The townſhip in the diſtrict of Maine, and county of Hancock, has 351 inhabitants.

ORRERY, col. 28, l. 17, for taken from *r.* taken for. Col. 42, l. *ult.* for under *r.* over. Col. 44, l. 9, for lays *r.* lies.

OSAGES. Add—See WASASHA.

OSMAZOME, in *Chemiſtry.* See BLOOD and FLUIDS, *Animal.*

OSRINGTON, l. *ult. r.* 1341.

OSNABURG, a townſhip of Ohio, in Stark county, having 301 inhabitants.

OSSIPEE, l. 2, *r.* Strafford; l. 4, *r.* 1205.

OSSIPEE *Gore*, a townſhip of the ſame ſtate and county, having 125 perſons.

OTAHEITE, l. 6 from the end, add—From a ſurvey made by captain Wilſon in this voyage, he eſtimates the whole number as not exceeding 16,050 perſons; and Turnbull, in his "Voyage round the World," performed from 1800 to 1804, ſays, that they cannot now be eſtimated at more than 5000.

OTALGIA, derived from ους, *the ear*, and αλγος, *pain*, ſignifies the diſorder, which, in plain Engliſh, is generally called the *ear-ache.* The pain may be confined to one ear, or affect both theſe organs with different degrees of ſeverity. It may be either of a burning, ſhooting, pricking, piercing, throbbing, or gnawing deſcription; or it may conſiſt of an unpleaſant ſenſation of whiſpering in the ear, of a ringing of bells (ſec TINNITUS *Aurium*), a continual humming noiſe, &c.; the complaint in ſuch inſtances uſually depending upon irritation of the nerves of the organ.

According to the nature and ſituation of the diſeaſe, the pain may affect either the outer part of the ear, the meatus auditorius externus, the cheeks and temples, or the internal parts of the organ, the cavity of the tympanum, the labyrinth, and the auditory nerve itſelf. Otalgia is divided into ſeveral ſpecies, which are determined by the nature of their particular cauſes. Calliſen mentions five varieties of the diſorder; *viz.* the *otalgia inflammatoria, catarrhalis, purulenta, metaſtatica,* (a caſe which the modern doctrines in pathology hardly allow us to admit,) and the *otalgia a corporibus alienis intruſis.*

The *inflammatory* form of the complaint, when ſeated in the external parts, is indicated by the common ſymptoms of inflammation, as heat, ſwelling, and redneſs, extending over the lobe of the ear, and the adjoining part of the cheek, attended with a diminution in the diameter of the meatus auditorius, and a conſequent dulneſs in the power of hearing. But when the inflammation is ſeated in the internal ear, it is accompanied with acute fever, excruciating pain in the deeper part of the organ, exquiſite ſenſibility to the ſlighteſt noiſe, intolerance of ſounds, reſtleſſneſs, ſometimes a great deal of delirium, convulſions, ſyncope, coldneſs of the extremities, and, according to the accounts of ſeveral reſpectable writers, the diſeaſe may even have a fatal termination.

The *otalgia catarrhalis* is preceded by the uſual ſymptoms of a cold, which is very frequently the conſequence of an expoſure of the head to a current of wind, or of the feet to damp, at a period when they are much heated. This ear-ache is commonly characteriſed by much milder ſymptoms than other varieties of the complaint; the ſwelling of the parts about the ear is not conſiderable; the noſe diſcharges a vaſt quantity of mucus; the patient is troubled with cough and tooth-ache; and not unfrequently an enlargement of the neighbouring glands is conjoined with the catarrhal ſwelling of the fauces.

The inflammatory otalgia ſometimes terminates in the formation of an abſceſs, which may be ſuperficial, being then ſufficiently manifeſt from the preſence of the ordinary ſymptoms of a cutaneous collection of matter. In this caſe, the fever and pain abate as ſoon as the abſceſs is opened, or has ſpontaneouſly burſt, and the pus has been diſcharged. In other examples, the matter forms more deeply in the cavity of the tympanum, and it either makes its way outward by ulceration of the membrana tympani, or, in a more favourable way, through the Euſtachian tube. When the abſceſs occupies a ſtill deeper ſituation, that is to ſay, when the matter collects in the labyrinth, a necroſis of the bones often follows, the abſceſs either diſcharging itſelf into the cavity of the tympanum, or becoming diffuſed under the pericranium.

The *otalgia carioſa* may originate from a caries, or rather a necroſis of the temporal bone, or, ſympathetically, from a caries of one of the teeth. As the communicating branches of the facial nerve are affected, we ſee why paralyſis of the muſcles of the face is a frequent concomitant of this ſpecies of otalgia.

The *otalgia from extraneous ſubſtances in the ear*, as maſſes of hardened cerumen, inſects, the lodgment of any ſmall body, like a pea, &c. may be ſuſpected from the account which the patient will give of his caſe; but it may be clearly aſcertained by examining the ſtate of the meatus auditorius in a ſtrong light, and by the uſe of a probe. An obſtruction or compreſſion of the Euſtachian tube may alſo become a cauſe of otalgia, as Calliſen aſſerts, by confining fluids in the tympanum.

From what has been ſtated, it is obvious that although otalgia may indeed ſometimes be an *idiopathic* diſorder, it is moſt commonly only *ſymptomatic*, in which laſt circumſtance it neceſſarily requires for its relief the ſame means which are proper for the cure of the primary diſeaſe, of which it is merely the effect.

In otalgia, the prognoſis generally differs according to the ſeat of the diſeaſe, its nature and violence, and the eaſe or difficulty of removing the cauſe. The following circumſtances relative to the prognoſis ſeem to deſerve remark.

Young perſons uſually ſuffer much more ſeverely from ear-ache than older ſubjects, and experience more ſerious degrees of indiſpoſition from the complaint. The internal inflammatory otalgia which produces ſuppuration affects the trunk of the auditory nerve itſelf, and diſcharges its matter within the cranium, may deſtroy the patient in a few days, if we are to credit the obſervations of Calliſen. A ſubſidence of the inflammation, as indicated by a remiſſion of the fever and pain, and a ſpeedy evacuation of the matter by the rupture of the abſceſs, are events which augur a favourable termination of the diſorder. When ſuppuration has occurred in the cavity of the ear, and the abſceſs uncomplicated with any carious affection has burſt and diſcharged itſelf through the meatus auditorius externus, the diſorder may prove no more dangerous than any other ſimple abſceſs. For the moſt part, after every ſevere attack of otalgia a degree of deafneſs remains, and this happens with ſtill greater certainty when the caſe has been attended with ſuppuration.

The treatment of the various forms of ear-ache muſt of courſe depend upon the nature of the cauſes of the diſorder. In general, however, if inflammation exiſt in the organ, it is to be oppoſed by the active employment of antiphlogiſtic remedies, eſpecially topical bleeding with leeches, veneſection, gentle purgatives, and anodyne fomentations. When matter is collected, the burſting of the abſceſs ſhould be accelerated with emollient applications, or an opening ſhould be made with a lancet. In ſuch circumſtances, the ear ſhould be frequently cleanſed by means of injections, which, generally ſpeaking, ought to be of a ſimple unirritating kind. Foreign bodies muſt be extracted. A morbid ſenſibility in the nerves of the ear muſt be leſſened by ſuitable internal and external remedies, the uſe of opium, anodyne fomentations, the exhibition of conium or ſtramonium, the introduction of a doſſil of ſoft cotton into the meatus auditorius, dipt in a mixture of olive-oil and laudanum, or the tinctura camphoræ, a perpetual bliſter in the vicinity of the ear, &c.

OTIS, in *Geography*, a town of Berkſhire county, in Maſſachuſetts, containing 1111 inhabitants.

OTSEGO, l. 6, *r.* 38,802 inhabitants, of whom 74 are ſlaves.

OUACHITTA, a county and pariſh of the territory of Orleans, which, in 1810, contained 1077 inhabitants. The ſtaples of this territory are, cotton, tobacco, lumber, and peltries. Ouachitta river is not navigable in autumn, when the waters are low, for any veſſels above the ſize of canoes.

OVERTON. Add—Alſo, a county of Weſt Tenneſſee, containing 5643 inhabitants, of whom 355 are ſlaves.

OUGEIN, col. 6, l. 39, for here *r.* yet.

OUNDLE. In 1811, the pariſh of Oundle contained 362 houſes, and 1833 perſons; 821 males, and 1012 females: 62 families being employed in agriculture, and 302 in trade, manufactures, and handicraft.

OWHYHEE, col. 2, l. 18. Its height is eſtimated at no leſs than 18,400 feet.

OXALIC Acid, in *Chemiſtry*. The laſt analyſis of this acid is by Berzelius. According to him, it is compoſed of

Hydrogen - - - -	.244
Carbon - - - -	33.222
Oxygen - - - -	66.534
	100

which nearly correſpond with $\frac{1}{12}$th atom hydrogen + 2 atoms carbon + 3 atoms oxygen. But there are ſome doubts if even this determination be correct.

OXFORD, in America, l. 3, *r.* 1277; l. 5, *r.* 1453. Col. 2, l. 5, *r.* 1810, 2470 inhabitants, including 36 ſlaves; l. 6, *r.* 973; l. 15, *r.* 700 inhabitants; and another, called Lower Oxford, with 769 inhabitants.—Alſo, a townſhip of Ohio, in Guernſey county, having 440 perſons.—Alſo, a townſhip of Ohio, in Tuſcarawa county, having 271 inhabitants.

OXYGEN Gas, in *Chemiſtry*. According to the moſt recent determinations, the ſpecific gravity of this gas is 1.111; and 100 cubic inches of it, at a mean temperature and preſſure, will weigh 33.888 grains. See Atomic *Theory*.

OXYGENIZED Acids. M. Thenard has recently been enabled to combine oxygen with acids almoſt to an unlimited extent, chiefly by means of the peroxyd of barium. His general method was, to diſſolve the peroxyd in the acid intended to be oxygenized, and afterwards to ſeparate the barytes by means of ſulphuric acid; the oxygen was thus transferred from the peroxyd of barium to the acid, and by repeating the operation he found that additional doſes could be added. In this way, he oxygenized the nitric, muriatic, phoſphoric, and other acids, and by taking advantage of its other properties, the muriatic acid in particular was oxygenized, even ſo far as to contain 64 atoms of oxygen to 1 of muriatic acid. Theſe oxygenized acids combine with the different baſes, and neutralize them; but they are by no means permanent, readily giving off their ſuperfluous oxygen upon the application of heat, &c. The oxygenized muriatic acid alſo is decompoſed by the oxyd of ſilver, chloride of ſilver is formed, and the oxygen is ſet at liberty.

By ſimilar methods, M. Thenard has been able to combine additional doſes of oxygen with many of the metallic oxyds. See Annales de Chimie et Phyſique, vols. viii. and ix.

OXYMURIATIC Acid. See Chlorine.

OXYPRUSSIC Acid. See Cyanogen and Pruſſic *Acid.*

P.

Vol. XXVI.

PACKERSFIELD, l. 3, *r.* 1076.

PACOLET. Add—Alſo, a town of Rutland county, in Vermont, containing 2233 inhabitants.

PADMA, l. 2, *dele* of.

PAINT, in *Geography*, a townſhip of Fayette county, in Ohio, having 534 perſons.—Alſo, a townſhip of Highland county, in Ohio, with 775 inhabitants.

PAINTING *in Enamel.* Of all the various mediums of painting none is ſo durable as enamel, ſince time, which deſtroys all other things, alters neither its beauty nor its brilliancy; and that this great advantage may not be too eaſily attained, it may be ſaid, alſo, that no other method of painting unites in itſelf ſo many difficulties in the execution.

Enamel painting differs from every other kind of painting, in employing, as a vehicle for the colours, glaſs or ſome vitreous body, to hold the parts together, and fix them to the ground on which they are laid. This being mixed with the colours, and fuſed or melted by means of heat, becomes fluid; and having incorporated with the colours, forms together with them a hard ſhining maſs. This vitreous body, called flux, is to an enamel picture what oil, gum, or varniſh, is in the other modes of painting, as by its means the work acquires its full degree of brilliancy and depth. See Flux.

The quality of the flux is an object of the greateſt conſideration to the enamel painter; when it is eaſily fuſible, it is called ſoft; and when it requires a greater degree of heat, it is called hard: theſe terms are applied as well to the enamel grounds, and the other vitreous ſubſtances employed, as to the fluxes. It is eſſential that the fluxes compounded with the different colours ſhould be of the ſame degree of hardneſs, or nearly ſo; as otherwiſe ſome, from being too ſoft, would be deſtroyed by the fire; while others, from having the contrary defect, would not be fixed to the plate, nor acquire their proper colour. It is neceſſary too, that the plate or enamel ground on which the picture is painted ſhould be harder than the colours; for if they both melted with the ſame degree of heat, they would neceſſarily run together, and render the work indiſtinct.

The ground-work of the enamel plate is metal. Gold and copper are thoſe chiefly employed. For ſmall plates, where great neatneſs and delicacy are neceſſary, gold is preferable, on account of its not bliſtering round the edges in the fire, as is the caſe with copper: for large plates, copper is preferred, not only on account of the difference of expence between it and gold, but becauſe it is found from experience to be better: gold being a much ſofter metal than copper, the plate, if of any ſize, is not found to retain its original form, in paſſing through the fire, ſo well, when made of it, as when it has copper for its baſis. The form of the enamel plate is ſlightly convex; if it were made quite flat, in paſſing through the fire repeatedly it would become concave. It is on this account that gold is not proper for large plates, being heavier as well as ſofter than copper: its own weight added to that of the enamel would naturally tend, while in a ſtate of fuſion, to ſink them in the middle, and render the ſurface warped and uneven, unleſs they experienced reſiſtance from the back, which would moſt probably occaſion the deſtruction of the whole.

When platina was firſt diſcovered, it was imagined, from its great difficulty of fuſion, that it would be of eſſential ſervice in the making of enamel plates, but it was found to be uſeleſs for that purpoſe: as, although a plate made of it paſſed through the fire with its form unaltered in the ſlighteſt degree, there was found wanting that union between the enamel and the metal on which it is laid, that is ſo neceſſary to enſure its ſafety, ſince a ſlight ſhock was ſufficient to ſeparate them and leave the platina quite free from the enamel. With gold and copper it is quite different, it is hardly poſſible to free the gold entirely from the enamel, and ſo ſtrict is its adheſion to the copper, that if broken it invariably brings a lamen of the copper with it. The mode of preparing the enamel plate for painting is exactly ſimilar to that for watch and clock dialling (ſee Enamelling), with this exception, that over the enamel is paſſed a ſofter body, a flux for the purpoſe of incorporating with the colours laid on: this flux ſhould agree with every colour uſed.

The colours uſed in enamel painting are all prepared from metals, earths, or other mineral bodies, mixed and melted with certain proportions of flux, which, when fuſed, diſcover the colours, and fix them to the plate. The colours of the enamel painter are few, and his palette, when compared to that of other artiſts, of the moſt diſcouraging deſcription, many of them appearing very different before and after paſſing the fire. This is indeed one of his greateſt difficulties, and one which requires the greateſt practice to overcome. It is true he may leſſen it by having by his ſide a plate on which he has made trial of his colours, and by which he has aſcertained their poſitive colour, and what their various combinations can produce; but it is alſo neceſſary that he ſhould have in his mind's eye the effect which the fire will give, and calculate the depth and brilliancy of his work; without this, he will be ever in danger of uſing one tint for another, and continually ſubject himſelf to diſappointment.

It is of the greateſt importance that the colours ſhould all agree. This will entirely depend on the properties of the fluxes made uſe of. It would be very deſirable that all the colours ſhould be fluxed with the ſame materials; but as this cannot be, care ſhould be taken that they are not of diſcordant principles. This diſagreement manifeſts itſelf by ſome of the colours deſtroying the others when mixed, or by occaſioning a bubbling of the tint in the fire, and a roughneſs on the ſurface when cold.

Some writers on the ſubject have conſidered it neceſſary, that to paint in enamel two ſets of colours ſhould be made uſe of; one hard, for the beginning of the picture; the other ſoft, for the latter paintings. This idea could only have originated with a perſon totally unacquainted with the principles of the art, as if it were not more neceſſary to have the full power of the colours at the finiſhing than at the beginning of the work: the ſoftneſs or hardneſs of the colour depending on the greater or leſs degree of flux mixed with it, it is evident that in proportion to the quantity of glaſſy matter mixed, ſo will the ſtrength of the colour be diminiſhed. It is much better to continue the old mode of uſing the ſame colours from firſt to laſt, more freely and in greater body in the beginning, and more thinly towards the finiſh.

It has been ſaid, that the French painters in enamel have diſcovered the mode of making the colours appear the ſame before as after paſſing the fire. If this were really the caſe, the advantage is not ſo great as at firſt ſight it ſeems to be. The diſadvantage is not ſo much the different appearance of the colour, as the want of its proper depth. This is not to be overcome but by the admiſſion of a greater evil. To bear a colour out, an oil muſt be uſed, which will not evaporate, and the conſequence of this would be, that on its application to the fire corroſion would take place, and the picture muſt undergo an operation which would much reduce its power before it would be fit for again proceeding with. It is towards the finiſh of the picture that the enamel painter's greateſt difficulties begin; for ſuch is the nature of his colours, that the parts he touches, when it is not neceſſary to cover the whole, whether he heightens the lights or deepens the ſhades, appear the ſame, and much lighter than the general tint. This is an operation which renders great practice and great caution equally neceſſary.

The principal colours whoſe tints are moſt altered by the fire are the reds, and as they are eſſential in the painting of the fleſh, their alteration neceſſarily affects the whole; as the ſame colour which after fire becomes a bright carmine, is before that operation of a dirty-browniſh hue: this inconvenience may be leſſened by expoſing the colour to a ſlight heat, by which it will acquire ſomewhat of its right tint. Some painters for this purpoſe have mixed a portion of carmine, or ſome other colour which is deſtroyed by fire, with their roſe-colours or reds, to render them when painted with the ſame in appearance as after they are fired: this, to ſay the leaſt of it, is a very fallacious mode of proceeding, and one which an artiſt's practice would ſoon teach him to deſpiſe.

The colours uſed in enamel are few and ſimple, and from them the different tints ſhould be made by the artiſt himſelf, (and not by the colour-maker, as uſed to be the caſe,) in the ſame manner as in any other way of painting. They are, white, yellows, roſe-colours or reds, browns, blues, and blacks. The white is prepared from tin; the yellows from ſilver, antimony, and from ſome ochres; the roſe-colours from gold; the blues from cobalt; and the browns and blacks from iron. A red may be prepared from iron, and a green from copper, but theſe will not agree with the other colours. A green cobalt has been lately found in ſome parts of Germany, from which a green may be made, as alſo one from the chrome; but neither is found to be in any reſpect better than that which may be made from blue and yellow, and it is therefore unneceſſary to encumber the palette with them. No colour ſhould be admitted till, from repeated experiment, it has been found to agree with every other in every poſſible combination.

The oils employed are eſſential, and they are ſuch as on application to the fire evaporate with a ſlight degree of heat; for this purpoſe, the oil of ſpike lavender is the beſt. The oil of amber is uſed to keep the colours moiſt for the day's uſe, as it does not evaporate before expoſure to heat. A thick oil of turpentine is likewiſe uſed for the purpoſe of binding the colours together, and making them work more pleaſantly; this however muſt be done with the greateſt caution, as if uſed too freely it will not eſcape in the fire, and will occaſion corroſion.

The laſt proceſs which the enamel picture undergoes is that of paſſing the fire: this is done after every painting, and is very often neceſſary; as without it the artiſt cannot tell the real ſtate of his work. The fire for this purpoſe is of the ſame utility to the enamel painter, as a proof of his plate is to the engraver: it ſhews him what he has accompliſhed, and points out to him what remains to be done. The laſt time of paſſing through the fire is, as may naturally be ſuppoſed, a moment of great anxiety to the artiſt, as he may, in an inſtant, witneſs the deſtruction of his picture, and ſee the labour of months rendered unavailing, by the enamel ground opening and ſhewing a crack acroſs his work. This accident may ſometimes be repaired, but never without great labour. The mode of firing the picture is exactly ſimilar to that uſed in the making of the clock plates. See Enamelling.

The hiſtory of enamel painting is involved in the greateſt obſcurity; of its antiquity we have ample teſtimony in the account which Diodorus Siculus gives of the painted walls executed by the command of Semiramis, in her city of Babylon. At this time, enamel painting had attained the higheſt eminence to which any art can aſpire; when it was made the engine of policy, and the inſtrument of religion; when it was employed to commemorate the heroic deeds of the living, and celebrate the virtues of the dead. How long it retained this elevation we know not, but it is probable it was eſteemed while Babylon remained, and, like that majeſtic city, was overwhelmed with ſuch entire ruin, as ſcarcely to leave a wreck behind.

The coloured beads which envelope the mummies, and the painted idols of the Egyptians, prove that this art was not unknown to that extraordinary people; although nothing which exactly deſerves the name of painting has deſcended to us.

To the Greeks it was known, as is evident from their painted vaſes, which although generally executed in one or two colours, yet furniſh ſome inſtances in which, departing from this ſimplicity, they have diſplayed a variety of colours with great ſucceſs.

By the Romans, if this art were not unknown to them, which, conſidering their intimate knowledge of the acquirements of the Greeks, is not probable, it was at leaſt unpractiſed: ſculpture with them ſeems to have ſuperſeded painting in the decoration of their vaſes, the embelliſhing of their ſarcophagi, and for all ornamental purpoſes.

Some ornaments which have reached our time indicate that the Saxons were not unacquainted with the art of enamel; and in the tomb of Edward the Confeſſor are many ſpecimens of coloured glaſs. Other monuments of a ſubſequent period prove, that the art regularly deſcended, although with varied ſucceſs, at different intervals; but in the tomb of Edward III. John of Eltham, and ſome others of that period in Weſtminſter abbey, are ſtriking inſtances of the art of enamelling. On the monument of the king, the coats of arms are enamelled in their proper colours on thick plates of copper; and the armour of the warrior is curiouſly ornamented with an enamelled pattern of blue, white, and gold.

Theſe remarks may be ſaid more properly to relate to the practice of enamelling than to the art of enamel painting, and are only mentioned here to prove that it was never entirely loſt ſight of; although it was long after that it became enamel painting, as that term is now underſtood.

In the ſixteenth century, ornamental works of conſiderable dimenſions were executed: every one converſant with the arts muſt be acquainted with the painted diſhes called Raffaelle ware, copied from the deſigns of that immortal painter and his diſciple Julio Romano: theſe are, ſtrictly ſpeaking, legitimate enamel pictures, executed on a ground prepared as it is at preſent, and differing only in the ſhape. They are generally painted in two colours.

Enamel painting ſeems long to have remained in this ſtate, and there are but few examples where a variety of colours was uſed until the time of Petitot, who died in the latter end of the ſeventeenth century. He is the firſt painter in enamel of whom any particular mention is made: he was in this country in the reign of Charles I. His pictures are of a ſmall ſize, not exceeding two or three inches; they are very highly and beautifully finiſhed, but certainly not deſerving the diſtinguiſhing commendation beſtowed on them by Pilkington; who ſays, that if they were magnified to the ſize of life, the pictures of Vandyck would ſuffer by the compariſon. His beſt pictures were copied from that maſter, and are of a ſmall ſize: his portrait of lady Southampton, a whole length after Vandyck, in the duke of Devonſhire's collection, the largeſt picture he ever painted, is certainly not among his beſt. His works have too much that parti-coloured appearance, for which enamel painting has by perſons of true taſte been ſo juſtly cenſured. The reputation of Petitot was no doubt owing to the novelty of his purſuit, as he has ſince been much ſurpaſſed. His ſon practiſed the ſame act when his father quitted this country, and his pictures are now generally taken for thoſe of his father.

No farther mention is made of enamel painting until the reign of queen Anne, when Boit, who poſſeſſed very little ability, appeared: he did not practiſe long in this country. He had the honour, however, of inſtructing Zincke, who far ſurpaſſed not only his maſter but Petitot. Although his pictures are not ſo highly finiſhed, his beſt works have leſs of that parti-coloured effect, and conſequently more the appearance of nature, than thoſe of his great predeceſſor. Petitot's beſt works were copied from Vandyck, thoſe of Zincke from Kneller. Meyer, who chiefly painted in water-colours, commenced enamel painting on the decline of Zincke; as he applied but little to this branch of art, he could not be expected greatly to excel: his principal work, the portrait of the marquis of Granby, in the king's collection, though poſſeſſed of conſiderable ability and ſweetneſs in the execution, has too many of the defects of early enamels, and by no means conveys an idea of the ſtyle of the great original from whom it is copied, ſir Joſhua Reynolds. The beſt pictures of Meyer are inferior to thoſe of Zincke. Spencer's pictures, as far as they go, are very beautiful both in colour and execution; but he, as well as all other enamel painters, confined his efforts to a very ſmall ſcale, and either did not wiſh or thought it impoſſible to obtain depth and richneſs; his pictures, therefore, are little more than beginnings. The other profeſſors of this art, of this period, were Hone, who afterwards became a portrait-painter in oil, Spicer, Burch, and Craft. Craft is only mentioned here to caution future enamel painters againſt an error into which he fell,—of painting on an enamel ground without the addition of a flux. The flux being ſofter than the enamel incorporates more readily with the colours, and gives that melting ſoftneſs to the tints ſo peculiar to enamel painting. By omitting this, he deprived himſelf of one of his greateſt advantages; and the conſequence is, that inſtead of great delicacy and finiſhing, his pictures appear hard, crude, and inharmonious.

Stubbs, an animal painter in oil, a comparative anatomiſt, and eminent as either, was alſo a painter in enamel. Unfortunately he took up this branch of art on too confined a principle, conſidering rather its durability than that excellence which alone can render durability truly eſtimable. His pictures are painted on plates made of Wedgwood's ware, and he prided himſelf on being the maker of his colours, which are, however, of the moſt ordinary kind. Now, although it is deſirable that the artiſt ſhould know how to make his own colours, it is equally certain, that if he can get them made for him, it is much better to do ſo than to employ his own time in preparing the means, when it ſhould be directed to the accompliſhment of the end. Neither the material on which he worked, nor the colours with which he painted, were calculated to bear more than two or three fires, conſequently great perfection could not be expected; and although they might tolerably well anſwer his purpoſe for the painting of animals, it is certain that his pictures in oil are in every reſpect ſuperior to thoſe he executed in enamel.

We have now brought enamel painting down to our own time, when ſuch great improvements have been made by the exertions of a living artiſt, Bone, as to render it an era in the art; that he is living, muſt be our apology for not entering into a full diſcuſſion of his merits: but it muſt be ſaid, that by his endeavours, aided by the liberal encouragement of that true lover and magnificent patron of the arts of his country, the Prince Regent, from a mere mechanical labour, enamel painting has become a highly uſeful branch of a liberal art; no longer confined to things merely ornamental, no longer differing from every other mode of painting, as much in its effect as proceſs, it now aſſumes the appearance of highly-finiſhed oil-painting, with the advantage of perpetual durability. As enamel painting from its nature muſt be always copied, the ſtyle of the original ſhould be ſo ſcrupulouſly obſerved, as to convey an inſtantaneous recollection of the painter. In this reſpect, the works of Bone are pre-eminent; whether the ſeverity of Leonardo, the purity of Raffaelle, the glow of Titian, or the ſplendour of Rubens, is entruſted to his pencil, each is alike ſucceſsfully pourtrayed. To the admirers of that ornament of our country and of the arts, Reynolds, this muſt appear in its full force; and it muſt afford them great pleaſure to find, that ſuch cloſe imperiſhable copies of the rare and juſtly valued pictures of this great maſter can thus be tranſmitted to poſterity.

Of the advantages of enamel painting, it would be ſuperfluous to ſpeak, they are ſo obvious as to occur to the moſt ſuperficial obſerver. Its unalterable durability is alone ſufficient to counterbalance every diſadvantage to which it is ſubject: to paint for eternity is the peculiar province of the enamel painter. To him the hyperbolical compliment which Pope paid to Jarvis is juſtly due:

> " Beauty, frail flow'r, which every ſeaſon fears,
> Blooms in his colours for a thouſand years."

How often have we mingled pity with our admiration of the fine works of the great maſters, colouriſts in particular, when we have obſerved the dreadful ravages of time on their pictures. By enamel painting this diſadvantage is removed; by means of this art, poſterity will become acquainted with the real merits of their predeceſſors; and thoſe works which muſt of neceſſity decay, will be preſerved in all their original ſplendour. How invaluable at preſent would the portraits of the illuſtrious characters of Greece and Rome appear! Had enamel painting then been known as it is practiſed at preſent, we ſhould not now have to ſeek their imperfect reſemblances in buſts and gems.

Thus has this art, ſometimes ſhining forth in full ſplendour, ſometimes nearly merged in obſcurity, ſurvived the lapſe of ages, and deſcended to the nineteenth century, whoſe enlightened policy and liberal patronage will never allow it to be again diſregarded; but will employ the talents of the enamel painter in the way which they can be beſt employed, by preſerving for futurity the portraits of our illuſtrious anceſtors, whoſe deeds have conferred an honour on their country; and in handing down to poſterity the reſemblances of our great cotemporaries, and in perpetuating the beſt efforts of native genius. See ENAMELLING.

PAINTING *of Clocks and Watches.* See the preceding article, and ENAMELLING.

PAISLEY, col. 4, l. 21, for ſalvtie *r.* ſalvation.

PALAVER, an African term denoting a court of juſtice, or a public meeting of any kind.

PALERMO, in *Geography*, a town of America, in Maine, and county of Lincoln, having 761 inhabitants.

PALLADIUM, in *Chemiſtry*. According to the recent determinations of Dr. Thomſon, the weight of the atom of this metal is 70, oxygen being 10; though this, perhaps, is not to be depended on, but as an approximation.

PALLADIUM. See MINERALOGY, *Addenda*.

PALMA, GIACOPO, in *Biography*, called the *Younger*, to diſtinguiſh him from his great uncle, has been ſtyled by Lanzi, " the laſt painter of the good and the firſt of the bad epochs of the art of Venice." He was born in 1544, the ſon of Antonio Palma, an obſcure painter, who firſt taught him the little he knew, and encouraged him to ſtudy the works of others, particularly thoſe of Tintoretto and Titian. At the age of fifteen, he obtained the patronage of the duke of Urbino, who ſent him to Rome, and maintained him there for eight years, during which time he employed himſelf in copying the works of M. Angelo, of Raphael, and above all, of Polidoro, and was employed by the pope to adorn one of the rooms of the Vatican.

On his return to Venice he found but little employment, Tintoretto and Paolo Veroneſe occupying the places of renown, and being engaged in all the public works. Their diſagreement with a celebrated architect and ſculptor, named Vittoria, furniſhed Palma with a patron, who endeavouring to lower the eſteem of his enemies, uſed his utmoſt efforts to eſtabliſh the rival painter, aſſiſted him with his advice, and found him employment. Their united endeavours failed however of ſucceſs, and Palma was obliged to be contented to hold the third rank in the art till their deaths left him without a rival. He had, in the mean time, painted in competition with them both, and produced very excellent works.

When he was left alone and was much employed, he relaxed from the care and diligence he had formerly uſed, and his works became ſlight in execution, ſo much ſo that Ceſare d'Arpino, remarking upon the ſlightneſs of the ſtyle in which he painted, obſerved, that he meant to make ſome ſtay at Venice, to learn of him to make ſuch admirable ſketches. When price and time, however, were left to his own diſcretion, in which he did not abound, he produced ſome works worthy of his former fame; ſuch as the altar-piece at the church of S. Coſmo and Damiano; the celebrated naval battle of Franceſco Bembo, in the public palace; the Saint Apollonia at Cremona, &c. The compoſitions of the younger Palma are more diſtinguiſhable for their copiouſneſs than the judgment with which they are conducted, and his deſign is more bold than correct. His colouring is more vivid than true, but is deſervedly admired for its richneſs, ſuavity, and freſhneſs.

PALMER, in *Geography*, l. 4, *r.* 1114.

PALMYRA, a townſhip of Maine, in the county of Somerſet, having 117 inhabitants.—Alſo, a townſhip of Wayne county, in Pennſylvania, having 336 inhabitants.—Alſo, a townſhip of Knox county, in the Indiana territory.

PALOMINO Y VELASCO, DON ANTONIO, in *Biography*, a Spaniſh painter, born in Valencia, in 1653. He ſtudied at Cordova in grammar, philoſophy, theology, and juriſprudence: the elements of his art he acquired of Don Juan de Valdes Seal, and to acquaint himſelf with the ſtyles of the different ſchools, he went to Madrid in 1678. Here he painted the gallery del Cierzo, and pleaſed the king and the miniſter, and in 1688 he was made painter to the king. He was overwhelmed with commiſſions, for many of which he made only the deſigns; but whatever was begun and terminated by himſelf in freſco, or in oil, poſſeſſes invention, deſign, and colour, in the eſſential, and taſte and ſcience in the ornamental parts. His ſtyle was certainly more adapted to the demands of the epoch in which he lived, than to thoſe of the preceding one, and probably would not have obtained from Murillio the praiſes laviſhed on it by Lucca Jordano.

Palomino may be conſidered as the Vaſari of Spain, as copious, as credulous, and as negligent of dates, too garrulous for energy, and too indefinite for the delineation of character, but eminently uſeful with the emendations of modern and more accurate biographers.

His literary work is divided into three parts, theoretical, practical, and biographical. The two firſt bear one title, *viz.* " El muſeo Pictorico y eſcala optica." The third part, diſtinguiſhed by that of " El Parnaſſo Eſpanol Pintoreſco laureada, &c." Madrid, 1724, though perhaps only intended as an appendix to the two former, is by far the moſt important and intereſting.

PALOU, or PALO, l. *ult.* add—pachalic of Erzeroom, ſituated on the edge of a mountain and the banks of the Euphrates: the population amounts to about 8000 ſouls, Turks, Armenians, and Kurds: the river here is very rapid, and from the bad conſtruction of the bridges made of wood, whole caravans have been ſwept away after the melting of the ſnow. The diſtrict of Palo is four days' journey in length and two in breadth.

PANDEANS, a title given to itinerant companies of Italian muſicians, who perform on the Syrinx or Pan's pipes of different pitches with their mouths, and accompany themſelves on different inſtruments with their hands and feet.

The loweſt ſet of reeds (the *ſeptem diſcrimina vocum* of Virgil) is called the contra baſſo, or double-baſe; the next fagotto, or baſſoon; the third, ſeptenary, is the tenor or ſecond treble; and the fourth, or higheſt range of pipes, the firſt treble: ſo that in the aggregate there is a complete ſcale of four octaves, and they never play in leſs than three or four parts. The inſtruments with which they accompany themſelves with their hands are the cymbals, the triangles, the double drum beat at both ends, the mezza luna, a Turkiſh inſtrument, and the tambour de baſque.

The reeds or pipes are faſtened under the chin of the performer, and the lip of the player runs from one to the other with ſeeming facility, without moving the inſtrument by manual aſſiſtance. (*Et ſupra calamos unco percurrere labro*, Lucretius.) The muſic which theſe people perform is very gay and pleaſing. One of the company with whom we converſed told us that they were Milaneſe peaſants and villagers, not allowed to ſtroll into great cities: which accounts for our never having heard them in their own country, nor any of our friends who have made the tour of Italy, and remained there ſome years.

The uſe which theſe ingenious people have made of Pan's pipes, by playing in troops and in different parts, is beating the ancients at their own weapons. The Grecian ſhepherds of Theocritus, and the Roman of Virgil, contend in dialogue, but never perform in parts.

It will be obſerved, that ſome of the performers, particularly the firſt treble, have more than ſeven pipes, which enables them to extend the melody beyond the ſeptenary.

PANIS. Add—See TOWIACHES.

PANTING, in *Phyſiology*. See LUNGS.

PANTON. Add—containing 520 inhabitants.

PAPER CURRENCY, l. 8 from the end, *dele* where; l. 5, inſert—not.

PAR *of Exchange*, col. 2, l. 24, for loſs *r.* leſs.

PARADISE, l. 2, *r.* 1548.

PARASANG. Add—The farſang at a mean was little ſhort of $3\frac{1}{2}$ Britiſh miles. The paraſanga of Xenophon was no more than 3 Roman miles, or 2.78 Britiſh miles. Herodotus and Xenophon ſay, that the paraſanga conſiſted of 30 ſtadia; and as theſe may be ſuppoſed to have been of the Grecian itinerary ſtandard, the paraſanga would be equal to 2.9 Britiſh miles, or $\frac{1}{24}$th only longer than that of the Anabaſis. Rennell's Illuſtration of the Expedition of Cyrus.

PARHELIUM, col. 2, *figs.* 23, 24; l. 14, *r.* 1320.

PARIS, in America, l. 13, *r.* Oxford for Cumberland.

PARIYATEKA, l. 12, for This *r.* There.

PARK, MUNGO, in *Biography*, a celebrated traveller, was the ſon of a farmer on the banks of the Yarrow, near the town of Selkirk, in Scotland, and born on the 10th of September 1771. After having received the firſt rudiments of education in his father's family, he was removed to a grammar-ſchool at Selkirk, where he remained for a conſiderable number of years, and where he was diſtinguiſhed by his application and improvement. At this early period, though he was ſedate, ſtudious, and thoughtful, he manifeſted traces of that ardent and adventurous diſpoſition which formed his diſtinguiſhing character in future life. Preferring the medical to the eccleſiaſtical profeſſion, for which he was originally deſigned, he was bound apprentice, at the age of 15, to Mr. Anderſon, a reſpectable ſurgeon at Selkirk; and after reſiding with him for three years, he removed in 1789 to Edinburgh, where he attended the uſual medical lectures during three ſucceſſive ſeſſions. In this ſituation he diſtinguiſhed himſelf among his fellow-ſtudents, by ardour and aſſiduity in the proſecution of his ſtudies, and by particular attention, during his ſummer vacations, to botanical purſuits, in which he was aſſiſted by his brother-in-law Mr. James Dickſon. Upon his removal to London, this eminent botaniſt introduced him to ſir Joſeph Banks, by whoſe recommendation he was appointed aſſiſtant-ſurgeon to the Worceſter Eaſt Indiaman. In 1792 he ſailed for Bencoolen, and having availed himſelf of the opportunities for ſcientific reſearches, which this voyage afforded him, the reſult of his inquiries and obſervations was communicated, after his return, to the Linnæan ſociety, and publiſhed in the third volume of their Tranſactions. Some years prior to this period, a ſociety had been formed with a view of promoting diſcoveries in the interior parts of Africa, of which we have already given a brief account under the article AFRICAN *Aſſociation*; and ſeveral perſons had been employed in accompliſhing the laudable purpoſes for which this ſociety was eſtabliſhed. Among theſe, we may reckon Meſſrs. Ledyard and Lucas, major Houghton, and Mr. Hornemann, who fell ſacrifices either to the ſeverity of the climate, the fatigue of the ſervice, or the violence of the natives. The Society, though diſpoſed to afford liberal encouragement to any perſon who was qualified for this undertaking, and who had at the ſame time reſolution ſufficient to engage in it, with the proſpects which paſt experience preſented to view, found themſelves at a loſs for a perſon in every reſpect fit for this hazardous miſſion. At this intereſting period Mr. Park returned from India, and no perſon could have been found better qualified for ſuch an adventurous office. Sir Joſeph Banks, the diſtinguiſhed patron of genius and ſcience, had been his friend, and with him Mr. Park was in habits of frequent and intimate intercourſe. Thus circumſtanced he offered his ſervices, and they were accepted. Having received his final inſtructions from the Society, he ſet ſail from Portſmouth on the 22d of May 1795, and on the 21ſt of June landed at Jillifree, a ſmall town near the mouth of the river Gambia, whence he proceeded to Piſania, where he was hoſpitably received by Dr. Laidley, to whom he had letters of recommendation. For an account of his progreſs, ſee the articles AFRICA and AFRICAN *Aſſociation*. Upon his return, he was received with cordial congratulation, both by his friends and the gentlemen of the African Aſſociation; and he was allowed to publiſh an account of his travels for his own benefit. In the mean while, Mr. Bryan Edwards, ſecretary of the Aſſociation, printed and diſtributed among the ſubſcribers an abſtract of the Travels from Mr. Park's papers. To this abſtract was annexed an important Memoir by major Rennell, conſiſting of geographical illuſtrations of Park's journey; and this, by Mr. R.'s permiſſion, formed a valuable appendage to the fourth edition of the Travels. In the ſpring of 1798, government having it in contemplation to obtain a complete ſurvey of New Holland, applied to Mr. Park for this purpoſe; but the propoſed plan was never executed. The remainder of this year was ſpent by Mr. Park in viſiting his friends in Scotland, and arranging the materials of his Travels. Towards the cloſe of this year he returned to London, and devoted the principal part of his time to the correction of his MSS., which he committed to the preſs in the ſpring of the year 1799. The work, as ſoon as it was publiſhed, commanded an extenſive and rapid ſale, both on account of the intereſting information which it contained, and the general elegance of its compoſition. An abſtract of Mr. Park's diſcoveries, with regard to the eaſterly courſe and magnitude of the Niger, the large and populous towns and villages that occupy the interior parts of Africa, the diſcriminating character of the negroes, contraſted againſt that of the Moors, and the civilization of the inhabitants of the interior, beyond the influence of the ſlave-trade, compared with that of thoſe who are ſituated near the coaſt, and a variety of other particulars relating to the ſoil and productions of the country, and the manners and habits of its inhabitants, has been already given under the articles AFRICA, MOROCCO, NIGER, &c. ſo that we need not here enlarge. The curioſity of the public was amply gratified, and the name and work of Mr. Park became ſingularly popular, though neither the one nor the other altogether eſcaped cenſure. The ſlave-trade was at this time a ſubject of general reprobation, and attempts were repeatedly renewed for the abolition of it. It was, therefore, natural to imagine, that in a work of this kind, the author would have availed himſelf of the opportunities which his narrative afforded him, of expreſſing his decided diſapprobation of this nefarious ſpecies of commerce: more eſpecially as it was well known to many of Mr. Park's intimate and confidential friends, that in converſation he had frequently declared his abhorrence of ſlavery and the ſlave-trade. Nor was it ſufficient to allege, as ſome of his advocates have done, that he conſidered the abolition of the ſlave-trade as a meaſure of ſtate policy; and that it would be improper for him to give an opinion on a ſubject which was at this time under the deliberation of the legiſlature. This neutrality on his part, to ſay the leaſt of it, led perſons, who did not know his real ſentiments, to reckon him among thoſe who were hoſtile to the abolition; and his authority was triumphantly appealed to by the advocates of the ſlave-trade. Whilſt he ſeems to have ſtudiouſly avoided giving an opinion on the pernicious influence of this trade, he ſtates facts which have been cited and ſtrongly urged in favour of its abolition. In order to account for this kind of inconſiſtency without impeaching his integrity, we ſhould recollect how he was circumſtanced whilſt he was preparing and publiſhing his narrative. "He was then," ſays a candid biographer, "a young man, inexperienced in literary compoſition, and in a great meaſure dependent, as to the proſpects of his future life, upon the ſucceſs of his intended publication. His friend and adviſer, Mr. Bryan Edwards," (a Weſt India planter, and a ſyſtematic advocate of the ſlave-trade in the Houſe of Commons,) "was a man of letters and of the world, who held a diſtinguiſhed place in ſociety, and was beſides a leading member of the African Aſſociation, to which Park owed every thing, and with which his fate and fortunes were ſtill intimately connected. It is difficult to eſtimate the degree of authority which a perſon poſſeſſing theſe advantages, and of a ſtrong and deciſive character, muſt neceſſarily have had over the mind of a young man, in the ſituation which has now been deſcribed. Suggeſtions coming from ſuch a quarter muſt have been almoſt equivalent to commands; and inſtead of ſeverely animadverting on the extent of Park's compliances, we ought, perhaps, rather to be ſurpriſed, that more was not yielded to an influence which muſt have been nearly unlimited." Mr. Park is known to have regretted that ſome parts of his publication, relating to the ſlave-trade, had been miſunderſtood, and applied in a ſenſe which it was not intended they ſhould have been. The writer of this ſketch of his life knew, from perſonal intercourſe, that he lamented any ſuſpicion of his integrity ſhould attach to this part of his publication; and we can well imagine, that he did not perceive the bias of his mind, or the cauſes that produced it, which were apparent to every one beſides himſelf. Such a bias would naturally reſult from the aſſiſtance afforded by Mr. Edwards in the compoſition of Mr. Park's work, and from the influence attending the connection that ſubſiſted between them. How far Mr. Edwards's aſſiſtance might extend, it is difficult to ſay; but of this we are certain, that it was not ſuch as to affect the authenticity of the work itſelf, or the literary reputation of Mr. Park; we regret, however, that in deference to Mr. Edwards's judgment or authority, Mr. Park ſhould admit into his narrative ſome reflections pertaining to the ſlave-trade, which ſhould have given occaſion for concluding that he was friendly to its continuance, or that he ſhould have omitted any favourable opportunity that occurred for expreſſing in an explicit manner his real ſentiments concerning it. But it is now needleſs to purſue this kind of diſcuſſion. The narration of Mr. Park, written as we have reaſon to believe by himſelf, entitles him to reſpect as an author; but he has other more unequivocal claims to grateful and honourable remembrance, as a perſon who hazarded much in making geographical diſcoveries, and who maintained in traverſing unknown countries, and in very trying ſituations, a degree of firmneſs and ſelf-poſſeſſion that has ſeldom or ever been ſurpaſſed.

After the publication of his Travels, he returned to Scotland in the ſummer of 1799; and on the 2d of Auguſt in that year, he married a daughter of Mr. Anderſon of Selkirk, with whom he had ſerved his apprenticeſhip. In the month of October 1801, he ſettled at Peebles, with a full purpoſe of purſuing his medical profeſſion; but as he devoted much of his time and attention to the poor, the profits of his buſineſs were inconſiderable; nor could he forbear wiſhing for a change of ſituation that would be more advantageous. His views, however, were directed towards a ſecond African miſſion. A proſpect of this kind was preſented to him by a letter from ſir Joſeph Banks, ſoon after the ſignature of the preliminaries of peace with France, in October 1801; but it was not till the autumn of the year 1803, that a ſpecific propoſal was made to him for this purpoſe. Previouſly diſpoſed to accept it, he did not long heſitate in announcing his purpoſe; and, accordingly he took leave of his friends, and left Scotland in December 1803, confidently expecting that he ſhould ſoon embark for the coaſt of Africa. A variety of circumſtances occurred which threatened the total failure of the expedition; however, in a courſe of time all difficulties were obviated; the objects and plan of the undertaking were ſettled to the ſatisfaction of Mr. Park, and he received a commiſſion from government in January 1805, for conducting and executing it. To himſelf was granted a brevet commiſſion of a captain in Africa; and to his friend Mr. Alexander Anderſon a ſimilar commiſſion of lieutenant; and Mr. Scott was appointed to attend him as a draftſman. He was empowered to enliſt at Goree any number of the garriſon that would be neceſſary for his purpoſe, not exceeding 45, with ſuch bounties as would induce them cheerfully to accompany him. From Goree he was directed to proceed up the river Gambia, and thence, croſſing over to the Senegal, to march by ſuch routs as he ſhould find moſt eligible to the banks of the Niger. The great object of his journey was to purſue the courſe of this river as far as it could be traced; to eſtabliſh a communication and intercourſe with the different nations on the banks; to obtain all the knowledge in his power reſpecting them; and to aſcertain various points which he had ſtated in his Memoir. Mr. Park was empowered to draw for any ſum which he might want, not exceeding 5000*l.*

When the preparations for the expedition were completed, Meſſrs. Park, Anderſon, and Scott, proceeded to Portſmouth,

mouth, and being there joined by four or five artificers from the dock-yards appointed for the ſervice, they ſet ſail on the 30th of January 1805, and on the 28th of March arrived at Goree. On the 27th of April 1805, Mr. Park took his departure from Kayee, a ſmall town on the Gambia, a little below Piſania, having previouſly engaged a Mandingo prieſt, named Iſaaco, who was alſo a travelling merchant, and much accuſtomed to long inland journies to ſerve as a guide to his caravan. On the 11th of May, he arrived at Madina, the capital of the kingdom of Woolli, and on the 14th he reached Kuſſai, on the banks of the Gambia, where the river is about 100 yards broad, and has a regular tide. On the 18th, he croſſed the river Nerico, 60 feet broad four feet deep, flowing at the rate of two miles an hour, and with a heat at two o'clock of 94° Fahrenheit, and arrived at Jallacotta, the firſt town of Tenda, at ſun-ſet. On the 20th reached Tendico or Tambico, a village belonging to Jallacotta, lat. 13° 53′, half a mile from which is a pretty large town, called Bady. May 21ſt at eight, halted at Jeningalla, near Bufra or Kabatenda. On the 24th, ſtopped at Manſafara, which conſiſts of three towns, contiguous to each other, and diſtant from the village of Nittakorra, on the north bank of the Gambia, eight miles due ſouth. Next day entered the Tenda or Samakara wilderneſs, and halted at Sooteetaba, lat. 13° 33′ 33″; after leaving this place, croſſed the firſt range of hills, which afforded a beautiful route and proſpect. On the 26th reached Bee-creek, lat. 13° 32′ 45″, W. long. 10° 59′, where men and beaſts were attacked by an immenſe number of bees, who ſeemed for a time to have completely terminated their journey. Arrived at Sibikillin, after travelling four miles, on the 27th; and on the 28th, arrived at Badoo, a ſmall town, conſiſting of about 300 huts, near which is another town of the ſame name; but the two towns are diſtinguiſhed by the names of Sanſanding and Sanſanba, at each of which cuſtoms are demanded of all coffles or caravans, lat. 13° 32′. From Badoo proceeded to Tambacunda, about four miles eaſt of it, and about four miles diſtant from the river Gambia, ſouth of Badoo: leaving Tambacunda on the 30th, entered the woods, and at dark arrived at Tabba Gee, which was left at day-break the 31ſt of May, and halted during the heat of the day at a ſmall village, called Mambari. On the 1ſt of June, arrived at Julifunda, a conſiderable trading town, containing about 2000 perſons, who trade on credit, and are called "Juli," by way of diſtinction from the Slatee, who trades with his own capital. At this place, lat. 13° 33′, they were exorbitantly taxed by Manſa Kuſſan, who is reckoned one of the moſt avaricious chiefs on the road. On the 4th of June, arrived at Baniſerile, a Mahometan town, whoſe chief, Fodi Braheima, was one of the moſt friendly men they met with, lat. 13° 35′. The kingdom of Dentila is famous for its iron; and the flux uſed for ſmelting it is the aſhes of the bark of the kino-tree. On the 7th of June, in proſecution of their journey, croſſed the bed of a ſtream that runs towards the Faleme river, called Samakoo, on account of the vaſt herds of elephants which waſh themſelves in it during the rains. At noon of the 8th, reached Madina, and halted by the ſide of Faleme river; in the evening went to Satadoo, one mile eaſt of the river. On the 10th reached a ſmall town called Shrondo at ſun-ſet; here they were alarmed by a tornado, which was the commencement of the rainy ſeaſon, and extremely pernicious to the attendants on the expedition.

In the vicinity of this town are ſome gold-mines, which were inſpected, and which afforded occaſion for witneſſing the expeditious mode practiſed by the female natives, for ſeparating the particles of gold from the ſand. Leaving Shrondo on the 12th, they travelled along the bottom of the Konkodoo mountains, which are very ſteep precipices of rock, from 80 to 200 or 300 feet high, and at noon reached Dindikoo, near which are gold-pits. On the 13th, they arrived at a ſmall village called Fankia, four miles N.W. from Binlingalla, lat. 13° 22′ 30″. On the 15th, they proceeded from Fankia to the delightful village of Toombin, and on the 17th travelled from Serimanna to Fajemmia, a ſmall village, fortified with a high wall, the chief of which is the moſt powerful in Konkodoo, and has in ſubjection the whole country from Toombin to the Ba Fing. At Fajemmia, N. lat. 13° 35′, the cuſtoms paid to the chief are very high. On the 20th, they arrived at an almoſt deſerted village, called Nealakalla, cloſe to the Ba Lee or Honey river, where they ſaw two crocodiles and an incredible number of large fiſh. On the 21ſt, they paſſed the village of Boontoonkooran, and halted for the night at the village of Dooggikotta; and the next day they obſerved many very picturesque and rocky hills during their march, and in the evening halted at the village of Falifing, ſituated on the ſummit of the aſcent which ſeparates the Ba Lee from the Ba Fing. On the 23d, they arrived at the village of Gimbia, or Kimbia; and about noon reached Sullo, an unwalled village, at the bottom of a rocky hill, at which place horſe-fleſh is much valued as food, and where they obſerved on the adjacent rocks numbers of large monkeys. On the next day, they arrived at Secoba, lat. 13° 27′ 26″, and here they halted on the 25th. On the following day, they arrived at the village of Konkromo, about ſeven miles eaſt of Secoba, W. long. 8° 6′, near the river Ba Fing, a large river quite navigable, and which they croſſed in canoes on the 27th; and on the next day, they paſſed by ſeveral heaps of ſtone, preciſely the ſame with thoſe that are called in Scotland cairns. In purſuing their march, they were alarmed by herds of lions and wolves, and on the 30th, reached a ſmall town, called Kandy. On the 2d of July, they arrived at Koeena, a village encompaſſed by a wall, and where they were terrified by the roaring and aſſault of ſeveral young lions. On the 3d, they arrived, after a march of ſix miles, at Koombandi; and at ſun-ſet reached Fonilla, a ſmall walled village, on the banks of the Wonda, which they croſſed on the 4th in canoes, Iſaaco having had a ſurpriſing eſcape from the ſeizure of a crocodile. On the 5th, they arrived at a village called Boolinkoomboo, ſometimes Moiaharra; and on the 10th, left this village; and eight miles N.E. paſſed the village of Serrababoo, and a little before ſun-ſet reached Saboofeera, (Dooty Matta,) a ſcattered unwalled village, lat. 13° 50′. From Saboofeera, or Mallaboo, they purſued their march on the 11th to Keminoom, or Maniakorro, a walled town, ſtrongly fortified, lat. 14°; near which the river Ba Lee runs with great velocity, and breaks into ſmall cataracts. This place is notorious for theft and impudence, and they were glad to leave it on the 13th, and to purſue their march by a walled village, called Nummaboo, to the banks of the Ba Woolima, where they arrived on the 19th; and having croſſed the river by means of a wooden bridge of ſingular conſtruction, they reached Mareena on the 21ſt, where they ſuffered depredation; and on the 22d, they arrived at Bangaſſi, ſix miles from Mareena, a large town, four or five times larger than Maniakorro, and fortified in a ſimilar manner. On the 27th, they arrived at Nummaſoolo, a large but much ruined town, and which they left on the 30th. On the

31ſt, they halted at Sobee, a town, the walled part of which ſerves as a citadel. On the 2d of Auguſt, they halted at Balanding; and on the 3d, at Balandoo; and on the 4th reached Koolihori, a town partly walled, but having the greater part of its huts without the walls. On the 6th, they reached Ganifarra, a ſmall beggarly village. On the 9th, they croſſed the Ba Woolli, a very deep river, flowing at the rate of four or five miles *per* hour. They purſued their route, until on the 13th, thoſe of them who ſurvived reached Koomikoomi, where they halted; lat. 13° 16′ 29″. On the 15th, they reached Doombila, where Mr. Park met with an old friend, Karfa Taura, a worthy negro whom he had known, and whoſe kindneſs he had experienced in his former travels. From Doombila, they proceeded on the 18th to Toniba, and from thence they aſcended the mountains ſouth of it, till having attained the ſummit of the ridge which ſeparates the Niger from the remote branches of the Senegal, Mr. Park had the ſatiſfaction of once more ſeeing the Niger rolling its immenſe ſtream along the plains. But this ſatiſfaction was accompanied by the mortifying reflection, that three-fourths of the ſoldiers had died on their march, and that in their weakly ſtate, they had no carpenters to build the boats in which they propoſed to proſecute their diſcoveries. It was, however, a pleaſing conſideration, that in conducting a party of Europeans, with immenſe baggage, through an extent of more than 500 miles, he had always been able to preſerve the moſt friendly terms with the natives; and hence he was warranted to infer, that with common prudence, any quantity of merchandize may be tranſported from the Gambia to the Niger, without danger of being robbed by the natives; and that this journey may be performed in the dry ſeaſon, with a probability of not loſing more than three or at moſt four out of fifty. But Mr. Park was unfortunate in undertaking ſuch a journey with the proſpect of the rainy ſeaſon, and the event proved, that this ſeaſon ſet in before his journey to the Niger was more than half completed. The effect produced on the health of the ſoldiers by a violent rain, preceded and accompanied by tornadoes, on the 18th of June, was almoſt inſtantaneous; twelve of them at once were dangerouſly ill, and from this time, the great mortality commenced, which was ultimately fatal to the expedition. When he reached the Niger at Bambakoo, where the river begins to be navigable, on the 19th of Auguſt, there remained out of thirty-four ſoldiers and four carpenters, who left the Gambia, only ſix ſoldiers and one carpenter, and the principal perſons who compoſed the expedition, beſides Mr. Park himſelf, were three, *viz.* Mr. Anderſon, Mr. Scott, and lieutenant Martyn, who were more or leſs affected by the diſeaſe of the climate; the two former very ſeriouſly, ſo that Mr. Scott was left behind at Koomikoomi, and died without reaching the Niger. Mr. Park had been ſlightly affected, and it is wonderful, that the anxiety and fatigue which he muſt have experienced did not break down both his ſpirits and his ſtrength.

Having arrived at the Niger, Mr. Park, and the few companions that remained, embarked in a canoe on the 22d of Auguſt, and were borne away by the current at the rate of about five knots *per* hour. The river is at the point of embarkation an Engliſh mile broad, and at the rapids, of which there are three principal ones, it ſpreads out to nearly twice that breadth. On the 23d, they arrived at Marraboo, where they were joined by thoſe who came by land. Iſaaco was immediately diſpatched to Sego, the capital of Bambara, to negociate with Manſong, the ſovereign, for a free paſſage through his dominions, and whilſt Mr. Park waited for his return, he was ſeized with the dyſentery, that threatened the termination of all his projects. But by the aid of medicine and the advantage of a good conſtitution, he was ſoon reſtored to health. Many difficulties and delays occurred in the negociation, which was conducted on the part of Mr. Park with ſingular judgment and addreſs; but at length, after many unfavourable rumours, which kept his mind in a ſtate of diſtreſſing ſuſpenſe, Manſong deputed a meſſenger to conduct him towards Sego. Under his eſcort, he left Koolikorro (N. lat. 12° 52′) on the 13th of September, and enjoyed the beautiful views which his voyage afforded him; "the river," as he ſays, "being ſometimes as ſmooth as a mirror, at other times ruffled with a gentle breeze, but at all times ſweeping us along at the rate of ſix or ſeven miles *per* hour." On the 14th, they departed from Deena, where they had lodged, and arrived at Yamina, (lat. 13° 15′,) where they halted on the 15th; and on the 16th reached Samee (lat. 13° 17′). A deputation of Manſong's friends viſited Mr. Park, in order to hear from himſelf a ſtatement of his views and purpoſes in the voyage he was undertaking. His ſtatement was ſatiſfactory to the grandees that had executed this commiſſion, and Mr. Park was aſſured of permiſſion to purſue his voyage, and of protection from Manſong as far as his power extended. The king and his courtiers were much gratified by the preſents which they received on the occaſion. Accordingly, on the 26th of September, Mr. Park proceeded from Samee to *Sanſanding;* which ſee. Here he intended to provide a proper veſſel for his further navigation down the Niger; but it was with difficulty that he procured from Manſong and his ſon, in return for the preſents he had given them, two decayed canoes, which merely afforded him materials for conſtructing with his own hands, and ſome aſſiſtance from one of the ſurviving ſoldiers, a flat-bottomed boat, to which he gave the ſounding title of His Majeſty's Schooner, the Joliba. In the meanwhile, Mr. Park was informed of the death of Mr. Scott, and he had now occaſion to lament the loſs of his friend Mr. Anderſon, who died, after a lingering attack of four months, on the 26th of October. The ſenſibility he expreſſed on this occaſion did honour to his feelings, and yet conſidering his preſent perilous ſituation, and the dreary and diſcouraging proſpects which preſented themſelves with regard to the projects of his undertaking, he muſt poſſeſs a very high degree of equanimity, firmneſs, and ſelf-poſſeſſion. On the 16th of November, the ſchooner having been completed, and every thing in Mr. Park's power to command being ready for the voyage, he cloſes his journal; and in the courſe of the ſucceeding days previous to his embarkation, which was on the 19th, he wrote ſeveral letters to his friends and kindred in England and Scotland. In theſe letters, we diſcover traces of that deliberate and inflexible reſolution, without effort or oſtentation, which proved a diſtinguiſhing feature of his character. From this period, we have no ſtrictly authentic information concerning Mr. Park, or the progreſs and termination of his expedition. In the courſe of the year 1806, conjectures and reports agitated the public mind; and the agitation was aggravated, by intelligence communicated by the native traders from the interior of Africa to the Britiſh ſettlements on the coaſt; whence it was concluded, that Mr. Park and his companions were killed. In conſequence of theſe unſatiſfactory and alarming rumours, lieutenant colonel Maxwell, then governor of Senegal, obtained permiſſion from government to engage a proper perſon to inveſtigate and aſcertain the truth of theſe rumours. Accordingly, he engaged Iſaaco, Mr. Park's guide, to conduct this buſineſs. In January 1810, Iſaaco left Senegal, and returned on the 1ſt of September, 1811, fully confirming the reports of Mr. Park's death. His journal, including another from Amadi Fatouma, the guide who had accompanied Park from Sanſanding down the Niger, was delivered to the governor, and tranſmitted by him, after having been tranſlated from Arabic to Engliſh, to the ſecretary of ſtate for the colonial department. From Amadi Fatouma's journal we learn, that the conductors of the expedition went from Sanſanding to Silla, where Mr. Park had ended his firſt voyage; and that from thence, Mr. Park, Martyn, three other white men, three ſlaves, and Amadi, as guide and interpreter, nine in number, proceeded in a canoe to Ginne; and as they paſſed Sibby, or Dibbie, they were attacked by an armed force in three canoes, which they repulſed. Again at Rakbara, or Kabra, they repelled another aſſault, and in paſſing Tombuctoo, they reſiſted another ſimilar attack, eſcaping by force and by the ſlaughter of many of the natives. As they advanced, the number of hoſtile canoes increaſed, till at length it amounted to 60, and in ſelf-defence they killed a very conſiderable number of perſons; their own number being now reduced by the death of one of the white men to eight. At length having paſſed Kaffo and Gourmon, and having ſupplied themſelves with proviſions, they entered the country of Haouſſa. The king of the country having received information from the chief of Yaour, a village in this diſtrict, that the white men had departed without giving them any preſents, ſent an army to a village called Bouſſa, near the ſide of the river, which was poſted on the top of a rock that traverſed the river, in which rock there was a large cleft or opening, that admitted the water to paſs in a ſtrong current; and when Mr. Park arrived at this opening and attempted to paſs, he was attacked with lances, pikes, arrows, and ſtones; againſt which he for ſome time reſolutely defended himſelf, till at length, overpowered by numbers and fatigue, and unable to keep up the canoe againſt the current, Mr. Park laid hold of one of the white men and jumped into the water; Mr. Martyn did the ſame, and they were drowned in the ſtream in attempting to eſcape. One ſlave was left, and they took him and the canoe, and carried them to the king. Amadi, after having been kept in priſon for three months, was releaſed; and obtained information from the ſurviving ſlave, concerning the manner in which Mr. Park and his companions had died. Nothing was left in the canoe but a ſword-belt, of which the king had made a girth for his horſe; and this belt Iſaaco afterwards recovered. Amadi, according to Iſaaco's report, was a good upright man, and delivered the above account to him on oath, nor could he have any intereſt in deceiving him. From circumſtances it is concluded, that Mr. Park died four months after his departure from Sanſanding.

On Mr. Park's diſpoſition and character it is needleſs to enlarge, after the detail of the principal tranſactions and events of his life given in this article and the article AFRICA. In private life his conduct was exemplary, as a ſon, a huſband, and a father. As to his perſon, he was about ſix feet high, and well proportioned. His whole aſpect was intereſting, and his corporeal frame robuſt and active, and fit for great exertion, and for enduring ſevere hardſhips. His family conſiſted of three ſons and one daughter, who with their mother ſurvived to lament the loſs of him. See the ſecond volume of his Travels, a new edition of which was publiſhed in 1816, 8vo. For ſome other particulars, we refer to the articles AFRICA, NIGER, and ZAIRE.

PARKER, in *Geography*, a townſhip of Butler county, in Pennſylvania, having 399 inhabitants.

PARKER's Town, a town of Kent county, in Vermont, having 100 inhabitants.

PARSONSFIELD, l. 4, *r.* 1763.

PARTHENOS. See PARTHENIA.

PARVATI, col. 2, l. 34, *dele* the point after Kailaſa. Col. 3, l. 6, for cap *r.* cup. Col. 4, l. 35, for beauty's *r.* brevity's. Col. 5, l. 2, for *Karlikya* r. *Kartikya*; l. 3 from bottom, for central is *r.* central eye is.

PASQUATUNK, in *Geography*, a county of North Carolina, containing 7674 inhabitants, of whom 2295 were ſlaves in 1810.

PASTE-WORK, in *Calico-Printing*. See *Diſcharge-*Work.

PATMOS, l. 14, add—Such is the account given by Sonnini; but Dr. Clarke (Travels, vol. vi.) informs us, that he viſited the library, which is a ſmall oblong chamber, with a vaulted ſtone roof, and found it to be nearly filled with books of all ſizes in a moſt neglected ſtate; ſome lying upon the floor, a prey to the damp and worms; others ſtanding confuſedly on the ſhelves, which were printed volumes, ſome of which were well bound, and in good condition; but neither of the ſuperiors of this college was able to read. At the extremity of the chamber he found a heap of Greek MSS., ſome of which were of the higheſt antiquity; amongſt other ſpecimens of Grecian calligraphy, the author found a copy of the 24 firſt dialogues of Plato, written upon vellum, in the ſame exquiſite character, which remained in the hands of his friend profeſſor Porſon until his death. But it is now, with the other MSS. from Patmos, &c. in the Bodleian library at Oxford.

PATRICK, l. 2, *r.* 4699 inhabitants, of whom 724 are ſlaves.

PATRICK *Town*, a town of America, in the diſtrict of Maine, and county of Lincoln, having 138 inhabitants.

PATROCLEIA, or PATROCLEA, in *Geography*, one of the Grecian iſlands, called by various other names, as Gaitharoneſé (Aſſes' iſle), the iſland of Ebony, Gaidromeſa, Gardener's, &c. which difference of names has cauſed it to be multiplied and repreſented as a cluſter of iſlands rather than as one iſland. It has been ſaid, that ebony grows upon this iſland; but Dr. Clarke and his companions could not find a ſingle ſpecimen of the Ebenus, either cretica or pinnata.

PATTON, a townſhip of Centre county, in Pennſylvania, having 297 perſons.

PAVAKA, for ſacrifices *r.* ſacrificers.

PAUCARCOLLA, for PAUCARCOTTA.

PAULSBURGH, in *Geography*, a townſhip of Coos, in New Hampſhire, having 14 inhabitants.

PAXTON, l. 2, *r.* 2232; l. 3, *r.* 2180—2998; l. 6, *r.* 619. Add—Alſo, a townſhip of Ohio, in Roſs county, having 661 inhabitants.

PEACHAM, l. 3, *r.* 1301.

PEARL RIVER, l. 12.—This is the largeſt river between Miſſiſſippi and Mobile. Before it enters the Regulets or Rigolets, it divides into ſeveral channels.

PEARL-SPAR. See MINERALOGY, *Addenda.*

PEARL-STONE. See MINERALOGY, *Addenda.*

PEASE, in *Geography*, a townſhip of Belmont county, in Ohio, having 1379 inhabitants.

PEA-STONE. See MINERALOGY, *Addenda.*

PEDAL HARP. The machinery of this inſtrument was invented by M. Simon at Bruſſels, about the year 1760, and was ſoon adopted in France. In the eighth volume of the folio Encyclopædia, printed in 1765, it is ſaid, that "the ſounds of the pedal harp are more ſweet and melodious than thoſe of any other ſtringed inſtrument played with the naked fingers; that it is more touching and proper to expreſs tenderneſs and grief than other affections of the heart; that the ſtrings muſt be moderately ſtruck, otherwiſe the muſic would be as confuſed as on the harpſichord or piano-forte without dampers; and, laſtly, the author of the article (the comte de Hoghenſki) ſays, that the Iriſh, of all the people in the world, are thoſe reputed to perform the beſt on the harps of their country.

PEDILUVIUM, in *Medicine*, from *pedes*, the *feet*, and *lavo*, *I waſh*, a bathing or immerſion of the feet in warm water.

The older practitioners reſorted to the pediluvium in a variety of diſeaſes upon hypothetical principles; conceiving that, by drawing the blood into the veſſels of the feet, it relieved diſtant organs, as the head or lungs, which were overcharged by a ſtate of inflammation in congeſtion: hence it was recommended in apoplexy, pleuriſy, and other topical affections of diſtant parts. This doctrine of revulſion, however, as applied to the operation of the pediluvium, is more queſtionable than under any other application of it; for as, like the general warm-bath, it ſomewhat accelerates the general circulation, it muſt be a doubtful remedy in caſes where the motion of the heart and arteries is already too great.

The operation of the pediluvium is, in fact, ſimply that of a partial warm-bath; and its uſe is at preſent limited to thoſe diſorders in which that more general remedy is indicated; being a more practicable and eaſy expedient, though neceſſarily much leſs effectual in its influence. The moſt valuable and common application of the pediluvium is at the onſet of febrile diſeaſes, while a certain degree of chillineſs is preſent. Uſed in this ſtate previous to going to bed, it contributes, by moderately exciting the heart and arteries, to equaliſe the circulation, and determine the blood to the ſurface, whence a ſlight diaphoreſis often follows its uſe under theſe circumſtances. Thus the attack of a commencing catarrh or rheumatiſm is often warded off by the uſe of pediluvium, aided by other proper means; and to this kind of treatment its operation is probably to be limited. In the more advanced ſtage of febrile diſeaſes, eſpecially when there is delirium, or a general heat, its advantages are very problematical.

PEDRICK ISLAND, in *Geography*, a townſhip of Plymouth county, in Maſſachuſetts, having 7 perſons.

PEELING, l. 2, *r.* 203.

PEEPEC, a townſhip of Ohio, in Roſs county, containing 670 perſons.

PEGYPSENT, a town of Maine, in the county of Cumberland, having 805 inhabitants.

PELHAM, l. 3, *r.* 1185; l. 7, *r.* 998.

PEMBROKE, in America, l. 3, *r.* 2051. Col. 2, l. 2, *r.* 1153.

PENCADER, a hundred of Newcaſtle county, in the diſtrict of Delaware, having 1865 perſons.

PENDLETON, l. 4, *r.* 4239 inhabitants, of whom 202 are ſlaves; l. 6, *r.* 22,897; l. 23, *r.* 3485. Col. 2, l. 1, *r.* 2940; l. 2, *r.* 346.

PENDULUM, col. 10, l. 16, add—The lateſt and moſt correct experiments that have been made for determining the length of the pendulum vibrating ſeconds are thoſe of captain Kater. Theſe experiments were performed with a pendulum conſtructed on the following principle: In illuſtrating this principle he ſtates, as a known fact, that the centres of ſuſpenſion and oſcillation are reciprocal; or, in other words, that if a body be ſuſpended by its centre of oſcillation, its former point of ſuſpenſion becomes the centre of oſcillation, and the vibrations in both poſitions will be performed in equal times. As the diſtance of the centre of oſcillation from the point of ſuſpenſion depends on the figure of the body employed, if the arrangement of its particles be changed, the place of the centre of oſcillation will alſo ſuffer a change. Suppoſe then a body to be furniſhed with a point of ſuſpenſion, and another point on which it may vibrate, to be fixed as nearly as can be eſtimated in the centre of oſcillation, and in a line with the point of ſuſpenſion and centre of gravity. If the vibrations in each poſition ſhould not be equal in equal times, they may be readily made ſo, by ſhifting a moveable weight, with which the body is to be furniſhed, in a line between the centres of ſuſpenſion and oſcillation; when the diſtance between the two points about which the vibrations were performed being meaſured, the length of a ſimple pendulum, and the time of its vibration, will at once be known, uninfluenced by any irregularity of denſity or figure. This principle being adopted for the conſtruction of the pendulum, the next object of importance is to ſelect a mode of ſuſpenſion equally free from objection. For this purpoſe a knife-edge was preferred, and the grounds of preference are briefly ſtated. The pendulum is formed of a bar of plate braſs, an inch and a half wide and one-eighth of an inch thick. Through this bar two triangular holes are made, at the diſtance of 39,4 inches from each other, to admit the knife-edges. Four ſtrong knees of hammered braſs, of the ſame width as the bar, ſix inches long, and three-quarters of an inch thick, are firmly ſcrewed by pairs to each end of the bar, in ſuch a manner, that when the knife-edges are paſſed through the triangular apertures, their backs may bear ſteadily againſt the perfectly plane ſurfaces of the braſs knees, which are formed as nearly as poſſible at right angles to the bar, which is cut of ſuch a length, that its ends may be ſhort of the extremities of the knee-pieces about two inches. Two ſlips of deal 17 inches long, and of the ſame thickneſs as the bar, are inſerted in the ſpaces thus left between the knee-pieces, and are firmly ſecured there by pins and ſcrews. Theſe ſlips of deal are only half the width of the bar; they are ſtained black, and in the extremity of each a ſmall whale-bone point is inſerted, for the purpoſe of indicating the extent of the arc of vibration. A cylindrical weight of braſs, in diameter three inches and a half, and an inch and a quarter thick, and weighing about 2 lbs. 7 oz., has a rectangular opening in the direction of its diameter, to admit the knee-piece of one end of the pendulum. This weight being paſſed on the pendulum, is ſo thoroughly ſecured there by means of a conical pin fitting an opening made through the weight and knee-pieces, as to render any change of poſition impoſſible. A ſecond weight of about ſeven ounces and a half is made to ſlide on the bar near the knife-edge at the oppoſite end; and this weight may be fixed at any diſtance on the bar by two ſcrews with which it is furniſhed. A third weight, or ſlider of four ounces, is moveable along the bar, and is capable of nice adjuſtment by means of a ſcrew fixed to a clamp, which clamp is included in the weight. This ſlider is deſigned to move near the centre of the bar; and it has an opening, through which may be ſeen diviſions, each equal to one-twentieth of an inch, engraved on the bar; and a line is drawn on the edge of the opening to ſerve as an index for determining the diſtance of the ſlider from the middle of the bar. The knife-edges are made of that kind of ſteel prepared in India, and called wootz. Their form is triangular, and their length an inch and three-quarters. They were ground on a plane tool, ſo as to enſure their having a perfectly ſtraight edge. They were then carefully finiſhed on a plane green hone, giving them ſuch an inclination as to make the angle on which the vibrations are performed about 120 degrees. Before the knife-edges were hardened, each was tapped half-way through, near the extremities, to receive two ſcrews, which being paſſed through the knee-pieces, drew the knife-edges into cloſe contact with them; the ſurfaces of both having been previouſly ground together to guard againſt any ſtrain which might injure their figure. For the deſcription of the ſupport and other apparatus of this pendulum, illuſtrated by drawings, and the method of determining the experiments, and certain other obſervations, our limits require us to refer to the Phil. Tranſ. for the year 1818, pt. i.

From his experiments and obſervations, captain Kater concludes, that the length of the pendulum vibrating ſeconds in vacuo at the level of the ſea, meaſured at the temperature of 62° of Fahrenheit, appears to be

	inches.
By ſir G. Shuckburgh's ſtandard -	39,13860
By general Roy's ſcale - -	39,13717
By Bird's parliamentary ſtandard -	39,13842

The latitude of the place of obſervation being 51° 31′ 8″,4 north.

PENKRIDGE. In 1811 this townſhip contained 196 houſes, and 923 perſons; *viz.* 438 males, and 485 females.

PENN's, l. 2, *r.* 3798. Add—Alſo, a townſhip of Northumberland county, having 2072 inhabitants.

Penn's *Neck*, l. 2, add—*Upper Penn's Neck* contains 1638, and the *Lower* 1163 inhabitants.

PENNSBOROUGH, East. Add—containing 2365 perſons.

Pennsborough, *Weſt.* Add—It contains 1264 perſons.

PENNSYLVANIA, l. 7, add—By the cenſus of 1810, the number of counties is 43, the five following counties having been added; *viz.* Cambria, Indiana, Clearfield, Jefferſon, Tioga, Potter, M'Kean, and the city and county of Philadelphia being ſeparated. The number of inhabitants is ſtated to be 810,091, including 795 ſlaves. See each county, and United States.

PENOBSCOT, l. 5, *r.* 1302.

PEORIA, a townſhip of St. Clair, in the Illinois territory, having 93 inhabitants.

PEPPERELL, l. 4, *r.* 1333.

PEQUANOCK. Add—containing 3853 inhabitants.

PERCHLORIC Acid, in *Chemiſtry.* See Chlorine.

PERGASITE. See Mineralogy, *Addenda.*

PERICARDIUM, *Liquor of, Chemical Compoſition of.* See Fluids, *Animal.*

PERQUIMINS, l. 5, *r.* 6052—2017.

PERSIA, col. 8, l. 18 from bottom, *r.* See Persian *Language.* Col. 13, l. 12 from bottom, *r.* Kejer. At the end, *r.* Kinneir's.

PERSIAN Gulf, &c. l. 1, for *Omar* r. *Oman.*

PERSON, l. 2, *r.* 6442; l. 3, *r.* 2573.

PERSPECTIVE, col. 4, l. 2, for plane *r.* line, and inſert radial before parallel; l. 13, for parallel lines *r.* parallel planes; l. 19, for point *r.* line. Prob. xxi. Meth. 1. l. 12 and 13, the lines which ſhould have been drawn from Q to *c* and *d* are in the plate improperly drawn from the point 3. Method 8. l. 3, *r.* repreſentation. Method 11. l. 13, for and *a e*, *r.* and *a s*.

PERTH, col. 4, l. 23 from bottom, for 4715 *r.* 4510; and after 16,948 inhabitants, *r. viz.* 7687 males, and 9261 females.

PERTH-AMBOY, l. 11, *r.* 815 inhabitants.

PERTHSHIRE. In 1811 this ſhire contained (excluſive of the town) 21,894 houſes, and 116,975 perſons; *viz.* 55,177 males, and 61,799 females: 8500 families being employed in agriculture, and 9602 in trade, manufactures, or handicraft.

Vol. XXVII.

PERU, in America. Add—Alſo, a town of Berkſhire county, in Maſſachuſetts, containing 912 perſons.—Alſo, a townſhip of Bennington county, in Vermont, having 239 inhabitants.

PERUVIAN Bark, *Chemical Properties of.* See Cinchona.

PETALITE. See Mineralogy, *Addenda.*

PETERSBOROUGH, in America, l. 3, *r.* 1537.

PETERSBURGH, a town of Huntingdon county, in Pennſylvania, having 194 inhabitants. Col. 2, l. 19, for Albert *r.* Elbert. At the cloſe, add—It contains, together with the county and Elberton-town, 12,156 inhabitants; the ſlaves of the county being 4291, thoſe of the town 225, and thoſe of Elberton 58.

PETERSHAM, l. 6, *r.* 1490.

PETROLEUM. See Mineralogy, *Addenda.*

PHÆNICOPHEUS, Malkoka, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak ſtrong and ſlightly incurved; feet ſimple, two toes pointing forwards, and two backwards, the outward toe the longeſt; head naked round the eyes and warted. This genus is readily diſtinguiſhed from Cuculus by the naked and papillated ſpace that ſurrounds the eyes, and from Polophilus by the ſtructure of the hinder toes; the head is ſomewhat ſquare, and very thick; the wings rather ſhort, and the tail remarkably long. Shaw.

PHANAGORIA for Phanagora.

PHARMACOPŒIA Equina, a diſpenſatory adapted to the purpoſes of veterinary practitioners, and deſigned more eſpecially to comprehend thoſe drugs and medicines that pertain to the diſeaſes of the horſe. Such a pharmacopœia is a deſideratum in veterinary ſcience. The drugs and preparations that are chiefly uſed are deſcribed, as far as our limits would allow, under their ſeveral titles on the diſorders to which they are appropriated. The form under which they are moſt commonly adminiſtered is that of balls, under which many of them are recited, and the general method of preparing them deſcribed. Veterinary writers have arranged theſe balls under ſeveral denominations, founded on the medical purpoſes for which they are adminiſtered. Accordingly we have *alterative, purging, diuretic, cordial, aſtringent, reſtorative,* and *diaphoretic* balls; for the preparation of which a variety of formulæ has been given by modern practitioners.

For *alterative* balls we have the following inſtructions: Mr. J. Lawrence directs flowers of ſulphur and cream of tartar, of each ½ oz., 1 dr. of canella alba in powder, and treacle *q. ſ.*, half of which ball ſhould be given twice a day on an empty ſtomach:—or, flowers of ſulphur, cream of tartar, gum guaiacum and turmeric, of each 2 drs., and 1 dr. of canella alba, may be made into one or two balls with treacle, and given as above:—or, prepared antimony and gum guaiacum, of each from 3 to 4 drs. prepared with treacle, may be given every day:—or, antimonial Æthiops, from 4 to 6 drs. made into a ball with treacle, may be adminiſtered every night for a fortnight, and diſcontinuing it for a week, reſumed for another fortnight; which is ſaid to have great effect in the farcy, the mange, and obſtinate dry coughs in horſes. Mr. R. Lawrence recommends a ball made of 1 dr. of tartariſed antimony, 1 oz. of liquorice-powder, and ½ oz. of Venice turpentine, given every other night for four or five nights, for horſes affected with greaſe. Mr. White directs a compoſition of 6 oz. of levigated antimony, 8 oz. of flowers of ſulphur, mixed with treacle, to be made into 8 balls:—or, 4 oz. of powdered roſin, 3 oz. of nitre, 1 oz. of tartariſed antimony, mixed with treacle, and divided into 8 balls:—or, 2 oz. of unwaſhed calx of antimony, 2 drs. of calomel, and 4 oz. of powdered aniſeeds, mixed with treacle, and divided into 8 doſes:—or, $\frac{1}{2}$ dr. of calomel, 1 dr. of aloes, 2 drs. of Caſtile ſoap, 30 drops of oil of juniper, and $\frac{1}{2}$ oz. of powdered aniſeeds, made into a ball with ſyrup, which ſerves for one doſe, and which Mr. W. calls the "mercurial" alterative. Mr. Taplin recommends levigated antimony, flowers of ſulphur, and nitre, of each 3 oz., 10 oz. of Caſtile ſoap, 3 drs. of oil of juniper, formed into a maſs with honey *q. ſ.*, and divided into 12 balls, and one to be given every morning for three or more weeks, in caſes of greaſe, after purging with a common ball:—or, milk of ſulphur, prepared antimony, cream of tartar, cinnabar of antimony, of each 5 oz., 4 oz. of Æthiops' mineral, and honey *q. ſ.*, and the maſs divided into 12 balls, one of which ſhould be given every morning, for a month, in the farcy.

Purging balls are prepared, according to the directions of Mr. Taplin, of 1 oz. of ſocotorine aloes, 2 drs. of rhubarb, jalap, and cream of tartar, of each 1 dr., 2 ſcruples of ginger, oil of cloves and oil of aniſeed, of each 20 drops, and ſyrup of buckthorn *q. ſ.* Mr. White orders 5 drs. of ſocotorine aloes, 2 drs. of prepared natron, 1 dr. of aromatic powder, 10 drops of oil of caraway, with ſyrup *q. ſ.*:—or, 7 drs. of ſocotorine aloes, $\frac{1}{2}$ oz. of Caſtile ſoap, 1 dr. of ginger, and 10 drops of oil of caraway, with ſyrup *q. ſ.*:—or, 1 oz. of ſocotorine aloes, 2 drs. of prepared natron, 1 dr. of aromatic powder, 10 drops of oil of aniſeeds, and ſyrup *q. ſ.* Mr. White aſſures us, that the ſecond of his compoſitions is generally ſufficient for ſtrong horſes, and that he has never had occaſion for a more active purge than the laſt. Mr. Ryding directs 6 drs. of Barbadoes aloes, 1 ſcruple of ginger, and ſoft-ſoap *q. ſ.*:—or, $\frac{1}{2}$ oz. of Barbadoes aloes, 1 dr. of calomel, and mucilage of gum arabic *q. ſ.* The firſt he calls a mild purging ball, and the latter the mercurial purging ball. Mr. J. Lawrence directs 2 or 3 balls to be made of the following ingredients; *viz.* from 12 to 14 drs. of ſocotorine aloes, from 1 to 2 oz. of cream of tartar, a tea-ſpoonful of powdered ginger, a table-ſpoonful of olive-oil, and ſyrup of buckthorn or treacle, *q. ſ.* Mr. R. Lawrence, for the ſame purpoſe, orders 9 drs. of Barbadoes aloes, and 1 dr. of ginger, to be formed into a ball with ſyrup or treacle.

Diuretic balls are prepared by Mr. R. Lawrence of $\frac{1}{2}$ oz. of Venice turpentine, 2 drs. of tartariſed antimony, and 1 oz. of liquorice-powder, with treacle. By Mr. White, they are made to conſiſt of 4 oz. of Caſtile ſoap, and powdered roſin and nitre, of each 2 oz., $\frac{1}{2}$ oz. of oil of juniper, linſeed-powder, and ſyrup *q. ſ.* This maſs for ſtrong horſes is divided into 6 balls, but for weak ones into 8:—or, the ſame balls may be prepared of 4 oz. of Caſtile ſoap, 2 oz. of Venice turpentine, and powdered aniſeeds, and treacle, *q. ſ.* ſo as to form 6 balls:—or, balls from 1 to $1\frac{1}{2}$ oz. are prepared, according to Mr. Ryding's directions, of yellow reſin, Caſtile ſoap, and Venice turpentine, of each 1 lb. diſſolved ſlowly over the fire and formed into a maſs. Theſe balls, he ſays, are excellent diuretics, and may be given in gripes, ſwelled legs, greaſe, or in diſeaſes of the eye, &c.

Cordial balls are prepared by the ſame of 2 oz. of grains of paradiſe, finely powdered, ginger and canella alba, of each $\frac{1}{2}$ oz., aniſeeds and caraway-ſeeds, of each $1\frac{1}{2}$ oz., 2 oz. of liquorice-powder, and honey *q. ſ.*; to be given occaſionally. By Mr. White, theſe balls are prepared by making a maſs with treacle of cummin-ſeeds, aniſeeds, caraway-ſeeds, of each 4 oz., and 2 oz. of ginger; and they are given in the quantity of about 2 oz.:—or, they may be made of aniſeeds, caraway-ſeeds, moiſt fennel-ſeeds, or liquorice-powder, of each 4 oz., ginger and caſſia, of each $1\frac{1}{2}$ oz., made into a maſs with honey, and given in a doſe of about 2 oz.

Aſtringent balls are prepared by Mr. Taplin's directions of 6 drs. of diaſcordium, gum arabic, prepared chalk, and Armenian bole, of each $\frac{1}{2}$ oz., 1 dr. of ginger, 40 drops of oil of aniſeed, with ſyrup *q. ſ.*; they are given in caſes of laxneſs or ſcouring, and repeated every 6, 8, or 12 hours, as the caſe may require. For this purpoſe balls may be prepared of rhubarb, and compound powder of gum tragacanth, of each $\frac{1}{2}$ oz., columbo and ginger, of each 1 dr., 15 grs. of opium, 6 drs. of orange-peel, and ſyrup of poppies; the ball to be repeated in 12, 18, or 24 hours:—or, 1 oz. of mithridate, Armenian bole, gum arabic, and prepared chalk, of each $\frac{1}{2}$ oz., 2 drs. of ginger, and ſyrup of poppies, may form a ball.

Reſtorative ball is formed, according to Mr. Ryding, of $\frac{1}{2}$ lb. of Peruvian bark, 2 oz. of grains of paradiſe, gentian, and columbo, of each 3 oz., and honey *q. ſ.*; the maſs is to be divided into 16 balls, and one to be given every morning in caſes of indigeſtion or loſs of appetite. Mr. Taplin directs a ball for this purpoſe to be made of 4 oz. of Peruvian bark, 2 oz. of mithridate (or diaſcordium), canella alba, ſnake-root, and camomile, of each, in powder, 1 oz., or formed into a maſs with honey *q. ſ.*, and divided into 6 balls, one to be given night and morning:—or, $\frac{1}{2}$ oz. of Venice treacle, 6 drs. of Peruvian bark, columbo, and camomile, of each 2 drs., 25 drops of oil of caraway, and honey *q. ſ.*

Diaphoretic balls are formed, according to Mr. White's directions, of 1 dr. of opium, 2 drs. of camphor, 3 drs. of tartariſed antimony, $\frac{1}{2}$ oz. of powdered aniſeeds, and ſyrup *q. ſ.*

PHASIS, l. 9, inſert—it is at the town of Serpana that it becomes navigable, and after collecting the ſtreams of the plain of Mingrelia, it enters the Black ſea. It purſues a courſe of 500 miles, 40 of which are navigable for large veſſels. At its diſcharge into the ſea, it has a ſmall woody iſland in the midſt of the channel.

PHASMA, in *Entomology*, a genus of inſects formed from ſome of the Linnæan Mantes, and differing from that genus in having all the legs equally formed for walking, and without the falciform joint that diſtinguiſhes the fore-legs in mantes. The characters are, head large, antennæ filiform, eyes ſmall, rounded; ſtemmata three, between the eyes; wings four, membranaceous; the upper pair abbreviated, the lower pleated; and feet formed for walking. They feed entirely on vegetable food. The moſt remarkable is the P. gigas or M. gigas of Linnæus. It is a native of the iſland of Amboina. Another extraordinary ſpecies is the P. dilatatum, deſcribed in the 4th volume of the Tranſactions of the Linnæan Society. Some inſects of this genus, as well as thoſe of the mantis, have their upper wings reſembling the leaves of trees; nature having thus provided for their ſecurity againſt the attacks of birds, and as well as for the more ready attainment of their prey. The female of the P. fucifolium has no under wings.

PHILADELPHIA, l. 6, *r.* 19; l. 7, *r.* contained, in 1810, 57,488 inhabitants. Add—Alſo, the metropolis of Pennſylvania, and now a diſtinct county, containing 14 wards, and, by the cenſus of 1810, 53,722 inhabitants.

PHILADELPHIA *Stones*, l. 3, after city, add—in Aſia.

PHILIPSBURG, a town of York county, in Maine, with 1427 inhabitants.

PHILOSOPHER's STONE, l. 23 from the end, *r.* ſhould not encourage.

PHLOGISTON, l. 19, *r.* now ſaid to be ſeparated.

PHOCA, l. 4, *r.* ſix (or four, Shaw.)

PHOSPHATE *of Copper*, in *Mineralogy*. See MINERALOGY, *Addenda*.

PHOSPHORITE. See MINERALOGY, *Addenda*.

PHOSPHORUS, *Phoſphoric Acid*, *Phoſphates*, &c. in *Chemiſtry*. According to the moſt recent determination of Dr. Thomſon, the weight of the atom of phoſphorus is 15, that of phoſphorous acid 25, and that of phoſphoric acid 35. A good deal of doubt, however, ſtill hangs over this principle and its compounds. The *hypophoſphorous acid*, diſcovered by Dulong, and which is formed when phoſphuret of barytes is diſſolved in water, appears to contain leſs oxygen than either the phoſphorous or phoſphoric acid, and was formerly conſidered as the *protoxyd* or firſt compound of phoſphorus and oxygen. Dr. T., however, is latterly diſpoſed to conſider the *hypophoſphorous acid* as a compound of 2 atoms phoſphorus + 1 atom oxygen; but this is by no means aſcertained. We may alſo obſerve, that all the beſt analyſes of the phoſphates ſhew that the weight of the atom of phoſphoric acid lies between 40 and 45.

We may mention here, that Dulong has obſerved an acid formed during the ſlow combuſtion of phoſphorus, compoſed, as he ſuppoſes, of 1 atom phoſphorous acid + 1 atom phoſphoric acid, and which he has named *phoſphatic acid.*

PHRYGIA MINOR, l. 6, *r.* N.W.; l. 26, *r.* Alexandria-Troas. Col. 3, l. 8, *r.* Podarces.

PICÆ. At the cloſe, add—See AVES, CLASSIFICATION, and NATURAL *Hiſtory*.

PICROLITE. See MINERALOGY, *Addenda*.

PICROMEL, in *Chemiſtry*. See BILE.

PIGMENTS. Add—The reſults of ſir Humphry Davy's late experiments on the colours uſed by the ancients as pigments are as follow. The red colours which they employed he found to be red-lead, vermilion, and iron ochre. The yellows were yellow ochre, in ſome caſes mixed with chalk, in others with red-lead. The ancients likewiſe uſed orpiment and maſſicot as yellow paints. The blue was a pounded glaſs, compoſed of ſoda, ſilica, lime, and oxyd of copper. Indigo was likewiſe employed by the ancients, and they coloured blue glaſs with cobalt. The greens were compounds containing copper; ſometimes the carbonate mixed with chalk; ſometimes with blue glaſs. In ſome caſes, they conſiſted of the green-earth of Verona. Verdigris was likewiſe uſed by the ancients. The purple colour found in the baths of Titus, was an animal or vegetable matter combined with alumina. The blacks were charcoal; the browns ochres; the whites chalk or clay. White-lead was likewiſe known to the ancient painters.

PILKINGTON, l. 1, after Lancaſhire, add—in the hundred of Salford, and pariſh of Preſtwick, containing 7353 perſons, occupying 1196 houſes, of whom 1223 are employed in trade and manufactures, and 166 in agriculture.

PILLORY. This kind of puniſhment is now aboliſhed in England.

PITCH-STONE. See MINERALOGY, *Addenda*.

PITT, in America, l. 2, add—of whom 3589 were ſlaves in 1810.

PITTSTOWN. Add, at the cloſe—containing 694 perſons.

PITTSYLVANIA, l. 2, add—of whom 6312 were ſlaves.

PLANE-TREE, for PLANTANUS *r.* PLATANUS.

PLANET, col. 20, l. 6 from bottom, for 365 days, hours and minutes, *r.* 365 days.

PLANETARIUM, col. 20, l. 34 from bottom, for Jupiter's *r.* Saturn's. Col. 23, l. 15 from bottom, for 23° 32′ 59″ *r.* 23° 39′ 59″.

PLAQUEMINA, in *Geography*, a pariſh of the county of Orleans, in the territory of Orleans, containing 1549 perſons. The ſoil of this pariſh is well adapted to the cultivation of the ſugar-cane, and ſome of the largeſt ſugar eſtates yet formed on the Miſſiſſippi are within its limits, ſo that ſugar is its ſtaple commodity. The important port of fort St. Philip is one of the defences of Louiſiana.

PLASNIA. See MINERALOGY, *Addenda*.

PLATINUM, in *Chemiſtry*. Dr. Thomſon concludes, from the beſt experiments that have been made on this metal and its compounds, that the weight of its atom is 226.25.

PLATYSTACUS, in *Ichthyology*, a genus of abdominal fiſhes, inſtituted by Dr. Bloch, and nearly allied to that of Silurus. Its generic characters are, that it has the habit of ſilurus, mouth beneath, bearded with cirri, body ſcaleleſs, depreſſed, tail long, compreſſed. Dr. Shaw enumerates and deſcribes the following ſpecies, *viz. cotylephorus*, with ſix beards, and ventral acetabula, the *Silurus aſpredo* of Linnæus, a native of the Indian ſeas and rivers: *lævus*, with eight beards and ſmooth abdomen, differing perhaps only in ſize from the former: *verrucoſus*, or warted brown P. marked above by longitudinal warted lines, with ſhort anal fin, ſimilar to the laſt, but ſmaller and of a leſs elongated form; a native of the Indian ſeas: *anguillaris*, or eel-ſhaped brown P., with longitudinal white ſtripes, and the ſecond dorſal, anal, and caudal fin united, form leſs broad in front than that of the preceding ſpecies, having eight inſtead of ſix beards; a native of the Indian ſeas.

PLEASANT, in *Geography*, l. 2, *r.* 1246. Add—Alſo, a townſhip in Franklin county, having 159 inhabitants.

PLEASANT, *Mount*. Add—a townſhip in Madiſon county, having 328 inhabitants.

PLUMSTEAD, l. 2, in Bucks county, having 1407 inhabitants.

PLUTONIUM, in *Chemiſtry*, a name given by Dr. Clarke to the ſuppoſed metallic baſis of barytes. See BARYTES and BLOW-PIPE.

VOL. XXVIII.

POGONIUS, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak large, thick, ciliated at the baſe, with the upper mandible bidentate on both ſides, noſtrils covered with briſtles, feet ſimple, with two toes before and two behind. Of this genus there are three ſpecies, all inhabitants of Africa; *viz. ſulciroſtris*, or groove-beaked, the blue-black P. with throat, neck, belly, and an obſcure ſtripe on the wings, ſcarlet, ſides yellowiſh, back with a white ſpot, quills dark-brown, upper mandible with one longitudinal, under with many tranſverſe, grooves; inhabits about the coaſt of Barbary: *læviroſtris*, or ſmooth-beaked black P., with throat, neck, breaſt, abdomen, and a ſtripe on the wings, ſcarlet, back with a white ſpot, crown of the head variegated with ſcarlet; beak ſmooth, not grooved; the bucca dubius B. of Latham: *vicilloti*, or brown P., whitiſh beneath, head, neck, throat, and ſpots on the breaſt, ſcarlet; interior wing-quills externally marginal with pale; beak ſmooth, not grooved. Shaw.

POINT, in *Geography*, a townſhip of Northumberland county, in Pennſylvania, having 431 perſons.

POINTE Coupe'e, a county and pariſh of New Orleans, containing 4539 perſons.

POIRET. See Theosophists.

POISON, col. 3, l. 15 from bottom, for verus *r.* berus.

POLAND, col. 9, l. 31, add—From a ſtatiſtical account of Poland, publiſhed at Warſaw, it appears, that this kingdom in its preſent ſtate contains 1291 ſquare miles, (of 15 to a degree,) 481 towns, 22,694 villages, and a population of 2,732,324 perſons, of whom 219,244 are Jews.

Poland, in America, col. 2, l. 2, *r.* 850. Add—Alſo, a townſhip of the county of Trumbull, in Ohio, with 827 inhabitants.

POLARITY *of Light*. See Light.

POLARIZATION, in *Optics*, a term which has been lately applied to that change which takes place in the direction of rays that paſs through certain cryſtals, and which derives this appellation from its analogy to magnetic phenomena. It was firſt ſuggeſted by the modifications of light diſcovered by M. Malus (ſee Light), and has ſince been inveſtigated with equal ingenuity and diligence by Dr. Brewſter. For his numerous communications on this ſubject to the Royal Society, he was honoured with the Copleyan medal.

POLASKI, in *Geography*, a county of Georgia, containing 2091 inhabitants, of whom 528 were ſlaves in 1810.

POLE, l. 2, add—the fourth ſon of the counteſs of Saliſbury, who was cruelly and unjuſtly beheaded by Henry VIII., and whoſe father, the duke of Florence, was drowned in a butt of malmſey by his ſon.

POLOPHILUS, Coucal, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, beak ſtrong, ſlightly incurvated, noſtrils ſtraight, elongated, feet ſimple, two toes pointing forward, the exterior being the largeſt, two toes turning backwards, the interior furniſhed with a very long claw. The Coucals, ſo firſt called by Vaillant, form a moſt beautiful tribe of birds. They reſide in woods, feed on inſects and fruits, and conſtruct their neſts in trees, and (contrary to the manners of cuckoos) bring up their young, from which circumſtance their generic name is derived. Shaw.

POLYPTERUS, in *Ichthyology*, a genus of the abdominal fiſhes; the character of which is, that the gill-membrane is ſingle-rayed, and the dorſal fins numerous. This fiſh conſtitutes a new and remarkable genus, and was firſt ſcientifically deſcribed by M. E. Geoffroy, who conſidered it as forming a connecting link between the oſſeous and the cartilaginous fiſhes. It ſeems moſt nearly allied to the genus Eſox. It is known to the Egyptians by the name of Bichir, among whom it is rare, and ſuppoſed in general to inhabit the depths of the Nile among the ſoft mud. Its fleſh is white and ſavoury, though it is hardly poſſible to open its ſkin with a knife; and therefore the fiſh is firſt boiled, and its ſkin drawn off whole. Its ſpecific name is "Niloticus," and it is characteriſed as the green P., with the abdomen ſpotted with black. Shaw.

PONT-VOLANT, *dele* the deſcription, and let the reference remain.

PORANTHERA, in *Botany*, from πορος, *a pore*, and ανθηρα, *an anther*.—Rudge Tr. of Linn. Soc. v. 10. 302.—Claſs and order, *Pentandria Trigynia*. Nat. Ord.......

Eſſ. Ch. Involucrum of eight leaves, many-flowered. Perianth none. Petals five. Anthers of four cells, each with a terminal orifice. Capſules? three, with numerous ſeeds.

1. P. *ericifolia*. Rudge as above, t. 22. f. 2.—Native of New South Wales. *Dr. White*. A very extraordinary little plant. *Stem* branched, round, leafy, four to ſix inches high. *Leaves* ſcattered, numerous, linear, glaucous. *Flowers* corymboſe, minute, white. The dried ſpecimens reſemble ſome ſmall kind of *Lepidium*.

PORCELAIN, col. 24, l. 31, *r.* in a melted ſtate.

Porcelain *Jaſper*. See Mineralogy, *Addenda*.

PORCELIA, in *Botany*, ſo called by Ruiz and Pavon, in honour of Don Antonio Porcel, a Spaniard, whom they celebrate, in the higheſt terms, as a promoter of botanical purſuits. Our reaſons for adopting this name, in preference to any other, for the genus we are about to deſcribe, may be found under the article Asimina. That we preſume to conſider the *Aſimina* and *Porcelia* of De Candolle as one and the ſame genus, may require a ſtill further apology, and we ſhall preſently give it, as far as we are able.—"Ruiz et Pavon Fl. Peruv. v. 1. 144. Prodr. 84. t. 16. Dunal Anonac. 85." De Cand. Syſt. v. 1. 480. "Perſ. Syn. v. 2. 95." Purſh 383. (Aſimina; Adanſ. Fam. v. 2. 365. Dunal Anonac. 81. De Cand. Syſt. v. 1. 478. Orchidocarpum; Mich. Boreal.-Amer. v. 1. 329. Annonæ ſpec. Linn. Juſſ. Gen. Willd. Ait. &c.)—Claſs and order, *Polyandria Polygynia*. Nat. Ord. *Coadunatæ*, Linn. *Anonæ*, Juſſ. *Anonaceæ*, De Cand.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in three deep, equal, ovate, concave, permanent ſegments. *Cor.* Petals ſix, unequal, in two rows, ſeſſile, ovate-oblong, ſpreading, coriaceous; the three innermoſt either larger or ſmaller than the reſt. *Stam.* Filaments ſcarcely any; anthers very numerous, nearly ſeſſile on the convex receptacle, oblong, burſting at each ſide. *Piſt.* Germens from three to ſix, ovate-oblong, ſeſſile; ſtyles none; ſtigmas obtuſe. *Peric.* Berries as many as the germens, ſeſſile, crowded, ovate or nearly cylindrical, more or leſs ſucculent, of one cell. *Seeds* numerous, elliptic-oblong, ranged tranſverſely in a ſingle or double row, inſerted into the inner margin.

Eſſ. Ch. Calyx inferior, deeply three-cleft. Petals ſix, ovate-oblong, ſpreading, in a double row, unequal. Germens oblong. Stigmas ſeſſile, obtuſe. Berries ſeſſile, of one cell, with many ſeeds.

A ſhrubby or arboreſcent genus, with oblong, undivided, deciduous *leaves*, and axillary, nearly ſolitary *flowers*, either ſeſſile or ſtalked, in ſome inſtances expanded before the foliage. All the ſpecies are natives of the cooler parts of America. The able profeſſor De Candolle ſeparates *Aſimina* of Adanſon from *Porcelia* of the *Fl. Peruv.*, the latter having its three inner *petals* rather the largeſt, the fruit more cylindrical and coriaceous, the ſeeds in a double row. In *Aſimina* the three outer petals are much the largeſt, and the fruit more ovate. But the *ſeeds* are likewiſe in a double row in one ſpecies at leaſt of this genus, the *triloba*, as De Candolle, on the authority of Ehret, admits; and the comparative ſize of the inner and outer petals, different in different ſpecies of *Aſimina*, can hardly be much relied on, nor is this admitted by De Candolle among his moſt eſſential characters, p. 465. The more or leſs cylindrical or ovate form of the *fruit* will not, ſurely, be inſiſted on; nor can that of the original *Porcelia* differ eſſentially in ſubſtance from the others, being like them ſucculent and eatable.

1. P. *nitidifolia*. Shining-leaved Porcelia. "Fl. Peruv. v. 1. 144." De Cand. n. 1.—Leaves ovato-lanceolate, pointed, ſmooth on both ſides. Flower-ſtalks aggregate. Inner petals rather the largeſt.—Native of moun-

tainous woods in Peru. A tall and very handſome *tree*, forty ells in height, with greyiſh, rugged, minutely dotted *branches*. *Leaves* alternate, on ſhort ſtalks, oblong-lanceolate, rounded at the baſe, entire, veiny on both ſides, ſhining above. *Stalks* axillary, ſeveral together, drooping, thickened upwards, each bearing one or more yellowiſh-white *flowers*, about an inch in diameter. *Berries* cylindrical, tumid, rather coriaceous, but juicy and eatable, each marked externally with a longitudinal ſeam. *Seeds* oblong-kidney-ſhaped, compreſſed, in two rows. The *leaves* afford a yellow dye.

2. P. *parviflora*. Small-flowered Porcelia. Purſh n. 2. (Aſimina parviflora; De Cand. Syſt. v. 1. 478. "Dunal Anonac. 82. t. 9." Orchidocarpum parviflorum; Mich. Boreal.-Amer. v. 1. 329.)—Leaves obovate-wedgeſhaped, pointed, clothed with ruſty down beneath, as well as the young branches. Flowers ſeſſile. Outer petals longeſt, ſcarcely twice the length of the calyx.—In ſhady woods, near rivers and lakes, from Virginia to Georgia, flowering in April and May. A low *ſhrub*, ſometimes not above two feet high when in full fruit. *Flowers* ſmall, dark purple. *Purſh.* *Branches* ſmooth, ſlightly rugged; when young leafy, and covered with reddiſh pubeſcence. *Leaves* on very ſhort ſtalks; acute at the baſe; ribbed and downy beneath; ſmooth and green above. *Flowers* nearly or quite ſeſſile, coming before the leaves, from the axillary ſcars of laſt year's foliage. Their *ſtalks*, if any, as well as the outſides of the *calyx* and *corolla*, are clothed with reddiſh down. *Berries* two or three from each flower, aggregate, ovate, ſmooth, rather fleſhy, "the ſize of a plum." *De Candolle.*

3. P. *triloba*. Three-lobed Porcelia. Purſh n. 1. (Aſimina triloba; De Cand. Syſt. v. 1. 479. "Dunal Anon. 83." Annona triloba; Linn. Sp. Pl. 758. Willd. Sp. Pl. v. 2. 1267. Ait. Hort. Kew. v. 3. 335. A. foliis lanceolatis, fructibus trifidis; Mill. Ic. v. 1. 23. t. 35. A. fructu luteſcente lævi, ſcrotum arietis referente; Cateſb. Carol. v. 2. t. 85. Trew Ehret 1. t. 5. Duham. Arb. v. 1. 56. t. 19, 20. Orchidocarpum arietinum; Mich. Boreal.-Amer. v. 1. 329.)—Leaves elliptic-oblong, pointed at each end, nearly ſmooth, as well as the young branches. Flowers ſtalked. Outer petals roundiſh-ovate, four times the length of the calyx.—On the overflowed banks of rivers, from Pennſylvania to Florida, flowering in March and April. A ſmall tree. *Flowers* dark brown. *Fruit* large, eatable. *Purſh.* This ſpecies, introduced by the celebrated Peter Collinſon, is ſtill met with in ſeveral curious gardens, like thoſe of Kew, Sion-houſe, &c. where it produces in the ſpring large inodorous *flowers*, an inch and a half broad, with wrinkled dark-brown *petals*, as repreſented by Miller. Cateſby and Ehret make them of a pale yellowiſh-green. The *leaves*, which come forth as the flowers begin to fall, are five or ſix inches long, and an inch and a half or two inches broad, on ſhort ſtalks. The *flower-ſtalks* are ſolitary and ſingle-flowered, from one to two inches long, downy with purpliſh hairs. *Berries* ovate, yellow, two or three inches long, not perfected in England, eatable, though reported by ſome perſons to have an unpleaſant ſmell. *Seeds* eight or ten, large, brown, rugged, in a double row, as repreſented by Ehret. Miller's figure exhibits a ſingle row only. One or two *berries* only appear to be perfected from each flower.

4. P. *pygmæa*. Dwarf Porcelia. Purſh n. 3. (Aſimina pygmæa; De Cand. Syſt. v. 1. 479. "Dunal Anonac. 84. t. 10." Orchidocarpum pygmæum; Mich. Boreal.-Amer. v. 1. 330. Annona pygmæa; Bartr. Trav. t. 1. Willd. Sp. Pl. v. 2. 1268.)—Leaves oblong-lanceolate, obtuſe; wedge-ſhaped at the baſe; ſmooth, as well as the young branches. Outer petals largeſt, obovate-oblong, greatly exceeding the calyx.—In the ſandy fields of Georgia and Florida. The whole ſhrub not above a foot high. *Flowers* the ſize of *Anona ſquamoſa*. *Purſh.* This is ſmooth in every part, with very long *leaves*, and ſhort, ſingle-flowered, ſolitary, bracteated *flower-ſtalks*. *Flowers* white; their inner petals ſmalleſt, elliptical and obtuſe. *De Candolle.* Purſh, by a faulty punctuation, makes the inner *petals* longeſt.

5. P. *grandiflora*. Large-flowered Porcelia. Purſh n. 4. (Aſimina grandiflora; De Cand. Syſt. v. 1. 480. "Dunal Anonac. 84. t. 11." Orchidocarpum grandiflorum; Mich. Boreal.-Amer. v. 1. 330. "Annona grandiflora; Bart. Trav. t. 2." A. obovata; Willd. Sp. Pl. v. 2. 1269.)—Leaves obovate-wedgeſhaped, obtuſe; clothed beneath with ruſty down, as well as the young branches. Flowers ſeſſile. Outer petals obovate, many times larger than the calyx.—In ſandy ſhady woods, of Georgia and Florida, flowering in May. A ſmall ſhrub. *Flowers* very large in proportion, white. *Purſh.* Older *branches* ſmooth, as well as the upper ſurface of the *leaves*. Inner *petals* linear-oblong. *Berries* ſmooth, oblong-obovate. *De Candolle.*

PORTER, in *Geography*, a ſmall townſhip of the diſtrict of Maine, in the county of Oxford, having 292 perſons.

PORTLAND, New, a townſhip of Maine, in the county of Somerſet, having 421 inhabitants.

PORTSBOROUGH. In 1811, the pariſh of St. Cuthbert's contained 1958 houſes, and 38,673 perſons; *viz.* 16,873 males, and 21,800 females: 210 families being employed in agriculture, and 3342 in trade, manufactures, or handicraft.

PORTSMOUTH, col. 5, l. 20, for tons *r.* cwt.

POTASSIUM, Potash, in *Chemiſtry*. The moſt recent determinations make the weight of the atom of potaſſium to be 50, and that of potaſh of courſe to be 60. Potaſſium, when heated in oxygen gas, combines with a larger quantity of oxygen than exiſts in potaſh, and thus forms a compound which is, in fact, a *peroxyd* of potaſſium. This peroxyd is of a yellow colour; when put into water it effervesces, giving off oxygen gas. Phoſphorus, ſulphur, and carbon, are acidified when brought in contact with it. Hydrogen, when heated with it, is ſlowly and without combuſtion converted into water. It decompoſes ammonia, converting it into water and azotic gas.

POTT, Percival, col. 2, l. 27, for 1726 *r.* 1736.

POTZDAM. Add—Potzdam contains (the military not included) 115,426 ſouls.

POULTICE, in *Farriery*, is compounded of various ingredients, according to the purpoſes of its application. Some of the moſt approved, founded in modern veterinary ſcience, are the following:—The *common* poultice conſiſts of $\frac{1}{4}$ peck of bran and water, *q. ſ.* boiled for ten minutes, and then thickened with linſeed-meal, having the addition of 3 oz. of hog's-lard: or, $\frac{1}{2}$ peck of fine pollard, $2\frac{1}{2}$ lbs. of linſeed-meal, and boiling water, *q. ſ.* adding 2 oz. of hog's-lard. *Fermenting* poultice is obtained by boiling a quantity of brewer's wort, and throwing into it as much oatmeal as will thicken it; adding, laſtly, a tea-cupful of yeaſt: this is adapted to putrid ulcers, or mortified parts. *Saturnine* poultice is had by adding to the common poultice 3 drs. or $\frac{1}{2}$ oz. of extract of lead, and mixing them well together: or, 1 oz. of acetated ceruſe, (ſugar of lead,) 3 quarts of boiling water, with the addition of bran and linſeed-meal, *q. ſ.* A *ſuppurative* poultice may be made by ſtirring a ſufficient quantity of common turpentine into ſome of the common poultice. An *anodyne* poultice may be prepared in the ſame way, by adding a ſufficient quantity of tincture of opium.

POWATAN, l. 1, *r.* 8073 inhabitants, of whom 5091 were ſlaves in 1810.

POYANG, l. 2, add—According to a ſtatement in "Ellis's Journal of an Embaſſy to China," (vol. ii.), this lake is very inferior in extent to the Tung-ting-hoo, in Ho-quang, the one being 180 lees, and the other 800 acroſs; the lee being rather more than one-third of a mile.

POWDER-CHESTS, l. *penult.* for fixed *r.* fired.

PRAIRIE, or MEADOW, a term uſed in North-Weſt America, to denote a tract of land diveſted of timber. In travelling W. from the Alleghanies, ſuch tracts occur more frequently, and are of greater extent as we approach the Miſſiſſippi. When we proceed to the diſtance of 2 or 300 miles to the weſt of that river, the whole country is of this deſcription, which continues to the rocky mountains weſtward, and from the head waters of the Miſſiſſippi to the gulf of Mexico, an extent of territory which probably equals in area the whole empire of China.

PREBBLE, in *Geography*, a county of Ohio, containing 7 townſhips, and 8304 inhabitants.

PREHNITE. See MINERALOGY, *Addenda.*

PRICE. See POLITICAL *Economy.*

PRINCE EDWARD, l. 2, after inhabitants, add—of whom 6996 were ſlaves in 1810.

PRINCE *George*, l. 3, inſert—of whom 4486 were ſlaves in 1810.

PRINCE *George*, l. 5, inſert—of whom 9189 were ſlaves in 1810.

PRINCE *William*, l. 3, add—of whom 5220 were ſlaves in 1810.

PRINCESS ANNE, l. 4, inſert—of whom 3926 were ſlaves in 1810.

PRINTING, CALICO, is the art of imparting various colours to plain calicoes, in any form, or according to any pattern that may be deſired, by means of certain colourleſs mordants previouſly applied to the cloth. This art has ſometimes been denominated *topical* dyeing, and the various branches of it are calculated to aſtoniſh thoſe who may have the opportunity of witneſſing the different proceſſes, without being acquainted with the nature of chemical mordants, and their ſeveral uſes in the arts.

The art of calico-printing is of great antiquity. Homer ſpeaks of the variegated cloths of Sidon, as having a very ſplendid appearance; and Pliny deſcribes the Egyptians as accuſtomed to prepare parti-coloured linens, and obſerves that theſe colours were produced after a manner correſponding with our method of topical dyeing. He ſays the Egyptians began by painting or drawing on white cloths, (doubtleſs linen or cotton,) with certain drugs, which in themſelves poſſeſſed no colour, but had the property of attracting or abſorbing colouring matters. After which, theſe cloths were immerſed in a heated dyeing liquor; and though they were colourleſs before, and though this dyeing liquor was of one uniform colour, yet when the cloths were taken out of it ſoon after, they were found to be wonderfully tinged of *different* colours, according to the different natures of the ſeveral drugs, which had been applied to their different parts; and theſe colours, ſo wonderfully produced from a tincture of only *one* colour, could not afterwards be diſcharged by waſhing; and he conſiders it as admirable, that the dyeing liquor, which, if cloths of different colours had been put into it, would have confounded them all, ſhould thus produce, and permanently fix *ſeveral* colours, being itſelf only of one colour. Pliny, lib. xxxv. cap. 2.

This account contains ſo plain a deſcription of one of the branches of calico-printing, that no one who is converſant with the preſent practices can entertain any doubt but that the ancient Egyptians were acquainted with many of the principles of this very curious art. Our readers, who are deſirous of further inveſtigating this intereſting ſubject, will find abundant and ſatisfactory information by conſulting the following works: *viz.* Pliny's "Natural Hiſtory;" the 26th volume of "Recueil des Lettres Edifiantes, &c." Strabo, lib. xv.; Delaval's "Experimental Inquiry into the Cauſe of Change of Colours, in opaque and coloured Bodies;" Berthollet's "Elements of the Art of Dyeing," vol. i. p. 28; Beckman's "Hiſtory of Inventions," in 4 vols. 8vo.; Mr. Parkes's "Chemical Eſſays," vol. ii. p. 65, &c.; and Dr. Bancroft "On Permanent Colours." In the above works, abundant teſtimonies will be found to ſhew that printed calicoes were not unknown to the ancients; and we have good reaſon alſo to ſuppoſe that the colours which they imparted to their cloths poſſeſſed a conſiderable degree of permanency, as we know that iron and alum were both employed by them as mordants. It is likewiſe well known that ſeveral ancient nations were acquainted with ſoda, madder, tin, the juice of the *buccinum*, cochineal (or an inſect ſimilar to it), the celebrated Tyrian purple, and other materials, ſufficient in the whole to enable them to give a great variety of colours and tints to their ſeveral productions.

Our object, however, in this communication, is to give a ſuccinct account of the art of calico-printing as it is conducted at preſent, and we do not know that we can do better than to copy the greater part of the detail which has been given by Mr. Parkes in his "Eſſay on Calico-Printing," in the ſecond volume of his "Chemical Eſſays," and which he has very politely allowed us to make uſe of in any way we think proper.

From this eſſay it appears, that calico-printing, as an art, is but of modern date in this country, though it has been practiſed in India, and other parts of the Eaſt, from time immemorial. From various accounts it appears, that formerly in India the cotton cloths when brought from the weavers, partly bleached, were worn next to the ſkin by the dyer and by all his family, during the ſpace of eight or ten days, after which they underwent ſeveral macerations in water, with goat's dung, and were afterwards ſubmitted to frequent waſhings, and as frequent dryings in the rays of an intenſe ſun-ſhine. Afterwards they were ſoaked for ſome time in the mixture of the aſtringent fruit of the yellow *myrobalans*, and of curdled buffalo's milk. When thoroughly impregnated therewith, they were ſqueezed, dried by expoſure to the ſun, and then, by preſſure and friction, they were made ſmooth enough for being drawn upon by the pencil with the different mordants.

The firſt of theſe mordants was an iron liquor, made by diſſolving iron in a mixture of ſour palm-wine and of water in which rice had been boiled. This liquor was applied to the figures or ſpots intended to become black, and afterwards the aluminous mordant was applied, commonly by children, with the pencil, to the parts intended to be made red. The pieces were then expoſed to the hotteſt ſun-ſhine, that the parts to which the mordants had been applied might be dried as much as poſſible: and then they were thoroughly ſoaked in pits of water, to cleanſe them from the ſuperfluous mordants, as well as from the buffalo's milk, &c.: and laſtly, they were dyed in water, with certain roots anſwering nearly in their effects to thoſe of madder.

It was in this way the manufacture of printed cottons was conducted by the Indians in *former* times. The following is an account of the *modern* Indian practice, in one particular branch of their manufacture, which Mr. Parkes ſays he procured from a gentleman who had ſpent ſome time in India, and who had taken pains to inquire into their manipulations.

This proceſs relates to the method of printing the fine cotton chintz counterpanes, which the natives call *pallampoors*, and which are manufactured at Madras. Theſe are woven in one piece, from two to four yards ſquare, and are printed, or rather painted, with various deſigns, and in various colours. Their method is to draw a pattern firſt on ſheets of paper ſewn together, of the ſize of the intended pallampoor; and then to prick out the ſame in the paper with a ſharp inſtrument. This done, the paper pattern is ſmoothly fixed upon the cloth, which is previouſly damped, and a ſmall muſlin bag containing ſome kind of black powder is rubbed over the whole, in order to paſs a part of the powder through the pin-holes, and completely mark out the pattern.

The pattern being thus ſketched upon the cloth, the paper is removed; and when the outline of the various figures is drawn with a pencil, the piece is conſidered to be ready for receiving the colours.

One colour is then laid on with a bruſh made with a tough root of a particular kind of tree, or with the huſk of the cocoa-nut; and when this is dry, the piece of cotton is given to a woman to wear, or to uſe in the family, till it be very much dirtied; in order that it might neceſſarily undergo a thorough waſhing, which is thought requiſite to prove the goodneſs and permanency of the colour. Another colour is then laid on in the ſame manner, and the piece is again ſubmitted to the ſame trial of wearing and waſhing. The Aſiatics may not be aware of it; but doubtleſs the long expoſure to the air in theſe caſes is the important point, as it is well known that the atmoſphere is a prime agent in rendering many colours permanent, which, under a different treatment, would be heavy and fugitive. This is repeated for every colour that is employed;—and when any one of theſe colours is found to be deteriorated by this treatment, it is printed afreſh; and ſo are all the reſt, till the workman is ſatisfied that all the colours are actually permanent.

This tedious proceſs is adopted, however, only when the manufacturer means to warrant the article; but in all caſes, even in thoſe pieces which will not bear waſhing, the colours are laid on by a bruſh, as before mentioned.

Whether they are all ſubſtantive colours which are thus applied, or whether they uſe any ſpecies of mordants in their faſt work, we are unacquainted, as the artiſts of India obſerve great ſecrecy, and are extremely jealous on this ſubject.

Such are the facts which we have been able to collect reſpecting the progreſs of calico-printing from the earlieſt ages; and alſo of the preſent ſtate of the art among the Aſiatics. The more difficult part now remains, *viz.* to give a brief detail of the moſt important proceſſes of our own artiſts. This, however, we ſhall endeavour to do with the utmoſt plainneſs, and ſhall not fail to ſuggeſt any improvement that may have occurred to us during our inquiries reſpecting this very intereſting and varied branch of manufacture.

We have not been able to aſcertain when calico-printing was introduced into this country, though there are various reaſons for believing that it is an art, among us at leaſt, but of modern date.

As the whole of this ingenious buſineſs, as it is now conducted, depends upon the proper application of a few compounds called *mordants*, it will be neceſſary, in the firſt place, to explain their nature and uſes. In doing this, one or two preliminary remarks will aſſiſt us.

The colouring ſubſtances chiefly employed in this art are divided into two claſſes, *viz.* *ſubſtantive* and *adjective.* A *ſubſtantive* colour is one which is capable of itſelf of producing a permanent dye on wool or woollen cloth; ſuch is the juice of the buccinum, uſed by the ancients for producing the imperial purple; ſuch are alſo the woad and indigo employed by the moderns for producing a permanent blue; and we may add the metallic ſolutions, particularly thoſe of iron, cobalt, gold, platina, and ſilver, which give various colours, according to the proceſſes by which they are prepared.

It has been propoſed to employ this valuable permanent colour for pencilling on fine muſlins. In time of peace it might readily be procured in ſufficient quantities, and would prove an important addition to the reſources of the Britiſh calico-printer.

Dr. Bancroft tells us, that the firſt mention of indigo, as known in England, is in the Act of the 23d of queen Elizabeth, chap. 9, where it is called *Ancle*, or *Blue Inde.* Bancroft on Permanent Colours, p. 138.

By *adjective* colours are meant all thoſe which are incapable of giving permanent dyes without the aid of certain intermedia, which form as it were a bond of union between them and the ſubſtances intended to be dyed.

Theſe intermedia are what are known by the term *mordants*, and are uſed for this purpoſe in very conſiderable quantities by the calico-printer of the preſent day.

Several expedients of this kind were employed by the ancients to produce faſt, or, more properly, permanent colours, and this appears from the teſtimony of Ariſtotle and Pliny. The chief articles in uſe at preſent are, the acetate of iron, the acetate of alumine, and the various ſolutions of tin, all of which ſhould be very carefully and correctly prepared.

We have already given ſome account of chemical mordants in vol. xxiv. part 1, under the article MORDANTS; which ſee.

When piece-goods are deſigned to be dyed of one uniform adjective colour, they are firſt immerſed in a ſolution of one of theſe mordants, then hung up to dry, and to abſorb the oxygen of the atmoſphere. When ſufficiently expoſed to the air, they are waſhed or dunged, to remove the ſuperfluous mordant; that is to ſay, that part of it which is not chemically combined with the cloth; and the goods are then ſubmitted to a bath of that particular kind of colouring matter which is to be imparted to them.

The dung of the cow is uſed in ſuch large quantities by the calico-printer, that it has become an article of great expence. The proportion that is employed is uſually about one buſhel to one hundred gallons of water, though frequently a larger proportion would be more effectual. The brightneſs of the colours, and the purity of the whites, are always dependent upon the quantity of the dung employed.

Whenever it is meant that the colour ſhould be partially inſerted, the mordant is applied to thoſe particular parts only; ſo that, when the piece is immerſed in the colouring bath, no other place will receive the permanent ſtain. If a ſufficient number of colouring ſubſtances ſhould ever be diſcovered, that have no affinity for any thing but the chemical mordants, the buſineſs of calico-printing would be rendered much more eaſy and ſimple than it is at preſent. For though the whole texture of the cloth will be coloured, yet having in itſelf no affinity with the vegetable with which the decoction is impregnated, the whole of the colouring matter will be eaſily removed by expoſure to the air, and the ground of the piece reſtored to its original whiteneſs; while thoſe parts to which the mordant was applied, will retain and fix the colours in a way which will be more fully explained hereafter.

Formerly all calico-printers were bleachers; but in the neighbourhood of London theſe are ſeparate and diſtinct trades, and the printer either purchaſes bleached goods for printing on his own private account, or receives the cloth from his cuſtomers in a white ſtate; and, when printed, he returns the identical pieces, and is paid ſo much *per* yard, according to the number of colours, for printing them.

In our opinion every printer ſhould bleach his own goods, for it is impoſſible always to rely with confidence on the care of thoſe who bleach for hire; and every printer knows that good bleaching is abſolutely a neceſſary preliminary in the production of good printing. Indeed, this is now pretty generally acknowledged in the north of England; for moſt of the opulent houſes in Lancaſhire and in Scotland, which produce fine work, are bleachers as well as printers.

Oxymuriate of lime is the agent generally employed in bleaching; but it appears to us that ſome other article might be introduced with advantage. For, as the goods are waſhed in diluted ſulphuric acid when they are taken from the oxymuriate of lime, a ſulphate of lime is always formed, which becomes fixed in the fabric, and, acting as a mordant when the pieces come into the madder-copper, occaſions an indelible ſtain, which in very fine goods often impairs their beauty. If oxymuriate of ſoda were employed, the ſulphuric acid would form a ſoluble ſalt with the ſoda, eaſily removable by waſhing.

No people have taken more pains to excel in bleaching than the Iriſh, and their credit is eſtabliſhed accordingly. The German linen, we believe, is generally better than theirs; but the Iriſh has always the preference in foreign markets, owing to their ſuperiority in bleaching and finiſhing.

A very minute account of the various proceſſes in bleaching has been already given in our 4th vol. part ii. under the article BLEACHING; which ſee.

By whatever means the bleaching is performed, the printer commences his part of the buſineſs in the following manner.

The goods are firſt *dreſſed* by ſingeing off the whole of the nap which is attached to them. This is effected by the following contrivance:—Ten pieces are generally wired together, and wound upon a roller, from whence they are paſſed over a hot iron, nearly in the form of half a cylinder, and received upon another roller; from thence they are returned to the iron, which is ſtill kept red, or nearly at a white heat. The uſe of repeating this proceſs is to remove the nap more effectually than it would be done by paſſing it only once over.

The next operation is that of *ſteeping*, which conſiſts merely in ſoaking the pieces for twenty-four hours in a veſſel of weak alkaline ley, at a temperature of about 100°. Theſe operations of ſingeing and ſteeping are going on at one and the ſame time, which effectually prevent any accident that might otherwiſe ariſe from the effects of the hot iron.

The goods are then boiled or elſe bowked in a ſolution of potaſh (ſome workmen prefer to have this alkali in a pure cauſtic ſtate); they are then well cleanſed by thorough waſhing in waſh-wheels, or in ſtocks, to enſure their being entirely diveſted of the alkali. The intention of thus treating them with potaſh, is to remove any greaſe or impurity that may be attached to them, which would otherwiſe endanger the evenneſs and uniformity of the colours. This proceſs is called *aſhing*.

By ſome obſervant calico-printers it has been imagined, that the rendering of the ley cauſtic is apt to impair the texture of the cloth; and we doubt not but that this has often been the caſe. Under the eye of the maſter, however, we are ſure that it might be employed with advantage and ſafety.

It may be remarked, that in weaving calicoes the workman generally greaſes the reeds, in order to make them move eaſier. Tallow is alſo employed for dreſſing the warp, and this has a baneful effect on all goods which are deſigned for printing. Wherever this greaſe is in the cloth, it becomes fixed by the operation of ſingeing; and if it be not taken out before bleaching, it will not come out afterwards by the uſual proceſs of aſhing and ſouring; for, when the pieces are ſubmitted to a blue vat to be dyed of a uniform ſelf-colour, all thoſe greaſy places will be found to have taken the dye in a very imperfect manner. If the calico-manufacturers themſelves would make a point of preparing the oleaginous matter for the weavers, and would furniſh them with nothing but pure vegetable oils, ſuch as thoſe of rape, linſeed, &c., it is very likely that theſe inconveniences would not occur; for the ſtain from *vegetable* is not ſo indelible as that from *animal* oil. To cleanſe ſuch goods, various expedients have been adopted, but we apprehend nothing but a ſolution of cauſtic alkali can be depended upon. To prove the effect of any method which may be tried, it is a good way to run the pieces through water, and then to paſs them from the water ſo gradually over a roller, as to give the ſuperintendant an opportunity of examining every inch of the ſurface; and if any part remains greaſy, it will be ſeen at once, for that part will continue dry, while all the reſt of the cloth is wet.

There is another way in which the goodneſs of bleaching might be proved. Let a few of the ſuſpected pieces be run once or twice through a madder-copper, at the temperature of about 180°. This will inevitably mark any part that may be imperfectly bleached; whereas, if the operation has been properly performed, they will come out ſo little ſtained, that an intelligent workman, who has been uſed to a madder-copper, will at once be ſatisfied that they contain no impurity that can form a permanent mordant.

The next proceſs is one with diluted ſulphuric acid. A quantity of ſoft water having been poured into a leaden veſſel, oil of vitriol is gradually added to it, in the proportion of about twenty pounds of oil of vitriol to every hundred gallons of water, which by weight is in the proportion of about one to forty.

When this mixture has been well ſtirred, it is ready for uſe. Sometimes it is employed in this ſtate, at others it is heated to 90° or upwards of Fahrenheit, according to the nature of the work to be done, and the goods are immerſed in it. They are not ſuffered to lie in this ſolution, but are wound by means of a winch over a wooden cylinder, that every part of the cloth may be immerſed in the fluid, and expoſed alternately to the action of the atmoſphere.

This operation is generally continued for about twenty minutes, and is deſigned to remove any iron-moulds or other ſtains which the cloth may have acquired. It has alſo the effect of neutralizing any portion of potaſh that may have been left in contact with the cloth. The proceſs is called *ſouring*.

After this operation it is neceſſary to waſh the goods thoroughly, that no part of the acid may be left in them to injure their texture, and this is beſt effected by means of the waſh-wheel. The calicoes are then to be regularly and thoroughly dried, which finiſhes theſe preliminary operations, known in the trade by the term *preparation;* ſo that thoſe cloths which have paſſed through theſe manipulations are ſaid to have undergone a preparation. Beſides the uſes already mentioned, there is another advantage attending theſe proceſſes, *viz.* that the cloth which has undergone this preparation will bleach ſooner, the colours will be brighter, and the whites more delicate, than they would have been had they not gone through theſe previous operations.

The next proceſs is that of *calendering.* Here the goods are paſſed through a ſet of rollers, which gives them a gloſs, and the appearance of their having been ironed. They are now fit for printing. For copper-plate printing, or cylinder work, the proceſs of calendering is omitted.

In printing faſt colours, the artiſt uſually proceeds in this way: he lays the piece of calico, which has been already ſmoothed by calendering, upon a ſtrong thick table, which is previouſly covered with a woollen cloth. He then proceeds to apply one or more mordants, as the caſe may require, for fixing the intended colours. Theſe mordants are applied by means of wooden blocks, with the patterns formed upon them. Theſe blocks were formerly choſen of holly, and the cutting them was a ſeparate branch of the buſineſs, and was called *block-cutting.* Of late years, however, a conſiderable improvement has been made in this part of the buſineſs by the introduction of braſs or copper; that is, the pattern, inſtead of being actually cut in the wood, is now formed by means of ſlender pieces of one of thoſe metals being firmly fixed to the block, ſo as to produce the pattern intended. This alteration was occaſioned by the periſhable nature of wood, on account of which every printer incurred great and unneceſſary expence. The pattern when thus formed with copper, is not only more laſting, but it has alſo the advantage of giving greater ſharpneſs and beauty to the impreſſion. When it was cuſtomary to uſe wooden blocks, the patterns were not enchaſed in the wood, but the wood was cut away in ſuch a manner as to leave the pattern in relief. It will be obvious that this muſt always be the caſe in *block*-printing.

When the mordant is ready, it is mixed up either with flour-paſte, or with a thick aqueous ſolution of gum arabic, gum ſenegal, or gum tragacanth, and is then ſpread upon a piece of ſuperfine woollen cloth, ſtrained tight upon a hoop. This is placed within another hoop, covered either with ſheep-ſkin or oil-cloth. Theſe hoops are both ſo broad as to give to each of them the appearance of a tambarine. That which is covered with the woollen cloth is called a *ſieve,* the other a *caſe.* The ſieve within its caſe is now placed in a ſmall tub of gum-water, and is ready for uſe.

Flour is an article of conſiderable conſumption with the printers for making paſte. Some houſes buy twenty barrels of American flour at once. Should it be muſty or ſour from keeping, it is of little conſequence for their uſe; but they are careful to buy none but ſuch as has been made with ſound wheat, for if unſound it will be of no value for their purpoſes.

Gum tragacanth is much dearer than the other gums mentioned above; but notwithſtanding this, it muſt be had for ſome ſtyles of work, as no other will anſwer for any of thoſe colours or mordants which are prepared with nitrous acid. A ſolution of gum ſenegal would be coagulated in an inſtant by any of thoſe preparations. Of late years, an article called Britiſh gum has alſo been much in uſe for the ſame purpoſe; ſo much ſo that the making of it has become a diſtinct trade. It is merely common ſtarch pulverized, and then calcined till it aſſumes a cinnamon-brown colour.

When the apparatus is thus prepared, the mordant is applied by a bruſh to the ſurface of the ſieve. This is called *teering.*

It ſhould have been remarked, that when a colourleſs mordant, like the acetate of alumine, is employed, the workman generally mixes a little of the decoction of Brazil wood, or of any other fugitive dye, with it. This is called *ſightening;* and is for the purpoſe of making the pattern more obvious to the workman, that he may ſee its progreſs, and the efficacy of the materials, as he proceeds in printing. The manipulation may be thus deſcribed.

Taking the block containing the pattern in one hand, the workman applies it gently to the ſurface of the ſieve, ſo that a ſufficient quantity of the thickened mordant may adhere to the figures. When the block is thus charged, he applies it to the calico, and gives it a blow with a ſmall mallet, either ſlightly or otherwiſe, according to the nature of the pattern.

This alternate application of the block to the ſieve and to the calico, is continued till the workman has gone over the whole piece. In this way, ſeveral different mordants are ſometimes applied to the ſame piece of goods. This is indeed always neceſſary, when the finiſhed piece is intended to contain a variety of colours, the different colours requiring different mordants to fix them and render them permanent.

The calico is now removed to a room called the ſtove, where a certain degree of heat is given to it by means of flues, which go round the room on the inſide, near the floor. In this room, it is generally continued for at leaſt twenty-four hours. This is when common red-liquor has alone been printed; but if citric acid or ſtrong muriate of tin has been employed, leſs time is ſufficient, and for the latter ſeldom more than half an hour is allowed. The intention of this is to evaporate the acids uſed in the preparation of the mordants, and which might otherwiſe injure the texture, and alſo to fix the baſe more ſurely within the fibres of the cloth.

In this operation, an attention to temperature is of the utmoſt importance. In general the room is kept at about 90°; but an intelligent calico-printer varies this according to the nature of the work under operation. If iron-liquor has been employed in printing the goods, it is an excellent practice to keep them for ſeveral days expoſed to the atmoſphere, after their removal from the ſtove, as the blacks, pompadours, olives, and indeed every other colour prepared with that metal, will increaſe in intenſity; the goods will clean better in the dung-veſſels, as will be explained hereafter, and the colours will riſe higher and brighter when they come into the copper of bark or madder. The iron in an acetous ſolution is in the ſtate of the *black* oxyd; but by expoſure to the air it acquires a further doſe of oxygen, and the more nearly it is made to approach to the ſtate of the *red* or peroxyd, the more fit it becomes for a mordant in dyeing. It may be worth an experiment to diſcover whether the colours containing iron would not be better if they were ſuffered to be only a *very ſhort time* in the ſtove, but were hung up inſtead for ſeveral days, expoſed to a current of air at the temperature of the atmoſphere; as the iron would thus acquire the oxygen ſlower, and conſequently would be fixed more firmly within the cloth.

When the pieces have been properly ſtoved, they are paſſed, by means of a winch, through water at various temperatures, with a little cow-dung mixed in it. This part of the buſineſs was formerly conducted in a very uncleanly and negligent way; but of late years ſome printers have incurred a conſiderable expence in the conſtruction of their dunging machines, with cocks for hot and cold water attached to them, and thermometers to regulate the temperature. Thoſe erected by Mr. Wright, a very ingenious calico-printer, at Strines, near Diſley, are the moſt complete of any we have yet ſeen.

The intention of the dung is to abſorb and remove that portion of the mordant which is not actually combined with the cloth, and which otherwiſe might ſtain the white or unprinted parts.

We ſuſpect the dung of the cow is ſerviceable in another way beſides that of cleanſing, though the printer may not be aware of the nature of its operation. To *clean* calicoes by immerſion in a dung-veſſel, may appear to be a ſtrange phraſe; but as this is the technical language of the trade, no other could be employed with propriety. It is acknowledged that madder, cochineal, and ſome other dyes, produce much better colours on woollen than on cotton cloths, owing to the former being of animal, and the latter of vegetable origin. We preſume, therefore, that the dung imparts an *animal* matter to the fibres of the cotton, and that this animal matter acts as an additional mordant, and thus more powerfully attracts the colouring particles of the dye, than the mordants alone would be capable of doing. Berthollet, who analyſed the dung of ~~the cow~~, found in it a ſubſtance partaking of the nature of *bile*.

If a piece of calico, prepared with the acetate of alumine, be divided into two parts, and the ſuperfluous mordant removed from one of them by cow-dung and water, and from the other by water only, though both fluids were at the ſame temperature, it will be found, on paſſing the two portions through a decoction of weld or quercitron bark, that the yellow will be much more intenſe and bright in that which had been ſubmitted to the action of the cow-dung. This is a ſatisfactory and deciſive experiment.

The proceſs of *dunging* is an operation that varies in time from five to forty minutes, according to the ſtyle of work. The pieces are then taken to the river or wheel, to be more effectually waſhed; after this they are paſſed through tepid water, in order that the workman may be aſſured that every impurity is removed.

His next care is to provide a copper boiler of pure cold water, in which a ſufficient quantity of madder is put, and a fire lighted underneath it. The calicoes, printed and rinſed as above, are now put into this boiler, and from the time they are immerſed, the workman never ceaſes to turn the winch, ſo as to paſs every part of the goods repeatedly through the liquor, till the whole acquires a boiling heat. Indeed, this operation is ſometimes continued for ten or fifteen minutes after the bath of madder actually boils, when the pieces are taken out and waſhed.

Madder is one of the moſt valuable drugs we have, for a variety of purpoſes in dyeing and calico-printing; as it is the agent by which the beſt and moſt permanent blacks are produced; alſo the fineſt purples, and every ſhade of red from a pale pink to a crimſon. But perhaps it may not be generally known that this article improves by age. If a quantity of madder-roots be ground, and then packed tight in a caſk, ſo as to exclude the air, and are kept thus for ſix months, they will then dye a much better colour, and go much further than they otherwiſe would have done, had theſe roots been uſed as ſoon as they were ground.

This proceſs, which is called *maddering*, has the effect of imparting all the requiſite colours to the goods, by means of *one* operation, which may be thus explained. While one mordant precipitates the colouring matter of the madder to a red, another precipitates a different portion of it to a purple, another precipitates it to a black colour, and ſo of every poſſible ſhade, from a lilac to a black, and from a pink to a deep red.

If a portion of weld or bark be added to the madder, every ſhade from a brown to an orange may be produced; whereas, if weld or bark alone be employed, all colours between a dark olive and a bright lemon can be imparted to the cloth. Theſe changes are all occaſioned by the play of chemical affinities, and are due to the improved ſtate of chemical knowledge.

Here it may be worth remarking, that whenever it is of conſequence to produce the fineſt yellows or more delicate lemon colour, it is neceſſary to dry the pieces in the open air, as the ſtove would not fail to injure ſuch colours; for ſtove-drying has always a tendency to convert a yellow to an orange. It is alſo neceſſary to be equally careful in the operation of dunging the mordants for theſe pale yellows; for, ſhould this be done at a higher temperature than 96° or 100°, their beauty will certainly be impaired. There is another advantage in this, *viz.* by dunging at this low temperature, the dyeing may be completed even at 110° or thereabouts, which will give a much livelier colour than where a higher temperature has been employed.

The mordants generally uſed in calico-printing are acetate of iron for browns, blacks, lilacs, &c. and acetate of alumine for all the different ſhades of reds and yellows.

Formerly the acetate of iron was made by digeſting old iron hoops in ſour beer, or in very weak vinegar; but of late years it has chiefly been made with the pyroligneous acid, [if wood be ſubmitted to an intenſe heat, when incloſed in an iron veſſel of any kind with a proper aperture to allow the vapour to paſs, this vapour on being condenſed forms the acid in queſtion, and is now known to be a kind of impure *vinegar*. The wood in this caſe is converted into *charcoal*, of which a great deal is prepared by this proceſs, particularly for the formation of gunpowder,] the oleaginous impurities of which tend, in ſome caſes, to improve the mordant.

Blacks are alſo produced by the nitrate of iron [nitrate of iron was not applied to calico-printing till within the laſt fifty years. This diſcovery formed an important era in the trade, as it afforded the manufacturer the means of varying his ſtyles of work in a multiplicity of ways and forms, which, till then, were entirely unknown,] and gallic acid; the mixture is called chemical black. This nitrate of iron is made by diſſolving metallic iron in a peculiar kind of aqua-fortis. Common aqua-fortis will not anſwer for this purpoſe; for, though it may diſſolve the iron with rapidity, part of the metal is apt very ſoon to precipitate; which not only weakens the colour, but leaves the remainder ſo acidulous, that there is always a danger of ſuch a preparation injuring the texture of the cloth.

It is, however, neceſſary to remark, that the black which is formed by this ſolution of iron, is produced in a different way from blacks in general; for, when common iron-liquor is uſed for this purpoſe, it is firſt printed on the calico: and when it has been ſufficiently oxydized by expoſure to the air, the goods are boiled in a decoction of madder, which renders ſuch parts as had been printed with the acetate of iron an intenſe black. But the black from nitrate of iron and galls is applied at once to the cloth, and is not afterwards raiſed by dyeing.

The calico-printer by uſing a black ready formed is thus enabled to mix it with other colours, in caſes where by dyeing alone it could not be produced, as in conjunction with yellows and olives, raiſed by weld or quercitron bark.

The acetate of alumine is prepared by a mixture of the ſulphate of alumine with acetate of lead, both in a ſtate of ſolution; ſo that, on the theory of double decompoſition, ſulphate of lead is formed, which precipitates, while the acetate of alumine remains in ſolution.

Since the demand for this article has been increaſed on account of the extenſion of the printing trade, it has been prepared from the pyroligneous acid by means of lime and alum. The following is the method:

The pyroligneous acid is firſt paſſed through a ſtill, to diveſt it of a portion of the tar which is always diſſolved in it; it is then ſaturated with lime or whiting; and laſtly, the acetate of lime thus formed is decompoſed by a heated ſolution of ſulphate of alumine. The reſult of this double decompoſition is ſulphate of lime, which precipitates, and acetate of alumine, which is drawn from the ſediment of the calcareous ſulphate, and preſerved for uſe.

And here it may be neceſſary to caution the manufacturer againſt a misfortune that may befall him if he be not converſant with the chemical nature of the ſubſtances he employs.

Magneſian lime-ſtone abounds in Derbyſhire, and in ſome of the adjacent counties; and ſhould a maker of acetate of alumine employ ſuch lime in his proceſs, the article which it would produce would in all probability be entirely unfit for the uſe of the calico-printer. But we muſt be more explicit.

In employing the common lime in conjunction with alum, a ſulphate of lime will be formed, as mentioned above, and this being nearly an *inſoluble* ſalt, will precipitate. But here, ſulphate of magneſia would alſo be formed, which being a *ſoluble* ſalt, would remain in ſolution, and increaſe the ſpecific gravity of the liquor, a circumſtance which would be very apt to occaſion the deception which we are anxious ſhould be avoided. If magneſian lime-ſtone be employed, the liquor will appear good by the hydrometer; but, as it will contain more Epſom ſalt than acetate of alumine, it will be unfit for every purpoſe for which it was intended.

While ſpeaking of acetate of alumine, we cannot avoid remarking that the proceſs which has juſt been deſcribed for making this mordant, and which is followed invariably by many of the manufacturers in the North, is extremely improper, on account of the lime which is employed in it, be the lime ever ſo good, as that earth is very prejudicial to every ſpecies of red dye. The true way of making it, though more expenſive, is that which was originally pointed out by Berthollet, and which conſiſts in decompoſing ſulphate of alumine by means of ſaccharum ſaturni, or acetate of lead.

In reverting to the remaining proceſſes of the print-work, it muſt be noticed, that when the goods have paſſed through the weld or madder-copper, they are uſually carried to a boiler containing wheat-bran and water, in which they are winched for a conſiderable time, for the purpoſe of freeing the white grounds from the ſtain which they had acquired from the madder or the weld. This proceſs always impairs, in ſome meaſure, the intenſity of the colours; [branning has alſo the effect of giving a pink hue to all madder reds. But it is not *generally* known what a peculiar richneſs may be imparted to madder-colours, by raiſing them with a mixture of bran and madder; that is, by mixing a portion of bran with the madder in the firſt inſtance. Mr. Parkes tells us, that he has ſometimes produced colours in this way whoſe brilliancy has aſtoniſhed him. The operation of the bran in producing this effect will be explained hereafter;] but it is a neceſſary operation, as there is no other mode ſo convenient for removing the ſtain which is always given to the white part of a print by the madder, the bark, or the weld, which has been uſed in dyeing it.

It frequently is the caſe, however, that goods will not bear to be ſufficiently branned to clear the whites entirely by that one operation; [the temperature at which the operation of branning is performed, is very important. If bark yellows are dyed at 100°, it is cuſtomary to bran ſuch goods at 115° or 120°, as it is a principle always to bran at a higher temperature than the goods are dyed at. Madder-work muſt be branned at a boiling heat;] ſuch goods, therefore, are partially cleanſed in the branning-copper, and are then laid on the graſs for ſome days, till they become perfectly clean.

But within a few years a new method has been introduced, which conſiſts in immerſing the pieces for a certain time in a very weak ſolution of one of the bleaching ſalts, ſuch as oxymuriate of potaſh, ſoda, or magneſia. [A Scotch houſe of great conſequence had practiſed this method a conſiderable time; and in the year 1812, a perſon viſited Lancaſhire for the purpoſe of inſtructing the Engliſh printers in the method.] This ſimple proceſs, which effects in a few minutes what would require more than as many days in graſs-bleaching, is now much practiſed, and promiſes very ſoon to ſuperſede crofting entirely. This is a moſt important improvement, as ſome of the large printers formerly required as much land to ſpread out their goods upon, as would make a farm of a very conſiderable ſize.

Beſides the kinds of calico-printing already mentioned, there are others which it will be proper to notice in this place. Of theſe, what is called *reſiſt-work*, is now done in conſiderable quantities. It is conducted in the following manner:

A certain preparation of copper, mixed either with flour-paſte, with gum, or with pipe-clay and gum, is printed on the calico, in any ſhape or of any pattern that may be deſired. [The ſulphate, the nitrate, the muriate, and the acetate of copper, have all been employed for preparing the reſiſt-paſte; but the ſulphate is the beſt for the purpoſe; unleſs a very concentrated ſolution of the four ſalts were prepared by ſucceſſively diſſolving each of them in pure water.] When this is ſufficiently dry, the goods are repeatedly dipped in the blue vat till they have acquired that depth of tint which may be required; and then, when they are waſhed, and paſſed through diluted ſulphuric acid, thoſe parts which had been printed with the preparation of copper, are found to be a good white; the preparation having effectually reſiſted the operation of the indigo, [the art of making an indigo-vat conſiſts in forming ſuch a mixture of lime and ſulphate of iron as ſhall moſt effectually deoxydize the indigo; as indigo has no affinity for cloth in its natural or oxygenized ſtate. Hence, thoſe parts of a piece which are printed with a ſolution of copper will never be dyed blue in one of theſe vats; becauſe the deoxydized indigo becomes oxygenated the moment it touches the copper, which parts with its oxygen to the indigo, and occaſions it to become inſoluble, and conſequently incapable of forming a dye. Thus, while ſulphate of iron has the power of deoxydizing indigo, ſulphate of copper, or any other ſalt of that metal, is incapable of retaining its oxygen, whenever it comes in contact with that ſingular ſubſtance in a ſtate of deoxydizement; and it is a curious inſtance of the different degrees of intenſity by which oxygen is held by the different metals;] though all the other parts of the cloth have received a permanent dye. The various deep blue calicoes with white ſpots or white figures, which are now ſo common, are generally done in this way; and by a ſimilar management with ſubſequent dyeing in madder, weld, or bark, figures in red or yellow are exhibited upon a blue ground.

In ſome particular ſtyles of work, the operation of certain colours is reſiſted by means of ſtopping out with wax; but this is too expenſive a method to be adopted often in theſe times, when it is the object of every manufacturer to finiſh his prints at the leaſt poſſible expence. [In printing thoſe ſilk handkerchiefs called Bandanas, a proceſs called waxing is ſtill followed. It conſiſts in making a preparation of tallow and roſin very liquid by heat, and in printing it in that ſtate with a block upon the ſilk. When ſuch goods are paſſed through the blue vat, thoſe parts which are covered with the tallow and roſin are preſerved from the action of the indigo, and remain white, while all the reſt is dyed a faſt blue. The method afterwards taken to diſcharge a part of this blue, and produce yellow, orange, &c. will be mentioned hereafter.] Formerly this mode was very generally practiſed, and wax [in the Eaſt Indies wax is ſtill uſed for preſerving the whites in calico-printing] was conſumed in very large quantities by this proceſs. [A very ſingular-looking ſubſtance was diſcovered a few years ago near Stockport, which being handed about from one to another as an undeſcribed ſubſtance, created conſiderable intereſt in that neighbourhood. Every body ſuppoſing it to be a natural production, ſpecimens of it were ſent to a variety of perſons into various parts of the kingdom, for their opinion and analyſis, and among others a portion was ſent to Mr. Parkes. However, after every one had been buſily engaged in examination and conjecture reſpecting this unknown ſubſtance, it was announced, that ſome ſeventy or eighty years before a calico-work had ſtood on the ſpot where the article was found, and that this was nothing more than a large heap of of the refuſe compound of flour, wax, and gum, above-mentioned.]

The reader will perceive that theſe *reſiſts* are employed for the purpoſe of preſerving certain parts of a piece white, and of giving other varieties to thoſe goods in which blue is the predominant colour: but if the ground is to be white, and the piece is only to have one ſmall object [a technical term, belonging to this branch of manufacture] in indigo blue, ſuch as a ſingle ſprig, then a different management is neceſſary, and the colour is imparted by a proceſs which is called *pencil-blue.*

Here the indigo is deoxydized by means of orpiment, which is a ſulphuret of arſenic; and formerly, whatever objects were done with it were put in by means of a pencil: hence its name, *pencil-blue.* [Pencil-blue is compoſed of the following ingredients, *viz.* Ten ounces of indigo finely ground in water; twenty ounces of quick-lime in lumps; the ſame quantity of potaſh of commerce, or the impure ſubcarbonate of this alkali; and ten ounces of orpiment. Theſe proportions require one gallon of water, and the whole is to be thickened with gum ſenegal.] See COLOUR.

Another kind of proceſs remains to be noticed, called chemical diſcharge-work. Here the cloth is firſt dyed of ſome uniform colour, by means of a mixture of iron-liquor, and ſome one or more of the common vegetable dyeing ſubſtances; and calicoes thus prepared are ſaid to be dyed of ſelf-colours. They are then waſhed and dried; and when properly preſſed or calendered, they are fit for receiving any pattern whatever, according to the artiſt's taſte or deſign.

This is generally effected by means of the mineral acids, which are previouſly compoſed for the purpoſe, by diſſolving in them a portion of one or more of the metals, according to the nature of the dye which is intended to be diſcharged, or of the colour to be produced. In doing this, care is taken that the diſcharging liquor be made ſo as to be capable of diſſolving the iron which is contained in the dye, and which is always uſed in ſuch quantity as to cover, or at leaſt to diſguiſe in a great meaſure, the other colour or colours which had been employed with it, and at the ſame time to act as a mordant in beautifying and fixing thoſe colours.

Thus a piece treated with a decoction of Brazil-wood, and dyed black by being padded [by the term *padding* is underſtood the operation of paſſing the pieces from a roller through a trough containing a ſolution of iron, or any other mordant. *Blotching* is another term uſed in calico-printing, and is ſynonymous with padding] with iron-liquor, if, when dried, it be printed with a peculiar ſolution of tin, the ferruginous portion of the dye will be diſſolved, and the printed part will inſtantly be converted from a deep black to a brilliant crimſon.

In the ſame way an olive-coloured calico, dyed in a ſolution of iron and a decoction of weld, will as quickly be changed to a bright pale yellow; and the various drabs and ſlates of every ſhade which have iron in their compoſition, will undergo as ſudden a change by the ſame treatment; though the colour of the figures produced on them will depend on the materials with which the cloths were originally dyed. Even the deepeſt gold colours, or ſtrongeſt buffs, if produced by iron only, may, by a peculiar preparation of tin, be diſcharged; and ſuch parts of the cloth as have been treated with this metallic ſolution will be reſtored to their priſtine whiteneſs.

By ſimilar management, calicoes dyed of a light blue in the indigo-vat, then run through ſumach and copperas, and finiſhed in a bath of quercitron bark and alum, may have figures of a bright green imparted to them. Here the green is originally formed by means of the indigo-vat and the bark, though it is enveloped by the iron of the copperas, which overcomes the other colours, till the ſolution of tin is applied, which removes the iron from thoſe particular parts, and gives a brilliancy to the remaining colours which they would not otherwiſe have poſſeſſed; the tin being a powerful mordant for the bark, by which the yellow of the green is produced.

Again, a good ſelf-colour may be given to calicoes, merely by dyeing them in ſumach and copperas, and then running them through an alkaline ſolution of annotto; and here the figures produced by the application of a colourleſs ſolution of tin will be of a bright orange. But it is needleſs to enumerate more inſtances, as the workman accuſtomed to a dye-houſe will have little difficulty in varying theſe in a thouſand ways, when he becomes acquainted with the nature of the ſolution of tin which he employs.

The whole of this, however, refers to that branch of diſcharge-work only, where all the purpoſes are attained by diſſolving the iron which makes a part of the colour that is intended to be diſcharged; whereas, the finer and more expenſive work is done in a different way, and by a proceſs which it will be neceſſary for us preſently to deſcribe.

In the mean time it may be proper to remark, that there is an objection to the particular kind of chemical diſcharge-work of which we have been ſpeaking, namely, that it is not perfectly faſt; that is, the goods produced in this way will not bear ſuch frequent waſhing, as thoſe which are done by the bath of madder or bark.

It is certainly an object of great national importance to give a permanency to the calico-printing of the country; [to this end great improvements have lately been made in the method of grinding madder-roots, by ſeparating the inferior parts, and dividing the whole into two or three different qualities. Thus the printer is enabled to apply the fineſt, which in this way is made equal to Dutch crop-madder, to his beſt work, and the other is laid by for inferior purpoſes;] and a great deal of very excellent printing is now done in various parts of the kingdom, eſpecially the beſt chintz-work and other furniture patterns. But, in what is called faſt-work, there is a great variety of qualities, and ſome of it little deſerves the name of permanent.

The mention of permanent colours reminds us of a very valuable green which was invented a few years ago by a Mr. Iſlet of London, and which deſerves to be noticed by us. This colour, which was ſecured to him by his majeſty's letters patent, was produced by printing ground indigo, mixed with a peculiar kind of ſolution of tin, and in then faſtening the indigo within the fibres of the calico by means of that proceſs, which is well known to printers by the technical deſignation of *china-blue dipping*. [China-blue is produced thus: Indigo ground fine, and then thickened, is printed upon the cloth, and afterwards it is diſſolved, and chemically united to the fabric, by alternate immerſion in a ſolution of ſulphate of iron and in lime-water. A deſcription of this proceſs has already been given very much in detail, in our eleventh volume, part ii. under the article DIPPING, in *Calico-Printing*.] After this the goods are to be dyed in a copper of bark or weld, which converts the blue to a green, and the whites are to be cleanſed by croft-bleaching, &c.

Upon this very ingenious proceſs, Mr. Parkes has the following obſervation. "Having," ſays he, "formed a very high opinion of this invention, I procured ſeveral interviews with Mr. Iſlet, ſoon after he obtained the patent, and from him was fully informed of the whole proceſs.—This I have ſince repeated for the purpoſe of verifying the detail in all its branches; and I am ſatisfied that it is one of the moſt beautiful and permanent colours that has ever been fixed upon cotton."

There is, however, another mode of producing very beautiful blues which has been much practiſed lately, and therefore deſerves notice. This conſiſts in printing ſome ſolution of iron, and then paſſing the goods through a very dilute and neutral ſolution of pruſſiate of potaſh. The pruſſian blue which is thus formed upon the cloth may be rendered tolerably permanent by a variety of expedients, and this by means of any of the yellow dyes may afterwards be formed to any ſhade of green or of olive.

In returning from theſe digreſſions we muſt not forget to revert to that other kind of diſcharge-work which we have engaged to deſcribe, and which we will now attempt as conciſely as is conſiſtent with perſpicuity and correctneſs.

Here, the agent which is employed is the citric acid, and this is uſed in various ſtates of concentration according to the purpoſe to which it is to be applied, and the ſtrength of the ground intended to be diſcharged. It is chiefly employed for the production of white figures upon ſelf-coloured grounds produced by madder and ſundry other dyes. For this intention the acid, in whatever ſtate of concentration it may be, is mixed with either gum or with paſte, [when citric acid is uſed for reſiſt-work, it is always mixed with gum ſenegal and pipe-clay. The clay gives it a greater body, and likewiſe acts mechanically as a reſiſter,] to a proper conſiſtency for the block, the plate, or the cylinder, and from thence it is transferred to the piece; and wherever it attaches, the mordant, whether iron or alumine, is diſcharged, and a delicate white ariſes in its ſtead. [It ſhould be underſtood, that the diſcharge is printed upon the mordants before the goods are dyed. In uſing citric acid for this purpoſe, a portion of one of the mineral acids is ſometimes mixed with it.]

The acid here referred to is produced from the juice of limes or lemons, and formerly it was not employed by the calico-printer until it was reduced to the utmoſt point of concentration, and appeared in a cryſtalline form. Even then, it was not thought ſufficiently pure, but was diſſolved again, and rediſſolved and recryſtallized, till it became as white and pellucid as any other pure ſalt in a cryſtallized ſtate, and was then generally ſold for 36*s*. the pound, at which high price it could only be employed on the beſt ſtyles of work. Now, however, it is oftener uſed in the brown, or firſt ſtate of cryſtallization; and ſome of the larger printers purchaſe lime juice, and concentrate it themſelves; and in many caſes, they uſe it largely both for diſcharge and reſiſt work, without ever cryſtallizing it at all. More on this ſubject may be ſeen in Mr. Parkes's Eſſay on Citric Acid, in vol. iii. of the Chemical Eſſay, page 1—118.

This mention of diſcharge-work by citric acid, [Mr. Thomſon, who has a print-work near Clitheroe, has taken out a patent for diſcharging the Turkey-red dye by means of the citric and oxymuriatic acids; and the work executed in this way has a very pleaſing effect,] reminds us of another ſpecies of diſcharge, which is employed by the printers of Bandana handkerchiefs, and which we are under the promiſe of noticing before we conclude this memoir.

The agent which theſe printers employ is the nitrous, and ſometimes the nitro-muriatic acid. It is uſed for the purpoſe of putting yellow figures upon blue ſilk handkerchiefs. The following is the proceſs which is principally adopted.

Aqua-fortis, or nitro-muriatic acid, of ſuch a ſtrength as is ſuitable for the kind of blue which is intended to be diſcharged, is mixed either with gum tragacanth, or with flour paſte, to a proper conſiſtence, and in this form it is printed on the ſilk, by means of a common block, on which the intended pattern is cut. The conſequence of this is, that wherever the acid attaches, there the original colour is diſcharged, and a yellow dye is produced in its place. The pieces are then ſteamed, by paſſing them over a veſſel containing boiling water, which gives brilliancy to the colour and finiſhes the operation.

If a ſtronger dye than the uſual yellow, or even a deep orange be deſired, all that is neceſſary is to immerſe the goods, for a moment, in lime-water, or in a ſolution of lime and potaſh; and by varying the proportions of theſe ingredients a great variety of ſhades may be produced.

Recollecting, however, that this is a paper profeſſedly on calico-printing, we muſt not deviate too far from the path we have preſcribed; otherwiſe, there are many proceſſes in the printing of ſilks which are curious and intereſting, on which we might copiouſly expatiate. The Bandana handkerchiefs which are printed upon cotton in imitation of India goods, are produced by a very different proceſs, and which we have already deſcribed under the article DISCHARGING *of Colour*, in vol. xi. part ii.

Having been ſpeaking of yellows, it may be worth mentioning, that there is a mode of producing yellows on calico which is not very frequently practiſed, and yet has a very good effect. The proceſs is as follows:

A ſtrong decoction of bark, thickened with gum tragacanth, is to be mixed with a portion of very pure muriate of tin, and this, when printed with the uſual management, will produce a colour of great brightneſs and durability. We mention this the rather, becauſe very many pleaſing effects may be obtained by this method which cannot be produced in the uſual way, by means of the acetate of alumine, and any of the yellow dyes that may be employed with it.

There is one very important advantage which this mode poſſeſſes, *viz.* that ſhould it be neceſſary to pad a piece in diluted acetate of alumine to obtain a pale lemon ground, the yellow figures, previouſly done by the above proceſs, will not give out any part of their colour to the ſecond mordant; whereas, whenever a ſtrong yellow has been produced in the common way, the pattern is very apt to ſpread and become irregular, and oftentimes to ſtain the ground, when the piece comes a ſecond time into the acetate of alumine.

Obſerving that the treatiſe from which we have made ſuch copious extracts, contains no particular directions for the preparation of that ſuperior kind of calico-printing called chintz-work, we applied to Mr. Parkes upon the ſubject, and he has furniſhed us with an original communication to ſupply that deficiency, which is as follows:

The term chintz-work is deſcriptive of that kind of calico-printing which is employed for beds, window-curtains, and other furniture, and it differs more in the richneſs and variety of the colours, than in any other circumſtance.

In relating the proceſſes by which theſe beautiful prints are produced, we ſhall ſuppoſe the calico to be already properly bleached and calendered, ready to receive the impreſſions of the block. The firſt thing then to attend to is, to apply the mordant for the colour which is intended to be imparted in the firſt inſtance. Thus if a black be deſigned, a mordant of acetate of iron, commonly called iron liquor, is thickened with gum, and printed upon the cloth in any pattern that may have been ſelected for the purpoſe. If this ſame mordant be diluted with water, it will form a proper mordant for a purple; and the ſame, ſtill further diluted, will, when it comes into the dyeing copper, form a lilac. In this way, all the varieties of ſhades, from a pale lilac to a ſtrong purple, and from purple to a black, may be produced by acetate of iron diluted with various proportions of water, and then dyed with madder.

In like manner, a colourleſs ſolution of acetate of alumine thickened with gum or flour paſte, forms a mordant for dark red; if diluted with water it makes a common red; and by diluting it further and further every ſhade of pink may be produced. Again, by the admixture of acetate of iron, and acetate of alumine, a mordant for chocolate colours, maroons, &c. is formed, either approaching to the purple or the red, according to the admixture; that is, according to the proportion of either of theſe original mordants which may predominate in the mixture.

When theſe ſeveral mordants have been printed upon the calico, they are allowed to dry for two days or more in a ſtove or drying-houſe; they then go through the operation of dunging, which conſiſts in rinſing them in warm water, in which a little cow-dung is diffuſed, as has been already deſcribed. When the pieces are ſufficiently dunged, which is not the caſe till all the ſuperabundant mordants are removed, they are well-waſhed in clean water, and then boiled in a decoction of madder, until the madder-bath is exhauſted. In conſequence of different mordants having been applied to the cloth, this one boiling in the madder-liquor will at once produce all the colours above-mentioned. When the pieces are thus dyed, they are to be rinſed in cold water, and laid upon the graſs to bleach. By this expoſure to the air for a few days, the whole of the ground to which none of the mordants had been applied, will become perfectly white.

The proceſſes which have now been detailed, will produce what is called *common* chintz-work; but if it be deſired to make the goods ſtill richer, by the addition of yellows, bright olives, drabs, &c. the cloth muſt undergo another ſeries of operations, which may thus be deſcribed.

Upon thoſe parts of the calico which ſtill remain white, any of the above mordants may be printed, according to the effect deſigned to be produced, after which all the preceding managements are to be repeated, except that inſtead of boiling in a decoction of madder, they are to be immerſed for about half an hour, more or leſs, in a warm decoction of quercitron bark, the *Quercus nigra* of Linnæus; a moſt important dye-wood, introduced by Dr. Bancroft, and which is found to give out a much brighter colour to *tepid* water, than it does when treated with *boiling* water, or with water nearly approaching to that temperature.

The effect produced upon theſe prints by an immerſion in a lukewarm decoction of this American bark, will be quite different from that produced by the madder; upon thoſe parts of the cloth where the mordants have been printed which before produced a black, a dark olive only will be apparent, and inſtead of pompadours will be drabs, and inſtead of reds we ſhall have yellows, which will vary in intenſity according to the ſtrength of the aluminous mordant.

Again, a further variety may be given to theſe prints, if the yellow mordant, or acetate of alumine, be applied to any of the colours which have already been dyed with madder; but this muſt be done before the pieces are immerſed in the decoction of bark. This application will convert the reds and pinks into different ſhades of oranges, and the lilacs into cinnamon colours. By means of theſe different proceſſes an endleſs variety may be given to the goods, and a calico-printer of taſte will never be at a loſs how to produce a pleaſing effect, whatever may be the patterns which he has to imprint upon the cloth. This ſecond immerſion in the dyeing veſſel will, however, give a yellow tinge to the remainder of the whites, but a ſhort expoſure on the graſs will obliterate it.

When chintz furniture-prints are deſigned to have as much variety of colouring as poſſible, a part of the remaining white is often coloured blue or green, or of any ſhade between thoſe colours, by a ſtill different proceſs. This is done with what is called pencil-blue, which is a preparation that has already been deſcribed. The blue is given by putting in the prepared indigo with a pencil; and the green is produced by pencilling ſome of the ſame colour over certain parts of the pattern which has already been dyed yellow. When theſe colours have been imparted, the printing is ſaid to be finiſhed, and the pieces are hung up to dry for at leaſt twenty-four hours, after which they are rinſed thoroughly in cold water; and when they have been dried with care, they are properly calendered and put up for ſale.

Nothing now remains but to notice an improvement which has been made of late years by the introduction of *cylinder-printing*, and which has the advantage of ſuperior accuracy and neatneſs, as well as of great expedition.

The machines which effect this are rather complicated and expenſive; but they are ſo contrived that the cylinders on which the patterns are engraved, furniſh themſelves with colour during their revolutions; are kept clean by a ſteel knife, or *doctor* as it is called, paſſing over their ſurfaces the moment they have charged themſelves with the thickened colour; and they have ſuch a preſſure given to them, either by means of ſcrews or levers, which can be tightened or ſlackened at pleaſure, that the whole ſurface can be made to depoſit its colouring matter with the greateſt certainty and exactneſs on the cloth, while this rolls over it in ſucceſſion, from one end of the piece to the other.

Theſe cylinders, which are made of copper, are from eighteen to forty-two inches in length, according to the width of the calico to be printed, and three and a half to five inches in diameter; and theſe maſſy rollers have the patterns enchaſed upon their ſurfaces, in the ſame way as a pattern is cut upon a flat plate of copper, that is intended to be employed in copper-plate printing. As theſe cylinders are made with plates of copper hammered into a circular form and joined by brazing, great loſs has ſometimes been ſuſtained by the engraving giving way upon the brazed joint. To obviate this, a patent has been lately obtained for boring the copper cylinder from the ſolid metal in the modern way of boring cannon.

Many of theſe machines are now contrived ſo as to carry two of theſe cylinders, each of which has a trough of colour attached to it, by which means two different colours may be printed on the ſame calico, at one and the ſame time.

Mr. Adam Parkinſon of Mancheſter has lately invented a machine capable of printing at one time, by means of one cylinder and two ſurface-rollers, or by two of the former and one of the latter, three diſtinct colours.

Theſe machines have not only the excellence of printing more correctly than can poſſibly be done by means of the block, but the ſaving of time and labour which they afford is great indeed. A piece of calico which would take a man and a boy three hours to print with one colour, or ſix hours to finiſh with two colours, may by this means be done in three minutes, or three minutes and a half, and then much more completely than could even have been imagined before the introduction of this invention.

Beſides theſe cylinders there are others which are called *ſurface-machines*, which contain cylinders of wood, and which have the pattern formed upon their ſurfaces in relief, exactly ſimilar to the blocks already deſcribed. Theſe are employed in particular ſtyles of work, eſpecially in light ground-work, and for certain kinds of reſiſt and diſcharge work.

In light work, the white grounds are apt to be ſoiled by the cylinders: hence ſurface-machines were contrived, and theſe are not liable to the ſame objection. Cylinder-machines are more commonly employed in thoſe ſtyles which are full of colour and leave but little white.

It muſt be obvious to every one who is acquainted with the ſubject, what an aſtoniſhing facility theſe machines have afforded to the production of printed calicoes; and alſo what an advantage they give to the Britiſh printer in foreign markets.

But we cannot conclude without expreſſing our fears, that even theſe facilities may eventually be the means of doing a ſerious injury to the trade, and of deſtroying that confidence in the goodneſs of Britiſh prints, which has hitherto been generally felt in every market on the continent, and alſo in every part of the New World, wherever they have been introduced. We refer to that mode of printing which has lately been adopted, and which conſiſts in precipitating the colouring matter from logwood, and from other *fugitive* dyes, and in printing theſe on the cloth, without any mordant or previous preparation whatſoever. Thouſands of pieces of this ſort have been finiſhed at the low rate of one penny the yard, including every expence of colour, paſte, and printing. Theſe articles, it will ſcarcely be credited, are dried up immediately from the printing-machines, and are ſhipped abroad, without even being waſhed off.

To *waſh off* is a technical phraſe. It means the ſoaking and rinſing the pieces in water, in order to diſſolve and remove whatever gum or paſte had been employed with the colours in printing them.

Such goods, wherever they go, muſt produce great diſſatisfaction; for they will neither endure the rays of the ſun nor moiſture. The firſt ſhower of rain to which they may be expoſed, will not fail to waſh out the pattern, and reduce them to a worſe ſtate than that of plain white calicoes.

In the reign of queen Elizabeth, an act was paſſed to reſtrain the uſe of logwood in dyeing, on account of the fugitive nature of its colour; and if this degrading kind of printing be continued, the interference of the legiſlature will again become neceſſary, or the foreign trade will, from this cauſe alone, be entirely loſt to the country.

PRINTING, *Cylinder*. See the preceding article.

PRINTING *on Porcelain*. The art of printing, particularly as it applies to books, has, from its incalculable benefits and vaſt importance, excited at once the profound admiration and gratitude of the world; and this ineſtimable diſcovery has been claimed by ſeveral individuals, alike anxious for the honour of giving to mankind at large the advantage of a rapid and economical diffuſion of delight and inſtruction. The *firſt* idea of *types* was very probably given by the *Roman potters*, who were in the habit of ſtamping their names in *raiſed* characters on their vaſes, &c. The letters on this plan were, in fact, *models* of the types uſed by the firſt printers; and it appears ſingular that the idea of adapting ſuch models by the medium of ink, to the common purpoſe of multiplying words and ſentences, ſhould not have come into uſe until about the year 1442.

It will appear, on conſideration, ſtill more ſingular, that after the introduction of engraving on wood and copper, (which was in uſe at the ſame time with letter-preſs printing,) the art of transferring impreſſions of ornamental deſigns, from the copper-plate to the ſurface of porcelain or pottery, was not diſcovered till about the year 1760.

The Royal Porcelain Works in Worceſter, belonging to Meſſrs. Flight, Barr, and Barr, are the only eſtabliſhment that claims the honour of inventing this admirable and ingenious proceſs. We can find no mention of this art in the annals of this or any other country prior to this period. It was practiſed with great ſucceſs for many years in the works alluded to; and beſides the demand for home conſumption, large quantities were exported to Holland. In the year 1788, his preſent majeſty Geo. III., and his royal conſort the queen, with the princeſs royal, the princeſs Auguſta, and the princeſs Elizabeth, viſited the Worceſter Porcelain Works, and particularly noticed this ingenious branch of the art of decoration. The royal party were much gratified by the compliment paid them, in the ſtriking off impreſſions from two copper-plates with the likeneſſes of the king and queen, which had previouſly been engraved by direction of the proprietors, in order to exemplify the nature of the operation. The ſecret of the printing was, about the year 1781, conveyed from the works at Worceſter into the potteries of Staffordſhire, and has proved of infinite ſervice in extending this branch of national commerce, and affording employment to the numerous population in that part of the country. The common Britiſh blue and white printed earthen-ware is now held in high eſteem in foreign countries, from its cleanly and neat appearance, beſides its being in general uſe at home. This art is certainly beſt confined, as in the preſent day, to the inferior fabrics, ſuch as earthen-ware, as the material on which the print is made is reaſonable, and can be rendered at a price which ſuits the convenience of the conſumer for all common purpoſes. The method, as invented and adopted by the original proprietors of the Worceſter Porcelain Works, is as follows:—The engraved copper-plate having firſt been warmed on the ſtove, is prepared to receive the colour, which, being previouſly mixed with oils of a proper conſiſtency, is then rubbed into the engraved lines, and the ſuperfluous quantity of colour is carefully cleaned from the ſurface of the plate. The paper, which is very thin, and manufactured for the purpoſe, is then laid on the plate, and delivered to the preſſman, who places it on a plank covered with warm flannels, and being fixed between two iron cylinders, it is drawn through by turning a wheel, exactly on the plan practiſed in taking off copper-plate prints. The paper bearing the clear-coloured impreſſion is now removed from the copper-plate and delivered to the printer, who fixes the piece of porcelain in a vice, to keep it ſteady; and the printed paper is then rubbed with a wooden tool, covered with flannel, till the impreſſion is completely tranſferred to the ſurface of the biſcuit, or *unglazed* porcelain. The operation of rubbing on the impreſſion being completed, the porcelain, with the paper left on the ſurface, is thrown into a tub of cold water, and in a ſhort time the paper delivers itſelf, and leaves the print. The ware is now placed out to dry, and is afterwards carried to the kiln, where the impreſſions are burnt in. It is then dipped in the liquid vitreous ſubſtance called the glaze, is burnt a ſecond time, and the colour, which is the oxyd of cobalt, (and moſt generally uſed,) comes out a neat blue, perfectly ſecured under the glaze.

An *improved method* of printing, comparatively of very recent invention, was introduced under the direction of the late Martin Barr, eſq., and is now carried on in the Porcelain Works at Worceſter, and is much admired for the *excellence* of the engravings, and the great beauty of the impreſſions. On this plan, the printing-preſs and ſtove are not neceſſary, as the engraved plate is charged with a prepared oil by the printer, who cleans the ſurface of the engraving with the hand; and inſtead of paper, a *bat of glutinous conſiſtency* is cut out and laid on the copper-plate, and is ſo ductile as to adapt itſelf to the form of any veſſel intended to be printed; and by the ſimple preſſure of a ſtuffed leathern ball *with the hand*, produces a perfect impreſſion of the ſubject *in oil* on the ſmooth ſide of the bat. The ware being rubbed dry and clean, the bat is now gently preſſed with the leathern ball on the *glazed* ſurface of the porcelain, and when removed the impreſſion appears complete, *but only in oil.* The colour, in form of a powder, is then lightly moved over the oil impreſſion with a piece of carded cotton, and the print completely cleared of all that is ſuperfluous. The porcelain is afterwards carried to the enamellers, who finiſh the deſign by adding ſome decorations in gold; and it is then paſſed through the enamelling kiln, where the oil is evaporated by the fire, and the colour, which is always a mineral preparation, unites firmly with the glaze, and becomes perfectly durable as the tints laid on with the camel's-hair pencils by the painters. The great advantage of this plan is, that the engraving can be executed *much finer* for the ſmooth ſurface of *the glazed porcelain*, than for the coarſer blue and white prints, (which are laid on the *rough unglazed ſurface*,) as the glaze is capable of receiving the *fineſt touch* the artiſt can put into his engraved plate. Meſſrs. Flight, Barr, and Barr, the proprietors of theſe works, have in conſequence introduced beautiful engravings of figures from the antique, beſides deſigns in landſcapes, flowers, ſhells, &c. which reflect no ſmall degree of credit on this branch of the art of printing. Conſiderable quantities have been exported to the Eaſt and Weſt Indies; and where economy is the object of the conſumer, this ſtyle of decoration ſuits very well, however deficient in richneſs of effect and elegance, to the more elaborate production of enamelled deſigns, executed in theſe intereſting and highly-reſpectable works.

PROFLUVIUM, l. 2, for *veneris r. ventris.*

PROJECTION *of the Sphere, Orthographic.* Prob. I. l. 8, for I C and F G, *r.* I C.

PROMEROPS, in *Ornithology*, a genus of birds of the order Picæ; the characters of which are, habit as in the genus Upupa; feet formed for walking; tail lengthened, and in moſt ſpecies cuneated. Dr. Shaw enumerates and deſcribes the following ſpecies; *viz. Cæruleus*, or blue P. with black bill and legs; the Upupa indica, or blue promerops of Latham; a native of India: *Cafer*, or brown P. whitiſh beneath, with rufeſcent breaſt, and very long tail; the Upupa P. or Cafer P. of Latham, and the Upupa P. or Merops cafer of Linnæus; a native of Africa, and common about the Cape of Good Hope: *Striatus*, or brown P. beneath white, with black undulations and very long tail; Upupa papuenſis, or New Guinea brown P. of Latham; native of New Guinea, inhabiting large woods: *Superbus*, or black P. with violet and green gloſs, foliated golden ſhining ſcapular feathers, and very long tail; the Upupa ſuperba and great P. of Latham; a magnificent ſpecies, exceeding all the reſt in the ſplendour and elegance of its plumage; a native of New Guinea: *Paradiſeus*, or cheſnut P., the Upupa paradiſea of Linnæus and Latham, and creſted P. of the latter: *Mexicanus*, or grey P. with green and purple gloſs, blueiſh wings, yellowiſh belly, and very long tail; Upupa mexicana, or Mexican P. of Latham; a native of Mexico, frequenting mountainous regions, and feeding on various kinds of inſects: *Aurantius*, or orange-coloured P., with tail of moderate length and even at the top; the Upupa aurantia, or orange P. of Latham; native of Guiana, frequenting the ſmall iſlands in the mouth of the river Berbice; Fernandez deſcribes the ſuppoſed female of this ſpecies under the name of *Cochitolotl*: *Erythrorynchos*, or black P. with green and purple gloſs, red bill and legs, and long tail with the feathers ſpotted with white near the tip; the Upupa erythrorynchos, or red-billed P. of Latham; an highly elegant ſpecies, an inhabitant of Africa.

PROPERTY, Literary. (See Literary *Property.*) The ſtate of literary property has been conſiderably improved ſince the article on this ſubject appeared in the body of this work. By the act of 54 Geo. III. c. 156. an abſolute term of twenty-eight years copyright has been veſted in the author of every book that ſhall be publiſhed after the paſſing of that act, and in his aſſigns, and if the author ſhall ſurvive that period, the copyright is alſo ſecured to him for his life. On books that were publiſhed before this ſtatute was made, the ſecond contingent term of fourteen years granted by the former acts on this ſubject, was made abſolute in ſuch authors as were then alive, and a life intereſt was alſo added if they ſurvived this extenſion. On this laſt ſubject, the court of King's Bench has decided in a recent caſe, that if the book had become the property of the public at the time the act paſſed, which was on the 29th July 1814, the benefit granted by the act to the authors of books publiſhed before that time, were not meant by the legiſlature to apply in ſuch inſtances.

The ſame act continued the obligation of delivering eleven copies of every book, and of its maps, plates, &c. to the eleven libraries therein mentioned, being the Britiſh Muſeum, Sion College, the Bodleian Library at Oxford, the Public Library at Cambridge, the Library of the Faculty of Advocates at Edinburgh, the Libraries of the four univerſities of Scotland, Trinity College Library, and the King's Inns

Library at Dublin. This delivery has been felt to be a ſevere burthen, and ſeveral petitions have been preſented to parliament by authors as well as publiſhers of books to be relieved from it. Theſe petitions were in the ſeſſions of 1818 referred to a committee of the Houſe of Commons, which examined many witneſſes on the ſubject, and made a report to the Houſe of the following import:

That it is the opinion of this committee, that it is deſirable that ſo much of the copyright act as requires the gratuitous delivery of eleven copies ſhould be repealed, except in ſo far as relates to the Britiſh Muſeum, and that it is deſirable that a fixed allowance ſhould be granted in lieu thereof, to ſuch of the other public libraries as may be thought expedient.

That if it ſhould not be thought expedient by the Houſe to comply with the above recommendation, it is deſirable that the number of libraries entitled to claim ſuch delivery, ſhould be reſtricted to the Britiſh Muſeum, and the libraries of Oxford, Cambridge, Edinburgh, and Dublin univerſities.

That all books of prints, wherein the letter-preſs ſhall not exceed a certain very ſmall proportion to each plate, ſhall be exempted from delivery except to the Muſeum, with an exception of all books of mathematics.

That all books in reſpect of which claim to copyright ſhall be expreſsly and effectually abandoned, be alſo exempted.

That the obligation impoſed on printers to retain one copy of each work printed by them ſhall ceaſe, and the copy of the Muſeum be made evidence in lieu of it.

PROPHECY, col. 3, l. 26, for Wolſton *r.* Woolſton. Col. 5, l. 10 from bottom, for Woolaſton *r.* Woolſton.

PROPOLIS, l. 33, add—See Wax.

PROPORTIONAL Compass, l. 2, *r.* proportional. Col. 2, l. 8, *r. fig.* 1. *Plate* I. of *Proportional Compaſſes.* Col. 5, l. 10 from bottom, inſert *fig.* 10. Col. 1, l. 30, *r. fig.* 11.

PROVERB, col. 1, l. 17 from bottom, for print *r.* fruit.

PROVIDENCE, Nether, l. 1, *r.* Delaware for Luzerne. Col. 2, l. 2, *r.* Delaware.

PRUSSIC Acid, in *Chemiſtry*. See Cyanogen.

PUFF-Ball, l. 2, add—and Tulostoma.

PULASKI, for Pulasni, l. 2, add—of whom 528 were ſlaves in 1810.

PULTNEY, a townſhip of Belmont county, in Ohio, having 645 inhabitants.

Vol. XXIX.

PURANA, col. 3, l. 6, for Variſhta *r.* Vaſiſhta.

PURPURIC Acid, in *Chemiſtry*. The name of an acid principle recently diſcovered by Dr. Prout; produced by the action of nitric acid upon the lithic or uric acid. The beautiful purple ſubſtance produced by the action of the nitric acid and heat upon lithic acid, has been long known to chemiſts. This purple ſubſtance is a compound of the acid in queſtion and of ammonia. This acid, which may be likewiſe formed from the lithic acid by chlorine and iodine, poſſeſſes the remarkable property of forming beautiful purple compounds with the alkalies and alkaline earths. Hence the name of *purpuric* acid has been adopted by Dr. Prout, which was ſuggeſted by Dr. Wollaſton.

Purpuric acid may be ſeparated from the *purpurate* of *ammonia* above-mentioned, by the ſulphuric or muriatic acids. It uſually exiſts in the form of a light yellow or cream-coloured powder. It is exceedingly inſoluble in water, and conſequently poſſeſſes no taſte, nor affects litmus paper, though it readily decompoſes the alkaline carbonates by the aſſiſtance of heat. It is ſoluble in the ſtrong mineral acids and in alkaline ſolutions, but not in dilute acids in general. It is inſoluble in alcohol. When expoſed to the air it aſſumes a purple colour, probably by attracting ammonia. Submitted to heat it is decompoſed, and yields carbonate of ammonia, pruſſic acid, and a little fluid of an oily appearance.

The alkaline *purpurates*, as before obſerved, all form ſolutions of a beautiful purple colour. They are capable of cryſtallizing, and their cryſtals poſſeſs ſome remarkable properties. The purpurate of ammonia cryſtallizes in quadrangular priſms, which when viewed by tranſmitted light appear of a deep garnet-red, but by reflected light two of the oppoſite ſurfaces appear of a beautiful green, while the other two retain their natural red colour. This curious property ſeems to be poſſeſſed by the other alkaline purpurates. The metallic purpurates are in general remarkable for their ſolubility, and the beauty of their colours. The *purpurate* of zinc is of a beautiful gold-yellow, the purpurate of tin of a pearly-white. The other purpurates are all more or leſs of a red colour.

Dr. Prout thinks it probable, that this acid forms the baſis of many animal and vegetable colours. The pink colour of the ſediment in the urine of fever ſeems to be owing to the purpurate of ammonia. Dr. Prout alſo thinks, that ſome of its ſalts might be uſed as paints, and alſo for dyeing, as they appear to poſſeſs ſtrong affinities, eſpecially for animal ſubſtances. See Philoſophical Tranſactions for 1818.

PURSHIA, in *Botany*, ſo called in juſt commemoration of Mr. Frederick Purſh, author of the rich *Flora Americæ Septentrionalis*.—De Cand. Tr. of Linn. Soc. v. 12. 157.—Claſs and order, *Icoſandria Monogynia*. Nat. Ord. *Senticoſæ*, Linn. *Roſaceæ*, Juſſ.

Eſſ. Ch. Calyx five-cleft. Petals five. Capſule ſuperior, oblong, of one cell, burſting at one ſide. Seed ſolitary, erect.

1. P. *tridentata*. Downy Purſhia. De Cand. (Tigarea tridentata; Purſh 333. t. 15.)—In the meadows of the Rocky-mountains, and on the Columbia river, flowering in July. A much branched *ſhrub*, with wedge-ſhaped, crowded *leaves*, three-lobed at the extremity, and ſolitary, terminal, yellow *flowers*, nearly the ſize of Hawthorn.

PYMATUNING, l. 3, *r.* 379.

PYRAMID, col. 2, l. 36, *dele* and character and feet.

PYROACETIC Spirit, in *Chemiſtry*. See Acetic *Acid*.

Q.

QUADRUPEDS, col. 6, l. 33 from bottom, add— See alſo NATURAL *Hiſtory*.

QUARANTINE, that ſpace of time (uſually forty days, as the term manifeſtly implies) which veſſels and perſons are reſtricted from having intercourſe with other veſſels or perſons, or with the ſhore, on their arrival from places ſubject to the plague or other infectious diſeaſe or diſtemper, or having held communication with ſhips coming from ſuch places, or on board of which any infectious diſeaſe ſhall have appeared during the voyage.

The public health is a matter of the higheſt importance, and whoever is ſenſible of the havoc which the plague and other infectious diſeaſes formerly made in this country, (ſee PLAGUE,) and conſiders the prevalence of ſuch diſeaſes in ſome parts of the globe, how eaſily they are communicated, and how long the poiſonous contagion lies dormant without loſing its malignity, will readily aſſent to the ſtrong neceſſity that exiſts for rigorous precautions being adopted, to prevent its introduction into theſe kingdoms.

Of ſuch common concern, indeed, is the health of large and trading communities, that the chief magiſtrates (ſays Blackſtone) have the guardianſhip of the public health, and are empowered to iſſue ſuch ordinances as may be deemed neceſſary, either to prevent the introduction of infection from neighbouring or remote countries, or for ſeparating thoſe actually infected by removal, or by cutting off communication with their abode.

In this country, a Board of Health has been inſtituted, to inquire into the nature of the infection of the plague, and the beſt mode to counteract its effects; and public ordinances have been made from time to time upon this ſubject; formerly by proclamation, but latterly by parliament. And ſuch has been the anxious ſolicitude to frame the laws and orders to obtain the ends deſired, that they have at various times undergone laborious reviſion, and ſuch further regulations and amendments have been introduced as by experience were found to be neceſſary. Nor has the care and anxiety of the Britiſh government ſtopped here, for their conſuls and public functionaries abroad are inſtructed to convey, with the utmoſt promptneſs, intelligence of the appearance of any epidemic diſtemper in the places where they reſide, or in ſuch as are in their vicinity. Government is thereby enabled to iſſue neceſſary directions, for ſubjecting ſhips and perſons arriving from thence, to a more rigid examination and ſecluſion than might otherwiſe have been adopted. Governors and commanders have ſimilar local powers and inſtructions, and are empowered to make ſuch orders, either to regulate or entirely cut off communication with ſuſpected places and veſſels as they ſhall deem neceſſary. In ſea-ports, veſſels and their cargoes and crews are ſubjected, on arrival, to examination; where the two former are aired and purified for a neceſſary time, and the latter retained a certain number of days, in which time, it is ſuppoſed, any infectious diſeaſe they might retain, would make its appearance.

In inland places, reſtraints are likewiſe impoſed for ſimilar purpoſes, and intercourſe thereby cut off by proper means, (uſually a cordon of troops drawn round the infected place,) which taking poſſeſſion of the roads, rivers, and watercourſes, effectually prevents infected perſons entering the place, as well as others from eſcaping.

All theſe meaſures, though they may appear arbitrary, are founded upon ſound policy; and however irkſome they may be found by thoſe who are ſubjected to their operation, yet if they reflect for a moment what dread is created at the very apprehenſion of approaching perſons afflicted with diſeaſes of an infectious or putrid nature, or having even the poſſibility of harbouring contagion; and what dreadful and painful conſequences are known to follow from an unguarded or indiſcreet expoſure, in ſuch caſes they will refrain from haſtily ruſhing into ſociety, without ſubmitting to ſuch ſalutary precautions which are ſo abſolutely neceſſary, or at leaſt ſo ſatisfactory to their fellow-citizens. No doubt the time is tedious, and the places appointed may be but little calculated to afford comfort to or reconcile "*les detenus*;" but when they reflect that thouſands may be ſwept away in a few days, by the introduction of ſuch a malady, it is hoped they will ſubmit with leſs impatience. One thing which makes the neceſſity leſs apparent is, that from the length of time ſince England has been afflicted with ſuch a calamity, and from the ſucceſs of the meaſures that have long been adopted to prevent its introduction, perſons in general have no actual knowledge, and ſtill leſs fear of its dreadful effects, and they perceive with indifference, as it were, an object at a diſtance, which on nearer approach would almoſt paralize their ſenſes.

That perſons and commerce may be as little impeded as the nature of circumſtances will admit, a certificate is always obtained by perſons coming from places where any of theſe diſtreſſing maladies are of frequent occurrence; by this means, the general ſafety is more ſtrongly ſecured, as well as leſs impediment given to the trader and the traveller; becauſe when it declares the country free from any infectious diſeaſe or diſtemper, no further detention is generally required, than is neceſſary to tranſmit the caſe to the conſideration of thoſe who are intruſted with the general ſafety. If on the contrary the certificate ſtates, that an infectious diſtemper does prevail at ſuch place at the time of their departure, or if no certificate is brought, the examinations are more minute, and the purifications are of longer duration.

It is not intended in this article to ſay any thing of the nature of infectious diſeaſes; they will be found in the previous work under the heads *Epidemical Diſeaſes*, *Plague*, *Yellow Fever*, *Contagion*, &c. to which the reader is reſpectively referred. A ſuccinct account only will follow of ſuch enactments and orders as have been made with the view of ſecuring the performance of quarantine, and that the neceſſity and value of theſe regulations may be more generally known.

Much pains and inquiry have been inſtituted for conſidering the moſt effectual means for preventing the introduction, and of the ſteps moſt neceſſary to be adopted, in caſe of the ſudden appearance of the plague, both with regard to the treatment of the perſons and their houſes, as well as their dealings and communication with each other; whereby ſuch inſtructions can on any emergency be immediately iſſued, as muſt check the extenſion and deprive the malady of half its inveteracy and of half its terrors.

Beſides this, ſo much more air has been admitted to large and manufacturing towns than formerly, ſo much more cleanlineſs ſecured by underground drainage, as well as among the lower claſſes, that in addition to their better condition generally, in point of food, and the treatment of febrile complaints being better underſtood, its recurrence or virulence muſt be conſiderably leſſened. Apprehenſions and falſe alarms will, at times no doubt, be created among weak and credulous perſons, and it will be moſt judicious in the local magiſtracy, immediately to inſtitute rigid inquiry into the rumour, and either to take prompt meaſures to contradict it, and thereby prevent unneceſſary alarm, or to adopt ſuch ſpeedy ſteps as will ſecure thoſe deemed infected from having intercourſe with others who are in health, until his majeſty's privy council can iſſue ſuch directions as the caſe may require, which they are ſpecially authoriſed to do by 45 Geo. III. ch. 10. ſect. 12. So much is the privy council on the alert in this reſpect, that it directed, and deemed prudent for the ſafety of the community, to have three veſſels ſunk a few years ago, having cargoes of ſkins from Mogadore on board, under very ſtrong ſuſpicion of their harbouring the plague.

It will not here be neceſſary to make an enumeration of the many acts that have been paſſed reſpecting quarantine, ſince they were all repealed, (except ſo much of the 39 & 40 Geo. III. c. 80. as repealed the former acts,) by the 45 Geo. III. which paſſed 12th March 1805, and which embodies many of the former proviſions and enactments. Three other acts have paſſed ſubſequently, (46 Geo. III. c. 98. 50 Geo. III. c. 20. and 51 Geo. III. c. 46.) making further proviſions and amendments; and ſeveral general orders in council have been publiſhed in the London Gazette, by authority of, and in furtherance of thoſe laws; and which have equal force with the laws themſelves. Indeed but for the levying of duties, and the infliction of pecuniary penalties and capital puniſhments, it is conceived acts of parliament would have been unneceſſary, for by the common law the king is inveſted with the care of the public health, and his edict muſt of neceſſity have been binding on the ſubjects reſiding in or trading to this country. But to return: the 45 Geo. III. c. 10. in the firſt place, declares what ſhips, perſons, and goods, are liable to the performance of quarantine. They are,

1. All ſhips and veſſels (including his majeſty's ſhips of war) arriving from or having touched at any place, from whence his majeſty ſhall declare it probable the plague or other infectious diſeaſe or diſtemper may be brought, and all perſons, goods, wares or merchandize, packets, packages, baggage, wearing apparel, books, letters, or any other articles whatſoever, on board the ſame. (Act, ſect. 10.) [*Note.* — This is deemed to relate to the outward as well as the homeward voyage. By 5 Geo. III. c. 25. ſect. 3. letters are to be given to the ſuperintendent, who is to diſpatch the ſame in the uſual manner, after due precaution.]

2. All ſhips, veſſels, and boats, receiving any perſon, goods, wares or merchandize, packets, packages, &c. out of ſuch ſhips, whether they came or were put on board the ſame, either before or after the arrival of ſuch ſhips at any port in Great Britain, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man, and whether they were bound to Great Britain or not. They are likewiſe deemed to be liable from the time of the veſſels leaving ſuch infected place, or from the time when ſuch perſon or goods went or were received on board ſuch veſſel. (Act, ſect. 10.)

3. Ships and veſſels importing certain goods, more eſpecially liable to retain infection, (to be ſet forth in any order in council,) and which may be carried from infected places into other countries, and from thence imported into Great Britain, are liable to all ſuch regulations and reſtrictions as are made concerning quarantine. (Act, ſect. 11.) For the goods, ſee Claſs 1 and 2.

4. Ships and veſſels coming from any place in Europe, without the ſtreights of Gibraltar or America, (where there is not a regular eſtabliſhment of quarantine,) having on board any goods enumerated in the firſt claſs, the produce of Turkey, or Africa within the ſtreights, or Weſt Barbary, and all ſhips and boats receiving ſuch goods out of ſuch ſhips, are, together with all perſons, (and pilots,) goods, &c. to perform quarantine, as ſhips coming from the Mediterranean with clean bills of health (which is fifteen days). Order in council, 5th April 1805, ſect. 5.

5. But by order of the prince regent in council, 26th April 1817, ſhips which have ſailed from ports deemed liable to infection, to others which are not liable to infection, and afterwards arriving here, ſhall not be liable to perform quarantine, if they come in ballaſt, or with a cargo taken in at the laſt-mentioned port, if the maſter ſhall make oath that all the goods of the firſt and ſecond claſſes were landed or otherwiſe diſcharged at the latter port forty days at leaſt before her arrival in Great Britain, and that no plague, &c. exiſted on board at any time from the commencement of the outward voyage to the termination of the homeward one; and provided alſo, that the goods taken on board at the port not liable to infection are not the growth, &c. of any country declared liable to infection; or if any goods of Claſs 1. taken in at a place not deemed liable, ſhall be the produce of any country deemed liable, then on proof according to the 43d ſection of order in council of 5th April 1805, that ſuch goods have performed quarantine at one of the foreign Lazarets.

6. Ships and veſſels alſo arriving from any place whatever, under any alarming or ſuſpicious circumſtances as to infection, are liable to ſuch regulations and reſtrictions as are made by any order of his majeſty (act, ſect. 11.); or by any three of the lords of the council, in caſe of any unforeſeen emergency on any ſhip arriving with any infectious diſeaſe on board, or if any infectious diſtemper has appeared in the courſe of the voyage, although ſhe ſhall not have come from any place from whence his majeſty has declared it probable the plague, &c. may be brought. (Act, ſect. 12.) And all ſuch ſhips and boats, and all perſons, (including pilots,) goods, wares, &c. whether imported or put on board ſuch ſhips, boats, &c. as well as on board the receiving ſhip, ſhall be obliged to perform quarantine in ſuch places and manner, and for ſuch time, as ſhall be directed by his majeſty's order in council, publiſhed in the London Gazette; and that until they have performed and been duly diſcharged from quarantine, they ſhall not come or be

brought on ſhore, or go and be put on board any other ſhip, &c. in order to go on ſhore, though ſuch ſhip may not be bound to Great Britain, unleſs by directions and permiſſion of his majeſty in council. And all ſhips and boats, perſons, pilots, maſters or commanders, goods, wares or merchandize, coming from ſuch reſtricted or any infected place, ſhall be ſubject to all the rules, regulations, and proviſions of the act, and any order in council, and to all pains and penalties, &c. of that act for any breach or diſobedience to it, or of any order in council made under its authority. Sect. 10. of the act.

By 46 Geo. III. c. 98. his majeſty, or any of the lords of the council, as often as they ſhall apprehend that the yellow fever, or other highly infectious diſtemper, prevails in America, or the Weſt Indies, may require every veſſel coming from or having touched at thoſe places, to come to anchor at certain places to be appointed by the commiſſioners of the cuſtoms, for the purpoſe of having the ſtate of health of the crew aſcertained before ſhe ſhall be permitted to enter any port in Great Britain; but the ſhip ſhall not be deemed liable to quarantine, unleſs it ſhall be afterwards ſpecially ordered under that reſtraint. Sect. 6.

Shortly after the paſſing the act of the 45 Geo. III., and under its immediate authority, an order in council was iſſued, dated 5th April 1805, which declared what places his majeſty judged it probable the plague, or other infectious diſtemper or diſeaſe, may be brought from. *They are* by veſſels coming from or through the Mediterranean, or from the Weſt Barbary on the Atlantic ocean, and alſo by the importation of certain goods being the growth or produce of Turkey, or Africa within the ſtreights of Gibraltar or Weſt Barbary, from any port in Europe without the ſtreights, or on the continent of America. And by further order, dated 7th November 1805, it was declared, that an infectious diſeaſe might be brought by veſſels coming from or having touched at any port in the ſtates of Pennſylvania or New York, but this order has ſince been annulled.

The Goods deemed moſt liable to retain infection are ſet forth in three tables, by ſect. 33, 35, and 38 of the order in council, and are as follow:

Class I.—Apparel; artificial flowers; baſt, or any article made thereof; beads, bracelets, or necklaces, in ſtrings; beds, bed-ticks; books; brooms; bruſhes; burdetts; cambletts; canvas; carmenian wool; carpets; cordage not tarred; cotton wool, yarn, or thread, all articles wholly made of or mixed with cotton, ſilk, wool, thread, or yarn; down; feathers; flax; furriers' waſte; goats' hair; gold or ſilver in thread, cotton, hair, ſilk, or wool, or any other ſubſtance hereinbefore enumerated; grogram; hats, caps, or bonnets of ſtraw, chip, cane or any other material; hemp; hoofs; horns and horn tips; hair of all ſorts; leather; linen; liquor of any kind, in bottles or flaſks; lute-ſtrings, catlings, or harp-ſtrings; maps; mattreſſes; mats and matting; mohair yarn; nets, new or old; paper; packthread; parchment; pelts; platting of baſt, chip, cane, ſtraw, or horſe-hair; quills; rags; ſails and ſail-cloth; ſilks, *viz.* crapes and tiffanies, huſks and knubs, raw ſilk, thrown or organzine ſilk, waſte ſilk, wrought ſilk; ſkins, hides, and furs, and parts or pieces of ſkins, hides, and furs, whether undreſſed, or in part or wholly tanned, tawed, or dreſſed; ſponges; ſtraw, or any article made or mixed with ſtraw; ſtockings; thread; tow; vellum; whiſks; wool, whether raw or anywiſe wrought; yarn of all ſorts.

Class II.—Senna; jalap; gum arabic; gum tragacanth; myrrh; opium; ſcammony; antimony; cantharides; alum; juniper-berries; pomegranates, flowers and ſeeds; ſal nitre; ſal ammoniac; madder; ſumach; galls; tobacco; coffee; wood in raſpings; cork.

Class III.—Grain; pulſe, and other ſeeds in bulk; grain, and other ſeeds in ſacks or caſks, or baſkets of ruſh mat; dried fruits in baſkets, or packages made of articles enumerated in the firſt claſs, or in packages of wood and oil in barrels.

Where veſſels are to perform quarantine depends upon circumſtances; for if the plague, &c. appears on board any ſhip *within the ſtreights of Gibraltar*, ſhe is to go to one of the foreign lazarets (at Malta, Ancona, Venice, Meſſina, Leghorn, Trieſte, Genoa, or Marſeilles); but if it appears *without the ſtreights*, then ſhe is to go to the harbour of St. Helen's-Tean and North Withel, (two of the iſlands, called the Scilly iſlands,) or ſuch places as his majeſty ſhall appoint. (Sect. 13. of the act.) And immediate intelligence ſhall be given to the commiſſioners of the cuſtoms, and to the privy council, ſo that meaſures may be taken for the comfort and ſupport of the crew and paſſengers, and ſuch precautions uſed as the caſe may require; and the ſhip is to remain there, and none of the crew or paſſengers are to go on ſhore, or have any communication with any other veſſel; and any perſon who ſhall not act conformable hereto, or any directions of the privy council, are to ſuffer death without benefit of clergy. If the veſſel cannot make thoſe iſlands or other places appointed, or ſhall be forced by ſtreſs of weather to go up either of the Channels, ſhe ſhall not enter any port in Great Britain, or the iſlands of Guernſey, Jerſey, &c. but ſhall remain in ſome open road till the maſter receives direction from the privy council. Sect. 13. of the act.

The next regulation is, that ſhips *not having the plague* on board, coming through the Mediterranean, or Weſt Barbary, *without clean bills* of health, (except ſhips of war, tranſports, or other veſſels in the actual ſervice of government, which are to go to the Motherbank near Portſmouth, in a place marked out with yellow buoys,) and all ſhips receiving goods out of them, are to perform quarantine at Stangate Creek, and no where elſe. (Order, ſect. 4.) But by order 15th July 1813, ſhips not having the plague actually on board, (except king's ſhips, &c.) coming from or through the Mediterranean, or Weſt Barbary, without clean bills of health, bound to the weſtern ports of Great Britain, may perform quarantine at Milford Haven.

The 46 Geo. III. c. 98. ſect. 7. authoriſes his majeſty or the privy council to prohibit (by proclamation or publication in the Gazette) any perſon, ſhips, or boats from going within the limits of any ſtation which may be aſſigned for the performance of quarantine by ſhips without clean bills of health, under the penalty of 500*l.* By orders in council, dated 21ſt July 1806, and 6th Septemher 1811, it was ordered, that no ſhip or boat (except quarantine and cuſtom-houſe boats) ſhould go, but on caſes of emergency, within the place at the Motherbank ſet out with yellow buoys for ſhips not having clean bills of health; and that ſhips with clean bills of health ordered to the Motherbank are to go within the compaſs of the yellow buoys, but ſeparate from his majeſty's ſhips and ſhips without clean bills.

The two weſt buoys are placed to the eaſtward of Wooton Creek, and the two north ones near the Iſle of Wight, with another buoy midway between them, and a red buoy as a mark for a burying-place.

By ſect. 2. of the order of 5th April 1805, ſhips (king's ſhips as well as others) with clean bills of health,

Bound to London, Rocheſter, Faverſham, or any creeks or places belonging to or within any or either of the above ports, } are to perform quarantine at Stangate Creek.

[*Note.*—In the caſe of ſhips coming from Turkey, and obliged to perform quarantine before their entry into the port of *London*, it is uſual for the conſignee to ſend down perſons at his own expence to pack and take care of the goods; and where a conſignee had omitted to do ſo, and the goods were damaged by being ſent looſe to ſhore, it was held that he had no right to call upon the maſter for a compenſation. Dunnage *v.* Jolliffe, before lord Kenyon, chief juſtice, at Guildhall, M. T. 1789.]

Ships bound to Leigh, and the ports and creeks extending from thence to, and including Berwick,	Whitebooth Roads, between Hull and Grimſby.
—— bound to Carliſle, and the ports and creeks extending from thence to, and including Beaumaris and the Iſle of Man,	Bromborough Pool, or Milford Haven, by orders, dated 18 Oct. 1809, and 27 June 1810.
—— bound to Sandwich and Cowes, and the ports incluſive,	Motherbank near Portſmouth.
—— bound to Poole and Scilly, and the ports incluſive,	St. Ives' Pool, within the harbour of Falmouth.
—— bound to Bridgewater and Swanſea, and the ports incluſive,	King's Road and Portſhute Pill.
—— bound to St. Ives and Aberyſtwith, and the ports incluſive,	Milford Haven.
—— bound to Jerſey, Guernſey, Sark, or Man, or any part of them,	The Motherbank, or St. Ives' Pool.
—— bound to Leith, and all the ports or creeks extending from thence along the eaſtern coaſt of Scotland, as far as and including Aberdeen,	Inverkeithing Bay.
—— bound to Glaſgow, and all the ports or creeks extending along the weſtern coaſt of Scotland, as far as and including Wigtoun,	Holy Loch, in the Frith of Clyde.
—— bound to Inverneſs, and all the northern coaſt of Scotland, as far as and including Stornaway,	Inverkeithing Bay, by order 21 July 1806.
—— bound to Dumfries and Kirkcudbright, and all the ports and creeks on the ſouth-weſt coaſt of Scotland,	Holy Loch, by order 21 July 1806.
—— bound to any port or place on the coaſts of England and Scotland, not within any of the before-mentioned limits,	At the neareſt of the above ſtations to the place to which ſhe is bound; and

Veſſels liable to quarantine, and having *a clean bill of health* on board, which are bound to any of the above ports, and have paſſed the place appointed to perform quarantine, either from the maſter's ignorance of being liable, or by ſtreſs of weather, or other unavoidable circumſtance, may, on proof on oath that it was unintentional, and not with the view of avoiding the regulations of quarantine, repair (and ſhall be compelled to go) to any other place at the diſcretion of the quarantine aſſiſtant, &c. keeping the proper ſignal flying during the whole time. Order, ſect. 6.

When any country or place is known or ſuſpected to be infected with the plague, &c. then, whenever any ſhip ſhall attempt to enter any port in Great Britain, or the iſlands of Guernſey, &c, ſhe ſhall be viſited by the ſuperintendent of quarantine, or proper officer of cuſtoms; and the maſter, upon being deſired, (for which purpoſe he or the pilot is to bring to, under penalty of 100*l*.,) ſhall give a true anſwer in writing to all ſuch queſtions and interrogatories as ſhall be put to him; and if he refuſes to make a true diſcovery in any of the particulars, or if he ſhall give a falſe anſwer, (though not upon oath,) he ſhall forfeit 200*l*. (Act, ſect. 18.) If it appears by ſuch anſwers that ſhe is liable, the ſuperintendent ſhall direct her to repair forthwith to the proper place, and ſhe ſhall not enter any other place, (except from ſtreſs of weather or damage,) and ſhe may be compelled, by all neceſſary means, (either by firing of guns upon her, or any other kind of neceſſary force,) to go to the proper place. (Order, ſect. 8.) And if the maſter does not cauſe ſuch ſhip to be conveyed to the place appointed, he ſhall forfeit 500*l*. 45 Geo. III. c. 10. ſect. 21.

Veſſels *not bound to this country* are not to touch at or attempt to enter any port in Great Britain, or the iſlands belonging thereto, although they may be ports appointed for performing quarantine (except for orders, or in conſequence of ſtreſs of weather, or loſs or damage at ſea); and then the maſters are to anſwer the preliminary queſtions, and to conform to all ſuch directions, as they ſhall receive, as well with reſpect to their continuance at ſuch ports, and departing and repairing to any other place, as to all other regulations, &c. touching quarantine; and if they do not comply, they may be compelled to put to ſea; to aid which, the commander, or other officer of his majeſty's ſhips of war, may be called in. Order, ſect. 7, and 45 Geo. III. c. 10. ſect. 19.

The duration of quarantine depends upon circumſtances; as, the country from whence the ſhip arrives, the kind of goods ſhe brings, the production of a bill of health, or otherwiſe. And the commencement is to be taken for ſhip and goods (where the cargo conſiſts of goods of Claſs I. and II., and goods non-enumerated), when the whole of the two former are removed. (Order, ſect. 39.) But if there are no goods of thoſe claſſes, then from the time of the veſſel's arrival at the quarantine ſtation. (Sect. 12.) And for ſhips without bills of health, but with cargoes not enumerated in the two claſſes, and not deemed infectious, from the day the quarantine guardians are put on board. Order, ſect. 40.

The lords of the council may iſſue orders for ſhortening the time of quarantine performed by particular ſhips, perſons, or goods, &c. or for wholly releaſing them, abſolutely or conditionally, as they ſhall think fit. 45 Geo. III. c. 10. ſect. 12.

The duration for ſhips performing quarantine is as follows:—

Ships having the plague on board, and arriving under any alarming or ſuſpicious circumſtances, the time is left to the diſcretion of the privy council. 45 Geo. III. ſect. 12 and 13.

Ships coming from or through the Mediterranean or Weſt Barbary with clean bills of health, having on board goods of Claſs I. and II., fifteen days. Order, ſect. 12.

Ships arriving without clean bills of health, thirty days. Order, ſect. 37—40.

Ships arriving from places in Europe without the ſtreights, or on the continent of America, where there is not a quarantine eſtabliſhment, bringing goods of the 1ſt Claſs, the produce of Turkey, or Africa within the ſtreights, or Weſt Barbary, to perform quarantine for fifteen days. Order, ſect. 5.

Ships bringing touched, *i. e.* ſuſpected bills, to perform quarantine for twenty days. Order, ſect. 41.

The time for paſſengers and the crews of veſſels performing quarantine is to be governed by the nature of the cargoes of the reſpective veſſels, and whether they come with or without bills of health.

The duration for goods performing quarantine to be as follows :—

Goods of the 1ſt Claſs, coming *without clean bills of health*, forty days at the lazaret. Order, ſect. 33.

Goods of the 2d Claſs, coming *without clean bills of health*, thirty days. Order, ſect. 35.

Goods remaining after thoſe of the 1ſt and 2d Claſs are removed to a floating or land-lazaret, are to perform quarantine for thirty days, and are to be afterwards fumigated. Order, ſect. 37.

Goods arriving from or through the Mediterranean, or Weſt Barbary on the Atlantic ocean, in ſhips not having the plague on board, *without clean bills of health*, to be removed to the floating lazaret at Stangate Creek, and perform quarantine for thirty days. Order, ſect. 14. and 40.

Goods coming from thoſe places *with clean bills of health* are to be aired one week in the ſame ſhip ; except goods of Claſs I. and II., which are to be removed to the lazaret, and be aired for fifteen days. Order, ſect. 13.

Goods coming in ſhips with *ſuſpected bills of health* to be treated as ſhips coming without bills of health, except that they are to perform ten days leſs quarantine. Order, ſect. 41.

Dried fruits having been ſhifted from baſkets and packages made of articles in Claſs I., or conſidered ſuſceptible, if all the perſons on board are in health may be delivered in twenty days. Order, ſect. 38.

Dried fruits in wood, may be delivered in ten days. Order, ſect. 38.

Oil in barrels, the bungs being tarred, and the barrels bruſhed and dipped in ſea-water, may be delivered in ten days. Order, ſect. 38.

Grain, pulſe, and ſeed in bulk, or in ſacks, or caſks, or mats, when ſhifted, and paſſed through a ſieve, may be delivered in ten days. Order, ſect. 38.

And the packages, when made of ſuſceptible articles, are to be ſent to the lazaret to perform quarantine, according to the nature of them, or be deſtroyed at the option of the owner. Sect. 38.

Formerly the 42d clauſe in the order in council required " the production of a declaration on oath for goods of the 1ſt Claſs," when brought from places without the ſtreights of Gibraltar, or on the continent of America, &c. to aſcertain their growth, and that they were not the produce of Turkey, &c., but that clauſe has been ſuſpended by order of 8th Aug. 1810 ; and they may be admitted without performing quarantine, on the maſter making oath that no infectious diſorder prevailed at the place from whence they ſailed, or on oath of the importer that they are not the produce of Turkey, or of any place in Africa within the ſtreights, or Weſt Barbary : but whenever that declaration is produced, the oath of the maſter or of the importer is not required. Order in Council, 27th Oct. 1818.

Veſſels having performed quarantine at any of the foreign lazarets, and producing proper documents to prove that fact, are not required to do ſo again : nevertheleſs, ſuch part of the cargo as conſiſts of articles in Claſs I. are to be taken out and perform quarantine in the uſual manner for fifteen days (Order, ſect. 43.) But no goods are to be landed or removed therefrom until the maſter has given notice to the quarantine ſuperintendent, or officer of cuſtoms, in order to be laid before the privy council. Landing or removing them, before directions are given, or contrary thereto, ſubjects the maſter to the penalty of 200*l*. 45 Geo. III. ſect. 22.

Having thus ſtated what ſhips and goods are liable and required to perform quarantine, and the time for which they are to perform it, we ſhall proceed to ſtate the manner of doing it, which is to be by opening and airing in the manner directed by order in council (Act, ſect. 29.), according to the nature of the goods, and the articles of which the packages are made.

Goods of the 1ſt Claſs, unaccompanied with a clean bill of health, undergo two performances, one *probationary*, the other of longer time and greater precaution. The hatches of the veſſel are firſt to be opened, and as many of the bales as can be ranged upon the deck are to be taken from the hold, (as ſoon as the pilot and paſſengers are removed,) and the ends opened, and the contents handled by the ſailors, under directions of a quarantine guardian for ſix days ; and after this, any further parcels are only required to be ſo opened and aired for three days, unleſs any ſuſpicious circumſtances ariſe, and then the time may be extended to four, ſix, or eight days, ſo as to complete in the whole twenty-one days, or even a longer time if neceſſary, and then they are to be conveyed to the lazaret. Order, ſect. 32.

In the ſecond performance, or expurgation at the lazaret, all bales of cotton are to be opened from one end to the other, and ſo much removed as admit the handling and removing the remainder. Rags, raw wool, goats' wool, Carmenia wool, and hair, are to be taken out and ranged in heaps of four feet high, and often rummaged. Bales of ſilk to be opened on one ſide, from end to end, the cords looſened, and the ſilk aired for twenty days ; then the other ſide to be opened in like manner for five days more. Cottons, yarn, thread, ſtuffs, and linen, are to be piled in rows or pyramids, and turned every four days, and completely ſpread out and ſuſpended on cords for ſeveral days. Paper, books, parchment, ſponges, and ſtockings, are to be unpacked and ſeparated, ſo as to admit thorough airing. Feathers, ſtraw-hats, artificial flowers, coral beads in ſtrings, and bruſhes, ſpread out in the ſame manner. Carpets, furs, hides, and ſkins to be unbaled, and each piece ſpread and ſuſpended on cords in the open air, and frequently turned ; and all goods packed with ſtraw, cotton, or articles ſtated in Claſs I., ſhall be entirely taken out of the ſame, opened, and handled, and carefully aired, as well as all other goods in that claſs, for which no directions are given. Order, ſect. 34.

Goods of the 2d Claſs, unaccompanied with clean bills of health, though leſs liable to infection, are to be carried to the lazaret, and be unpacked, opened, and aired as much as poſſible ; and by moving them as much as practicable from time to time, ſo as to admit free ventilation for thirty days. Order, ſect. 35 and 36.

Goods not mentioned in thoſe claſſes, and remaining on board the importing ſhip, are to perform quarantine for thirty days, by being frequently ſwept and ſhifted, ſo as to admit a free ventilation ; at the end of which time, if all the perſons on board, and thoſe employed in the expurgation on ſhore, are well, the ſhip, goods, crew, and paſſengers, are to be fumigated and diſcharged. Order, ſect. 37.

There are other regulations and enactments on this ſubject which it is neceſſary to notice, and though they relate to the firſt arrival of the ſhips, and take effect from that time, yet being rather regulations to aſcertain the nature of the voyages, and the ſtate of the crews, and the goods compoſing the cargo, than any part of the performance of quarantine, this is conceived a proper place to introduce them.

It is manifeſt, that without the earlieſt information of the arrival of veſſels from countries infected with the plague, &c. and of the kind of goods of which their cargoes are compoſed, many of the above-mentioned ſalutary regulations would be uſeleſs, either by perſons quitting veſſels immediately on their arrival, or from having intercourſe with other ſhips, or with the ſhore, or by breaking bulk and ſending goods into the common ſtock of the country. To this end, the law has impoſed the neceſſity of the maſters of ſhips liable to quarantine ſhewing proper ſignals by day and night, by which the quarantine officer and others are apprized of their arrival; and to prevent any abuſe herein, for the purpoſe of covering any ſmuggling tranſactions, perſons exhibiting them, when not liable to quarantine, are liable to 200*l.* penalty by 45 Geo. III. c. 10. ſect. 15. And as perſons, eſpecially paſſengers, may innocently render themſelves liable to thoſe penalties, as well as thoſe ſtatutes which affect their lives, it is neceſſary they ſhould be ſet out for their information. The ſeverity that has been annexed to the violation of the quarantine regulations is a ſufficient proof how irkſome the conſtraint is, and how regardleſs perſons are to the general ſafety of others, for nothing ſhort of impoſing the penalty of death, on a violation of ſome of the enactments, has been found ſufficient to impoſe reſpect to the law on this ſubject.

By 45 Geo. III. c. 10. ſect. 14. ſhips ſubject to quarantine are required at all times, when they meet any other ſhip at ſea, or ſhall be within four leagues of the Britiſh or Iriſh coaſts, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man, to have a ſignal hoiſted, to denote that they are ſo liable, which they are to keep hoiſted ſo long as they remain in ſight of ſuch ſhip, or are within ſuch limits of the coaſt, until they ſhall have arrived at their quarantine port, and been legally diſcharged. The ſignals are to be, by day, a large yellow flag at the maſt-head; for which purpoſe, every ſhip leaving Great Britain for the Mediterranean, or Weſt Barbary, or any place ſuſpected or liable to have the plague, &c. ſhall be provided with one or more quarantine ſignal-flags and lanthorns, and proper materials and inſtruments for fumigation and immerſion, and ſhall keep them on board, to be uſed upon the ſhip's return (Order, ſect. 45.); and if coming without clean bills of health, then with the addition of a large black ſpot in the centre: and by night a lanthorn with a light therein, alſo at the maſt-head; on failure whereof, the maſter is ſubject to a penalty of 200*l.* (45 Geo. III. c. 10. ſect. 14.) Ships actually having the plague on board are to hoiſt a ſignal flag of yellow and black, borne quarterly, of eight breadths of bunting at the main-topmaſt-head; and in the night two lanthorns, one over the other, to be kept up when in ſight of any other ſhip, or within four leagues of the coaſts or iſlands, and until arrived at the proper quarantine port, and legally diſcharged from quarantine, upon penalty of 200*l.* 46 Geo. III. c. 98. ſect. 1.

Maſters of ſhips are alſo further required by ſect. 16. of the act of the 45 Geo. III. to give the pilot who ſhall go on board a written paper containing a true account of the places at which they have touched or loaded on the homeward voyage, and any neglect or refuſal, or any falſe repreſentation, or wilful omiſſion therein, ſubjects them to the penalty of 200*l.* And by the 46 Geo. III. c. 98. ſect. 2. maſters of ſhips that are not liable to quarantine in reſpect of the place from whence they come, are alſo to give a true account of all the different articles of their cargoes, under the penalty of 200*l.* And if by proclamation or order in council, ſhips are liable, as coming from any place mentioned in any order in council, or by reaſon of bringing any goods mentioned in ſuch order, the pilot is to give the maſter notice of being liable, ſo that he may hoiſt the proper ſignal, under the penalties of 50*l.* and 100*l.* by the 45 Geo. III. c. 10. ſ. 16. and 46 Geo. III. c. 98. ſ. 2. Pilots, not conducting ſhips to the proper places, (except prevented by ſtreſs of weather, adverſe winds, or other accidents,) to forfeit 100*l.* (45 Geo. III. c. 10. ſ. 17.); and not requiring ſuch paper, 100*l.* by 46 Geo. III. c. 98. ſ. 2.

Maſters knowing any place from which they came, or at which they touched, to be infected with the plague, or any infectious diſeaſe, or having any perſon on board infected with it, and who ſhall refuſe or neglect to diſcloſe the ſame when examined by the ſuperintendent of quarantine, or officer of cuſtoms, and omitting to hoiſt the proper ſignals, ſhall be guilty of felony, and ſuffer death. 45 Geo. III. c. 10. ſ. 19.

Maſters of veſſels ordered to perform quarantine are to deliver to the officer of cuſtoms, or quarantine ſuperintendent at the quarantine ſtation, (and which they are required to demand,) their bills of health, manifeſt, log-book, and journal, under penalty of 100*l.* 45 Geo. III. c. 10. ſ. 20.

Maſters of ſhips liable to quarantine, although the plague, &c. ſhall not have then appeared, who ſhall quit the ſhip, or ſuffer any ſeaman or paſſenger to quit the ſame, till they have performed quarantine, (unleſs by licence or order in council,) ſhall forfeit 500*l.* And if any perſon coming in, (or any pilot or other perſon who may go on board, whether before or after her arrival at any port in Great Britain,) ſhall afterwards quit her before ſhe ſhall be regularly diſcharged, all perſons (by neceſſary force) may compel ſuch perſon to return on board; and every perſon ſo quitting ſuch ſhip ſhall forfeit 200*l.* and be impriſoned ſix months. 45 Geo. III. c. 10. ſ. 21.

Such of the paſſengers and crew of ſhips not furniſhed with clean bills of health as may be deſirous of performing quarantine in a ſeparate veſſel, (to be hired at their own expence,) may, if the ſuperintendent and medical aſſiſtant ſee no objection thereto, do ſo, and may quit the ſhip before the hatches are opened and go on board ſuch ſhip, (a guardian being there placed at their expence) for thirty days (Order, ſect. 28.); but their baggage, apparel, and books, for which they have not immediate occaſion, ſhall be ſent to a floating lazaret to be aired, and before any paſſengers or crew ſhall be diſcharged, they, their clothes, and effects, ſhall be fumigated (Order, ſect. 31.); but paſſengers and the crews continuing on board the ſhip in which they arrived are to remain under quarantine till the ſhip be diſcharged. Order, ſect. 28.

Pilots may quit the ſhip and be removed to the hoſpital ſhip, after the quarantine guardians are placed on board, provided they come from ſhips having no ſuſpicious ſickneſs on board; but if otherwiſe, they are to be ſent to the peſt-houſe, or other place appointed for perſons ſo affected, and they are to continue under quarantine until the probationary airing of the goods is finiſhed, when, if they continue well, they are to be fumigated and diſcharged. But ſuch pilots are not to have communication with any other perſon, except under the regulations uſual in like caſes. Order, ſect. 37.

If any peſtilential accident occurs among the ſhip's crew or paſſengers during the probationary airing, (at whatever ſtage it may happen,) the quarantine of the crew, paſſengers, and pilot, (if any ſhall have been on board,) and the goods, is to recommence, and the ſick are to be ſent to the hoſpital, or peſt, or place provided for perſons ſo afflicted, the external guard to be doubled, and notice immediately given to the privy council. Order, ſect. 29.

If any perſon falls ill, and a medical man is on board, he ſhall confer with the medical man who comes alongſide, the latter keeping ten feet to windward; but if no medical man is on board, and it is neceſſary to viſit the ſick, the viſit ſhall be made at the ſhip's boat by the medical attendant in his own boat, keeping to windward ten feet; and if medical aid cannot be adminiſtered on board, the ſick is to be carried to the peſt or hoſpital ſhip. Order, ſect. 23.

Perſons under circumſtances to induce a ſuſpicion of having any peſtilential diſorder, to be removed to the peſt or hoſpital ſhip; but if it is not infectious, they may be removed to a more commodious apartment in the lazaret, there to complete the remainder of their quarantine. Order, ſect. 24.

If any peſtilential diſorder ſhall actually diſcover itſelf in any ſhip or lazaret, the perſon is to be removed with all poſſible care and diſpatch, under the ſpecial directions of the ſuperintendent or medical aſſiſtant, to the peſt-houſe, and a proper attendant is to be aſſigned to him, and he ſhall be viſited at a due diſtance; but if a nearer approach is neceſſary, ſome perſon is to be ſpecially appointed for that purpoſe. Order, ſect. 25.

Paſſengers and crews may have the aſſiſtance of any medical perſon they may chooſe from the ſhore; but if any perſons communicate by contact with the ſick, they ſhall perform the like quarantine as the ſick. Order, ſect. 26.

Perſons liable to perform quarantine, and others having had intercourſe with them (whether in ſhips or lazarets), are to be ſubject to the orders of the ſuperintendent or officer of cuſtoms, who are required to enforce obedience to all ſuch orders, and to call in others to their aſſiſtance; and they may compel all ſuch perſons to repair to the lazaret or ſhip, and cauſe all goods liable to quarantine to be conveyed there alſo; and perſons refuſing to go, or, who being there, ſhall eſcape, ſhall be compelled by force to return; and perſons refuſing or neglecting to return, and perſons eſcaping, ſhall ſuffer death without benefit of clergy. (45 Geo. III. c. 10. ſect. 23.) And may be ſeized by any conſtable, headborough, tythingman, or peace officer, or any other perſon, and be carried before a magiſtrate or juſtice of the peace, or ſuch juſtice may iſſue his warrant for their apprehenſion and conveyance to their ſhip, or to any ſhip performing quarantine, or to any lazaret from which they have eſcaped, or for confining them in ſafe cuſtody (but not in a public gaol) under ſuch reſtrictions, as to having communication with other perſons, as the juſtice may think proper, (calling to his aid medical advice) until they can be ſafely removed to ſome place appointed for quarantine, or until directions can be obtained from the privy council. 45 Geo. III. c. 10. ſect. 24.

Perſons not infected with the plague, &c. entering the lazaret whilſt any perſon is performing quarantine, are to perform it alſo, and are not to return without licence or order in council; and, if they ſhall actually eſcape before it has been fully performed, they ſhall ſuffer death, without benefit of clergy. 45 Geo. III. ſ. 27.

Perſons on board ſhip, or in a lazaret, may have communication with others by letter, to be collected by a boat, which is to go round at a fixed hour daily, and they are to be dipped in vinegar and put into the fumigating-box, and the covers ſlit open (Order, ſect. 16.); but letters to perſons on board are to be taken by the quarantine ſuperintendent only, and no conference is to be had by perſons *not* under quarantine with perſons who *are* under quarantine (except by permiſſion of or in the preſence of the quarantine ſuperintendent or his aſſiſtant), nor from any ſhip, unleſs the ſuperintendent's boat be preſent, and then at the diſtance obſerved by the ſuperintendent. And to prevent improper or clandeſtine communication, there is to be a night-watch and row-guard at all the quarantine ſtations; and the boats belonging to any floating-lazaret are to be locked to the ſame; and the boats of the ſhips performing quarantine are to be taken away, and no uſe made of them, but for removing goods, from ſuch ſhip, or upon occaſions of neceſſity, till they are given up when the ſhip has done performing quarantine. Order, ſect. 17.

Aſſiſtance and neceſſaries for ſhips under quarantine to be found by the ſuperintendent and to be carried to the windward ſide, and delivered by means of buckets. (Order, ſect. 18.) Quarantine guardians are to prevent any goods being delivered from ſhips without clean bills of health but by an order in writing from the ſuperintendent, ſuch order to be entered in a book and the original returned; and nothing to be conveyed from one ſhip under quarantine to another, nor any perſonal intercourſe allowed. And a guardian is to go with the lighters and boats, to prevent communication during the tranſit of the cargo, and to take care that no remnants of cotton, or things of Claſs I. and II., remain in them. And before leaving off work they are to collect and deliver all ſuch articles into the lazaret. Sect. 19 of the Order.

The duty of the quarantine ſuperintendent and officers of the cuſtoms may partly be collected from what has gone before; but it is neceſſary here to obſerve, that they are, on a ſhip's arrival, to go off and put the following preliminary queſtions:—What is the name of the ſhip? Maſter? From whence? Where bound? At what port has ſhe touched on the homeward voyage, or what ſhips ſpoken with? Whether the plague, or any infectious diſeaſe, exiſted at the time of leaving the port ſhe loaded at? What kind of goods the cargo is compoſed of, and of what country are they the produce? and whether ſhe brings a bill of health?

If the ſhip is deemed liable to quarantine, ſhe is then to be directed to the proper quarantine port, where, on arrival, the ſuperintendent is to go to the windward ſide, (taking medical advice with him, if neceſſary,) and to ſee all the officers, crew, and other perſons, muſtered on the gangway, and is to put further queſtions to them. They are in ſubſtance the ſame as above, except more particular as to the places the veſſel touched at during the whole voyage; the reſpective dates of her arrival at every place, and dates of her departure; the number and conditions of the crew for the voyage, whether any have been ſick or died, and the nature of the diſeaſe; whether their bedding and clothes were deſtroyed, or any perſon employed about them taken ill; if ſo, when, and what kind of diſeaſe; whether any letters or parcels have been received out of any other ſhip on the paſſage; of what kind and where delivered, and into what veſſel or boat; what pilots ſhe has had; and any particulars reſpecting Britiſh ſhips loading at the ſame port from whence ſhe came; their names; where bound, &c. and what Britiſh ſhips were at the places at which ſhe touched; whether any perſon employed in loading the cargo was taken ill, or any ſuſpicion of the kind; whether the cargo had been long warehouſed, or packed, handled, or brought on board by any perſon affected with the plague: did ſhe touch at the iſle of Rhodes, the Morea, or any and what part of Africa; if ſo, where? and had ſhe any communication with the ſhore at thoſe places, or with any ſhip coming from ſuch places; if ſo, in what manner, and when, and whether the crew of ſuch ſhip was healthy.

The anſwers to all theſe queſtions are to be taken in writing, and the maſter to make oath to them, and is to deliver the log-book, manifeſt, and ſhip's papers, (which are to be dipped in vinegar and fumigated,) and make oath to the truth of the contents of the former, or in what particular it is not correct; and whether any particular entry was made ſoon after the fact, and if not, for what reaſon; and alſo to make oath to all the other papers. Sect. 10 of the Order.

If any ſuſpicious circumſtances appear in the anſwers to the above queſtions, or from any other circumſtance, the proper officer is immediately to tranſmit ſuch anſwers to the privy council and the commiſſioners of the cuſtoms, and without regard to the bill of health, whether clean or otherwiſe, is to order ſuch ſhip to a ſtation diſtant from all other veſſels, and put her under ſpecial guard, the more effectually to prevent communication with her. Order, ſect. 11.

Ships coming without clean bills of health are to have two quarantine guardians placed on board as ſoon as the examinations are ended, and ſhe ſhall have arrived at her proper ſtation. Order, ſect. 15.

Guardians are to take care that, after the cargoes are diſcharged into the lazaret, the holds and between decks are completely ſwept, and the ſweepings burnt. (Order, ſect. 20.) And they are to ſearch all lockers and cheſts, &c. of paſſengers and crews, ſo that no goods in Liſt 1 and 2, or any thing liable to infection, remains undelivered, except what the ſuperintendent or medical man declares requiſite for daily uſe; and they are to ſee all ſuch cheſts, clothes, and the bedding of the ſhip daily opened and aired. (Order, ſect. 21.) They are alſo to make daily reports of the ſtate of health of every perſon on board, and whether the regulations are regularly complied with; and, in caſe of any impediment, are to give notice to the maſter, and then to the ſuperintendent, who ſhall remove the ſame. Order, ſect. 22.

Perſons landing or removing any goods, wares, or merchandize, packets, packages, baggage, wearing-apparel, books, or letters, from any ſhip liable to quarantine, or knowingly receiving the ſame, are to forfeit, for every offence, not more than 500*l*., nor leſs than 100*l*. And perſons clandeſtinely conveying them (or concealing them for that purpoſe) from any ſhip actually performing quarantine, or from the lazaret, are to be adjudged guilty of felony, and ſuffer death without benefit of clergy. Act, ſect. 31.

Officers of cuſtoms, or other perſons embezzling goods, or guilty of any other breach or neglect of duty, in reſpect of the ſhips, perſons, and goods performing quarantine, ſhall loſe their office or employment, and be rendered incapable to hold the ſame, or receive a new grant thereof, and ſhall forfeit 100*l*. And if they ſhall deſert their duty, or wilfully permit any ſhips, perſons, or goods, to depart, or be conveyed out of the lazaret, ſhip, or other place, unleſs by permiſſion under an order in council, and if they, or any perſon authoriſed to grant certificates of ſhips having performed quarantine, ſhall knowingly give a falſe certificate thereof, they ſhall ſuffer death without benefit of clergy; and if they ſhall wilfully damage any goods under their direction, they ſhall pay treble damages and coſts of ſuit to the owner. 45 Geo. III. c. 10. ſect. 26.

Perſons forging, counterfeiting, interlining, or altering, any certificate required by this act, or any order in council touching quarantine, or procuring it to be done, or publiſhing it as true, ſhall ſuffer death without benefit of clergy. 45 Geo. III. c. 10. ſect. 30. and 46 Geo. III. c. 98. ſect. 8.

After goods have been duly opened and aired, proof thereof ſhall be made by the oaths of the maſter of the lazaret or veſſel, and one of the guardians or officer of the cuſtoms, and the ſuperintendent, ſhall give a certificate of ſuch proof having been made, and ſuch goods ſhall not be liable to any further reſtraint, either at that or any other port. 46 Geo. III. c. 98. ſect. 5.

Ships and perſons having performed quarantine, proof is to be made by the oath of the maſter, and of two other perſons belonging to the ſhip, before the principal officer of cuſtoms or juſtice of peace, at the port where quarantine was performed, or, if at the iſlands of Guernſey, &c. before two jurats, that ſuch ſhips or perſons have duly performed quarantine, and that they are free from infection. And, upon producing a certificate from the ſuperintendent to that effect, the collector or juſtice, &c. is required to give a certificate thereof, and thereupon ſuch ſhips and perſons ſhall not be liable to farther reſtraint. 45 Geo. III. c. 10. ſect. 28.

All forfeitures and penalties incurred againſt this act may be recovered in any of his majeſty's courts of record, or by ſuit in any of his majeſty's courts in the iſlands of Guernſey, &c. one half to them who ſhall ſue, and the other to his majeſty, to be applied towards defraying the expences of erecting and maintaining the lazaret. 45 Geo. III. c. 10. ſect. 34.

Actions to be commenced in the name of the attorney-general, or of ſome officer of the cuſtoms, and the former may ſtop proceedings if he thinks proper, as well as to the officer's ſhare as to the king's moiety. Sect. 35 and 36.

Offences againſt this act, not being felony, and diſobedience to any order in council, for which no ſpecific penalty is provided, may be tried before any two juſtices of the peace for the county, riding, &c. where ſuch offence happens; and if any perſon ſhall be convicted he ſhall be liable to ſuch penalty, not exceeding 50*l*. for any one offence, or to ſuch impriſonment, not exceeding three months, as ſhall, in the diſcretion of the two juſtices, be judged proper. Such penalty to be applied as directed by ſect. 34. 45 Geo. III. c. 10. ſect. 38.

Offences contrary to this or any act hereafter to be paſſed, or of any order in council, notified by proclamation, or publiſhed in the Gazette, may be tried in any county within England or Scotland, or in the proper courts in the iſles of Guernſey, &c. No attainder of felony to work corruption of blood or forfeiture of goods, &c. 45 Geo. III. c. 10. ſ. 39 and 42.

In any proſecution for offences againſt this act, or any act which may hereafter be paſſed, concerning quarantine, or for any breach of any order in council notified in the Gazette (which is to be a ſufficient notice by 45 Geo. III. c. 10. ſect. 33.), the anſwer to any queſtions or interrogatories put to the maſter of a ſhip, may be given in evidence as to the place from which ſuch ſhip came, or the places at which ſhe touched in the courſe of the voyage; and where any ſhip ſhall have been directed to perform quarantine, the having been ſo directed ſhall be evidence that ſhe was liable, unleſs ſatisfactory proof ſhall be produced by the defendant that the ſhip did not come from or touch at any ſuch place as is ſtated in the ſaid anſwer; or that ſuch ſhip, although directed to perform quarantine, was not liable. And where any ſhip ſhall in fact have been put, and ſhall actually be performing quarantine, ſuch ſhip ſhall, in any proſecution, be deemed to be liable, without proving in what manner, or from what circumſtances, ſuch veſſel became liable. 46 Geo. III. c. 10. ſect. 40.

By the 43d ſection, offenders may plead the general iſſue, and if the plaintiff is nonſuited, or diſcontinues his action after the defendant has appeared, or if judgment has been given upon any verdict or demurrer againſt the plaintiff, the defendant may recover treble coſts, and have the like remedy at law as the defendant hath in other caſes.

Actions to be brought within the ſpace of two months after the offence is committed.

Whenever any perſon is charged with an offence againſt this or any other act, or in diſobedience of any order in council concerning quarantine, and the ſame ſhall appear to any judge of the court of King's Bench by affidavit or certificate of an information being filed againſt ſuch perſon, he may iſſue his warrant under his hand and ſeal, and cauſe him to be brought before him or a juſtice of the peace, that he be bound with two ſufficient ſureties to appear and anſwer ſuch offence; and if ſuch perſon ſhall refuſe or neglect to become bound, he may be committed to gaol till he does ſo give bail, or be diſcharged by order of the court of King's Bench. The recognizance to be returned and filed in court, and remain in force until ſuch perſon is acquitted, or until he has received judgment. (Act, ſect. 41.) And if he is detained for want of bail, the proſecutor may cauſe a copy of the indictment to be delivered to him, or the gaoler, &c. with notice thereon indorſed, that if he does not in eight days enter an appearance and a plea of demurrer, an appearance and plea of not guilty will be entered in his name; and upon affidavit being made of ſuch notice, &c. being delivered, the proſecutor may cauſe an appearance and plea of not guilty to be entered, and ſuch proceedings ſhall be had as if the defendant had appeared and pleaded not guilty; and if upon a trial the defendant is acquitted the judge may direct his diſcharge. Act, ſect. 41.

Where any examination or anſwer ſhall be taken on oath, the perſons authoriſed to take ſuch examinations and oath ſhall be deemed to have full powers to adminſter ſuch oath; and if any perſon ſwears falſely, or procures others to do ſo, he ſhall be deemed guilty of perjury or ſubornation of perjury. 45 Geo. III. c. 10. ſect. 37. and 46 Geo. III. c. 98. ſect. 10.

The king may iſſue directions if the plague breaks out in Great Britain.—The lords of the privy council, in caſe any infectious diſeaſe breaks out in Great Britain, or the iſlands of Guernſey, &c. may make ſuch order, and give ſuch directions in order to cut off all communication between any perſon infected, and the reſt of his majeſty's ſubjects as ſhall appear to them expedient for that purpoſe. 45 Geo. III. c. 10. ſect. 12. And if it ſhall happen that any part of Great Britain or Ireland, or the iſles of Guernſey, &c. or France, Spain, Portugal, or the Low Countries, ſhall be affected with the plague or other infectious diſeaſe, his majeſty may by proclamation reſtrain all ſmall boats, and veſſels under 20 tons, from ſailing out of the ports of Great Britain or the iſlands, until bond is given by the maſter, with ſufficient ſureties for 300*l.*, that ſuch veſſel or boat ſhall not go or touch at any place mentioned in ſuch proclamation, and that the maſter, crew, or paſſengers, ſhall not go on board any other ſhip at ſea, nor receive any perſon on board at ſea from any other ſhip, nor receive any goods out of any ſhip. And if any veſſel for which ſuch ſecurity is required, ſhall ſail before ſecurity is given, ſhe ſhall be liable to forfeiture, and the maſter and every mariner ſhall forfeit 20*l.* 45 Geo. III. c. 10. ſect. 32.

By the ſtat. 1 James I. c. 31. if any perſon infected with the plague, or dwelling in any infected houſe, be commanded by the mayor or conſtable, or other head officer of the town or vill, to keep his houſe and ſhall diſobey it, he may be enforced by the watchmen appointed on ſuch occaſions to obey ſuch neceſſary command, and if any hurt enſue the watchmen are thereby indemnified. And further, if ſuch perſon goes abroad and converſes in company, if he has no plague ſore upon him, he ſhall be puniſhed as a vagabond by whipping, and be bound to his good behaviour. But if he has any infectious ſore upon him uncured, he then ſhall be guilty of felony. Blackſtone, vol. iv. c. 13.

Having thus far given the laws and regulations concerning this matter, we ſhall ſtate the duties payable by ſhips performing quarantine, with the exceptions provided by the act; and alſo the beſt methods of fumigating ſhips and houſes. It muſt be apparent, that the nature of the quarantine eſtabliſhments and maintaining lazarets incur conſiderable expences, to defray which the duties are to be applied (Act, ſect. 8.); and the law 45 Geo. III. c. 10. ſect. 3. declares, that it is reaſonable the importers ſhould defray the ſame; and ſect. 6. enacts, that the ſhip-owners may recover of the importers ſuch ſums as the tonnage of their goods ſhall bear to the proportion of the tonnage of the ſhips. Theſe duties are to be paid upon the ſhips clearing inwards, and to be computed according to the 26 Geo. III. c. 60. 45 Geo. III. c. 10. ſect. 5. They are to be levied and recovered as duties of cuſtoms, and although not raiſed for the purpoſe of contributing to the revenue, the amount is to be carried to the conſolidated fund. Sect. 7.

A Table of tonnage duties payable on ſhips and veſſels, which ſhips or veſſels, or the cargo of which, or any part thereof, ſhall have performed quarantine in Great Britain, or the iſlands of Guernſey, Jerſey, Alderney, Sark, or Man. 45 Geo. III. c. 10. ſ. 3.

	£	s.	d.
1. For every ſhip which ſhall have arrived from any part of Turkey, or from Africa within the ſtreights of Gibraltar, or in the Weſt Barbary on the Atlantic Ocean, with a clean bill of health, the ton - -	0	7	6
2. Do. without a clean bill of health, the ton	0	15	0
3. For every ſhip which ſhall have arrived from any place whatſoever, (except from any part of Turkey, &c.) with a clean bill of health, the ton - - - - - -	0	3	0
4. Do. without a clean bill of health, the ton	0	10	0
5. For every ſhip which ſhall arrive with any part of the cargo conſiſting of goods the growth of Turkey, or any place in Africa within the ſtreights, or in the Weſt Barbary, and which ſhall have arrived from any place whatever, the ton - - - -	0	7	6
6. For every ſhip which ſhall have ſo arrived under ſuch circumſtances as ſhall induce his majeſty, or the lords of the council, to ſubject ſuch ſhip to the like quarantine as ſhips coming from Turkey with clean bills of health, the ton - - - -	0	7	6
7. Ships arriving under ſuch circumſtances as ſhall induce his majeſty to ſubject ſuch ſhip to the like quarantine as ſhips coming from Turkey *without clean bills of health*, the ton	0	15	0
8. For every ſhip which ſhall enter inwards in the port of London, an additional duty of per ton - - - - - -	0	1	0

Exempted from the ſaid Duties.

Ships of war, tranſports, and other veſſels employed in the ſervice of government.

Ships or veſſels not bound to Great Britain or the iſlands, and having put in in diſtreſs. (Although they ſhould perform quarantine. Opinion of the attorney-general.)

Ships or veſſels obliged to perform quarantine only on account of having goods enumerated in the 1ſt Claſs on board, and not producing the proper declaration or document as to their growth, &c.

Ships or veſſels, with a clean bill of health, in ballaſt, or whoſe cargo ſhall conſiſt wholly of ſalt, (unleſs coming from Turkey, or ſome place in Africa within the ſtreights of Gibraltar, or in the Weſt Barbary.)

Ships and veſſels, which with their cargoes ſhall have performed quarantine in the foreign lazarets, and produce proper documents and vouchers atteſting the ſame. (Or when goods, which have performed quarantine there, and been carried to other countries, are afterwards brought here. Treaſury order.)

Ships and veſſels rendered liable ſolely by reaſon of having received on board by force, and againſt the will of the maſter and crew, any perſon from a veſſel coming from or having touched at an infected place. 46 Geo. III. c. 98. ſect. 4.

Ships which have ſailed in ballaſt from places conſidered liable to infection, and which ſhall afterwards bring a cargo from a place not deemed liable to infection. Treaſury order.

To prevent as much as poſſible the plea of ignorance of theſe laws, the order in council of 5th April 1805 directs, (ſect. 44.) that the collector of the port where any veſſel ſhall clear out for the Mediterranean or Barbary coaſt, or any other place reſpecting which an order in council is made, ſhall furniſh the maſter with an abſtract of the quarantine regulations, and it is to remain up during the voyage in ſome conſpicuous part of the ſhip till his return, provided he returns in twelve months.

Ships of war which ſhall meet any veſſel liable to quarantine coming to any port in Great Britain, or the iſlands of Guernſey, &c. are to take care to prevent the landing of any goods or perſons, &c. until they ſhall be put under the direction of the quarantine ſuperintendent, &c. (Sect. 46.) And the commanders of ſhips of war, and forts and garriſons on the ſea coaſt, and all juſtices, mayors, ſheriffs, bailiffs, chief magiſtrates, conſtables, headboroughs and tythingmen, &c. ſhall be aiding and aſſiſting to the ſuperintendent of quarantine and his aſſiſtants, and to the officers of the cuſtoms, and in bringing ſuch ſhips to the places appointed for performance of quarantine, as well as in the due performance of the ſame. Order, ſect. 48.

The commiſſioners of the cuſtoms are ordered to uſe their utmoſt vigilance and care that the regulations of the acts of parliament and orders in council be duly obſerved (ſect. 47.); and the lords of the treaſury, the lord high admiral, the lord warden of the cinque ports, and the maſter general and principal officers of the ordinance, his majeſty's ſecretary at war, and the governors and commanders-in-chief of the ſaid iſles of Guernſey, &c. are to give the neceſſary directions herein as to them may reſpectively appertain. Order in council, ſect. 50.

It now remains to ſtate the beſt mode of fumigating veſſels and apartments infected with infectious diſeaſes, and to offer ſuch hints as are applicable to the ſubject.

Odoriferous woods, gums, ſweet herbs, and aromatics, have been recommended as fumigations, but with little certainty as to their effects; perfumes ſtill leſs ſo; beſides which, they rather conceal the mal-aria than correct contagion. The evaporation of common vinegar by heat is often employed as a fumigation, but it is not poſſeſſed of much power of diminiſhing the fetid odour of putrid air. The acetic acid or radical vinegar is better; its powers are however limited to a ſmall ſpace, and therefore, though it may be uſeful about the perſons of thoſe who attend the ſick, it is inadequate to the purification of large rooms.

The ſtronger and better fumigations are the nitrous or marine acid, and the oxymuriatic acid vapour, the former of which is made thus: half an ounce of nitre reduced to powder and vitriolic acid (oil of vitriol) in equal quantities, mixed in ſmall pots, and placed in various parts of the room.

Oxymuriatic acid, which is moſt powerful, is prepared thus:

Manganeſe - - - -	2 parts.
Common ſalt - - -	4 parts.
Vitriolic acid, ſpecific gravity 1.85	3 parts.
Water - - - - -	1 part.

To a ſmall quantity of the mixture of the manganeſe and ſalt, (ſuppoſe three ounces,) the whole of the water is to be added, (half an ounce,) and to this, in a pot large enough to prevent the ebullition from flowing over, add the vitriolic acid from time to time. This will keep up for twenty-four hours a diſcharge of the oxygenated muriatic acid, of which the ſmell is not unpleaſant, and the vapour gives no annoyance to either the ſick or the attendants.

Where houſes or hoſpitals are highly infected with the plague, it will be neceſſary for them to undergo a ſtronger fumigation of ſulphur, but that being attended with danger ſhould only be done by perſons properly acquainted with the manner of doing it; they ſhould afterwards be white-waſhed, and the floors well ſcoured.

It may be ſtated once for all, that the great object of quarantine laws is the ſeparating of thoſe affected, or ſuſpected to be infected with an infectious diſtemper, from thoſe who are not, and nothing would be ſo ſalutary or abſolutely neceſſary, wherever the plague breaks out, as inſtantly ſeparating of the ſick from thoſe who are well; and this is beſt done by removing them to a proper place, rather than ſuffering them to remain with their family, which too frequently by that means becomes infected alſo.

Whatever is requiſite to be done by way of *fumigation* will be found at large under that head; the following precautions are, however, proper to be known.

The clothes of the ſick ſhould at all times, when changed, be removed by tongs, and not by handling, and ſhould be put into cold water and boiled for an hour, and afterwards be well waſhed in waſhing machines, and then fumigated; or they may be baked in an oven; but the ſafer mode would be to have them deſtroyed, eſpecially if not valuable.

Thoſe who attend about the perſon of the ſick, as well as the medical men, ſhould remain as ſhort a ſpace of time as is conſiſtent with their duty, and to avoid as much as poſſible all contact with his perſon or his bedding, clothes, &c. And they might be furniſhed with gloves made of oiled ſilk, as well as dreſſes made of the ſame article. The cup or glaſs out of which he drinks ſhould be immediately plunged into water or vinegar, as well as any article he touches or uſes. Whatever he leaves of his meals ſhould be burnt or wholly deſtroyed. The excrementitious diſcharges ſhould alſo be received into cold water, and inſtantly removed out of the room. If the ſick die, he ſhould be immediately wrapped in oiled cloth or a tarpaulin, and be ſpeedily buried at the depth of ſix or ſeven feet; which ſhould be performed, without buſtle, in the night time, without toll of bell, to prevent the alarming of others.

With reſpect to the bed and bedding upon which the ſick has died, it would be beſt to have it burnt immediately; at all events, it muſt on no account be uſed till it has been baked in an oven for twelve hours (being rolled up and removed in a cart with every poſſible care, that it be as little handled as poſſible). It ſhould be afterwards expoſed to the open air for at leaſt fourteen days before it is again uſed.

Furniture conſiſting of chairs, bedſteads, &c. ſhould be ſcoured and fumigated with ſulphur and ſaw-duſt for twenty-four hours, firſt removing every perſon out of the apartment, as no living creature can exiſt in the fumes for any length of time.

Houſes and apartments ſhould be fumigated in like manner, and be afterwards purified by the admiſſion of as much air as is practicable, and alſo by ſcraping and waſhing the walls with lime-water, and the floors with plenty of cold water.

And laſtly, we cannot inculcate too much the fact, that the beſt preventive of infectious diſeaſe, and the ſureſt mode of diminiſhing the effects of its contagion, is by the free admiſſion of pure air, even in the room of the ſick, who, to admit of its free circulation, ſhould not have bed or window curtains, and by the greateſt attention to cleanlineſs. By the removal of the reſt of the inhabitants from the ſick houſe to a place of obſervation, for the ſpace of twenty days, and by the ſick being alſo confined for an equal length of time, having perſons appointed to prevent his eſcape, and to have a nurſe aſſigned to him. Articles neceſſary for his ſupport muſt be delivered by means of baſkets or planks, as well as thoſe received from the houſe, and all money received in payment to be dipped in vinegar.

Large aſſemblies ſhould not be permitted to meet while towns are infected, and the theatres, churches, and markets ſhould be cloſed; and if theſe precautions are ſtrictly adhered to, we are confident that if the contagion cannot be wholly prevented, its ſpreading may be greatly confined, and its malignity conſiderably leſſened.

QUARTZ. See Quartz, and Mineralogy, *Addenda.*

QUASSIN, in *Chemiſtry,* the name which has been given to a bitter ſubſtance extracted from quaſſia. See Bitter *Principle.*

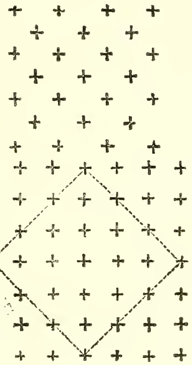
QUEEN Anne's. Add—It contains 16,648 inhabitants, of whom 6381 were ſlaves in 1810.

QUEMAKO, a townſhip of Somerſet county, in Pennſylvania, having 1392 inhabitants.

QUERCITRON. See Quercus *Tinctoria,* and Printing *on Calico.*

QUILOA. At the cloſe, add—An iſland of Quiloa was viſited by captain Beaver in 1812. He deſcribes this iſland, which has been the ſeat of royal reſidence, ſince the foundation of the kingdom, at leaſt 700 years, as being about ſix miles long and three broad; low and fertile, extending longitudinally acroſs the mouth of a deep bay, having at either end an opening for two arms of the ſea, and thus containing a peninſula which projects from the main land, forms two ſafe and magnificent harbours, capable of containing, in perfect ſecurity, the largeſt fleets. Of the ancient ſplendour and magnificence that ſubſiſted when the Portugueſe firſt viſited this iſland, not a veſtige remains. The preſent city, if it deſerves the name, conſiſts of a number of ſcattered huts from the borders of the ſea to the ſhore. Here captain Beaver found the deputy of the Imam of Muſcat, who controuls the miſerable Moors or Arabs who are in poſſeſſion of the ſea-coaſt, with his half a dozen of ſoldiers, ſituated in a round tower, mounting three guns, which pointed directly to the king's houſe, and at the diſtance of a muſket-ſhot from it. By theſe means, he keeps the king of the extenſive kingdom of Quiloa in awe, and levies a tribute in ſlaves, ivory, gold-duſt, and many other articles exported from this part of the coaſt. The Mooriſh king is only the nominal ſovereign both of the iſlands and of the ſhores of the continent.

QUINCUNX, l. 21, add—The notion, however prevalent, that plants thus ſet have greater ſcope than when ſet at the ſame diſtance without alternation, is perfectly imaginary: thus below it is evident, that the *ſquare mode* becomes a quincunx when viewed angularly, and the quincunx, in like manner, becomes a ſquare; and the diſtance of the plants is the ſame in both.



QUINTAL, col. 2, l. 3, add—The Caſtilian quintal is divided into 4 arrobas, or 100 lbs.; the lb. into 2 marcs, or 16 oz.; the marc into 8 drachmas, 16 adarmes, or 576 grains. The merchants commonly reckon 100 lbs. Caſtilian weight equal to 102 lbs. avoirdupois; but the more accurate proportion is as 123 to 125.

QUIRA, or Quiria, in *Geography,* a province of the ancient kingdom of Colchos encloſed by the end of the Moſſian hills. It is a pleaſant and fruitful country, and, from the ruins that ſtill remain, we may conclude, that it was formerly flouriſhing and populous in an extraordinary degree. The reſidence of the prince of Quiria is Titi-zighi or Ighina (the ancient Pityus), ſituated on the ſhores of the Black ſea, with a ſecure and ſpacious harbour. The only conſiderable river of Quiria is the Boas, which riſes 30 verſts from Titi-zighi, and after a courſe from E. to W. empties itſelf into the Black ſea.

QUIRILIA, the only river of conſequence in Immertia, or, as it is now called, Iberia. It riſes in the Soanni ridges and being increaſed by the ſnow-ſtreams which deſcend from the Georgian ſide of the Caucaſus, enters the Phaſis, in the neighbourhood of Cotatis.

R.

RACOON, in *Geography*, a townſhip of Gallia county, in Ohio, having 295 inhabitants.

RADIATION *of Heat*, a property of heat or circumſtance belonging to it, which has been lately inveſtigated and ſucceſsfully illuſtrated by profeſſor Leſlie of Edinburgh. There are two modes in which heat is diſcharged from bodies. A portion is communicated to the contiguous matter, and is ſlowly diffuſed through it. Another portion, when the body is placed in an aërial medium, is diſcharged with rapidity, darts through the air to a diſtance, and even at that diſtance, when intercepted, produces a heating effect. This forms what is called the "radiation of heat." Mr. Leſlie has diſcovered the important fact, that different kinds of matter, at the ſame temperature, diſcharge very different quantities of heat by radiation. From a metallic ſurface, the quantity is comparatively ſmall; from a vitreous ſurface, it is much greater; and it is ſtill more ſo from a rough ſpongy ſurface.

The power of different ſurfaces in diſcharging different portions of heat, in this mode, at the ſame temperature, Mr. Leſlie aſcribes to the more or leſs cloſe contact which they admit with the external air; a vitreous ſurface, for example, admitting of a cloſer proximity of the air than a metallic ſurface does, and thereby communicating to it, in a given time, a larger portion of heat. And on the ſame principle he explains the fact, that thoſe ſurfaces which are moſt powerful in thus diſcharging heat, are alſo moſt powerful in arreſting and abſorbing it; the cloſer contact into which the heated air comes with the ſurface on which it impinges, favouring the transfer of its heat; while a ſurface, to which the heated air does not approach ſo cloſely, will in a great meaſure reflect it with little loſs of heat. Hence the diſcharging and abſorbing power are proportional to each other; while the reflecting power is the reverſe.

Some important practical applications reſulting from theſe differences are ſuggeſted by the author.

A veſſel with a bright metallic ſurface is the beſt fitted to preſerve liquors either long warm, or as a conſervatory to keep them cool. A ſilver pot will emit ſcarcely half as much heat as one of porcelain; and even the very ſlighteſt varniſhing of gold, platina, or ſilver, which communicates to the ware a certain metallic gloſs, renders this new kind of manufacture about one-third part more retentive of heat. The addition of a covering of flannel, though indeed a ſlow conductor, far from checking the diſſipation of heat, has directly the contrary tendency; for it preſents to the atmoſphere a ſurface of much greater propulſive energy, which it would require a thickneſs of not fewer than three folds of this looſe ſubſtance fully to counterbalance. The cylinder of the ſteam-engine has lately been moſt advantageouſly ſheathed with poliſhed copper.

The progreſs of cooling is yet more retarded, by ſurrounding the heated veſſel, on all ſides, at the diſtance of near an inch, with a caſe of planiſhed tin; and the addition of other caſes, following at like intervals, augments continually the effect. With an obſtruction of one caſe, the rate of refrigeration is three times ſlower, with two caſes it is five times ſlower, with three caſes it is ſeven times ſlower, and ſo forth, as expreſſed by the ſucceſſion of the odd numbers. By multiplying the metallic caſes, therefore, and diſpoſing them like a neſt at regular intervals, the innermoſt could be made to retain the ſame temperature with little variation for many hours or even days. Such an apparatus would obviouſly be well calculated for various culinary and domeſtic purpoſes.

In the conveyance of heat by means of ſteam, the ſurface of the conducting tubes ſhould have a metallic luſtre. On the contrary, if it be intended by that mode to warm an apartment, they ſhould be coated on the outſide with ſoft paint, to facilitate their diſcharge of heat. For the ſame reaſon, metallic pots are more eaſily heated on the fire, after their bottoms have become tarniſhed or ſmoked. If a bright ſurface of metal be ſlightly furrowed or divided by fine flutings, it will emit heat ſenſibly faſter, becauſe the prominent ridges, thus brought cloſer to the general atmoſpheric boundary, will excite the pulſations with augmented energy.

For the experiments which led to this diſcovery, and the concluſions deduced from it, we refer to his "Eſſay on Heat," and to a "Short Account of Experiments and Inſtruments depending on the Relations of Air to Heat and Moiſture." 8vo. Edinb. 1814. See Heat. See alſo Dew, Rays *of Heat*, and Refrangibility *of Radiant Heat*.

RADNOR, in *Geography*, a townſhip of Ohio, in Delaware county, having 347 perſons.

RAJAPOOT, denotes literally the ſon of a king, and is uſed as the name of a warlike race of Hindoos.

RAIN. For Inverary *r.* Inverarie.

RAIN-GAGE, l. 4, for LXIV. *r.* XVI.; for *fig.* 2. *r.* 10.

RALEGH, col. 5, l. 20, *r.* 1601.

RAM *of M. Montgolfier.* Add—See Water.

RAMA, or Ramah. Add—This was a common name applied to many places in the Holy Land: and it is ſuggeſted (ſee Clarke's Travels, vol. iv. p. 432.), that the modern village of Bethoor and the modern Rama are the places mentioned by St. Jerom, where he ſays, "Rama et Bethoron et reliquæ urbes nobiles a Salomone conſtructæ parvi viculi demonſtrantur:" Rama was a village in the time of Jerom, and the ſituation of Bethoor is diſtinctly marked in the Apocrypha, with reference to the plain of Rama. (1 Maccab. iii. 16. 24.) (However, the prophecy of Jeremiah (xxxi. 15.) applied by St. Matthew (ii. 17.) to the murder of the Innocents by Herod is not believed to refer to the place now mentioned, but to another Rama, noticed by Euſebius.) The origin of Rama has been aſcribed to the Moſlems under Soliman, ſon of Abdolmelic, who is ſtated to have built the town with materials from the ruins of Lydda, diſtant three miles from Rama. But that this is an error may be evinced by reference to the writings of St. Jerom; who ſpeaks of its vicinity to Lydda, and calls it Arimathea, from a prevalent opinion that it was the native place of Joſeph, who buried our Saviour. Jerom's teſtimony, preceding the Mahometan conqueſt of the country, is ſufficient to prove that the city exiſted anterior to the invaſion of Paleſtine by the Moſlems. Nevertheleſs it is poſſible that Rama, from having been a ſmall village, might have become a large town under their dominion: nor does there ſeem much reaſon to doubt, that this Rama was the village mentioned with Bethoron by St. Jerom, as the only remains of the two cities ſo named, which were built by Solomon. According to Reland, the oldeſt writer who mentions Rama is Bernard the monk, who viſited the Holy Land in the 9th century. Oriental geographers deſcribe it as the metropolis of Paleſtine; and it is ſaid that St. George, the tutelar ſaint of our anceſtors in England, ſuffered martyrdom in this place; though others ſay, that his relics repoſed in a magnificent temple at Lydda or Dioſpolis. Its diſtance from Jeruſalem, uſually eſtimated at a day's journey, is deſcribed as equal to 36 or 37 miles by Phocas; who diſtinguiſhes Armathem, the native place of the prophet Samuel, from Ramola or Rama, with which Adrichomius ſeems to have confounded it; and places the church of St. George within the latter city; which poſition, although diſputed by Reland and other authors, not only ſeems to coincide with the teſtimony given from the Alexiad of Anna Comnena, but alſo with the evidence afforded by Bernard the monk, who mentions a monaſtery of St. George near to Ramula. There is not a part of the Holy Land more fertile than the plain around Rama; it reſembles a continual garden; but cultivation had been neglected at the time of the arrival of Dr. Clark, the traveller now cited, owing to the dreadful plague with which the whole country had been infeſted. Rama and Lydda were the two firſt cities of the Holy Land that fell into the hands of the Chriſtians when the army of the Cruſaders arrived. Rama was then in its greateſt ſplendour; a fenced city, abounding in all the luxuries of the Eaſt. It was exceedingly populous, and was adorned with ſtately buildings, and well fortified with walls and towers. The count of Flanders having been diſpatched by the princes and generals of the Chriſtian army, with five hundred cavalry, to reconnoitre the place, and to ſummon the city to ſurrender, found the gates open: the inhabitants, alarmed by the ſudden approach of ſo powerful an army, had abandoned their dwellings and all their property during the preceding night. In conſequence of this, a general rendezvous of the Chriſtian forces took place in Rama, where they remained during three entire days, regaling themſelves in the abundance the place afforded. During this time, Robert of Normandy was elected biſhop of Rama and Lydda, to which biſhopric all the revenues of the two cities and their dependencies were annexed; the whole army joining in thankſgiving to St. George the Martyr, the patron ſaint of Dioſpolis and Rama, to whom the auſpicious commencement of the enterpriſe was attributed. Hence probably originates the peculiar conſideration in which St. George was held by the inhabitants of England, during the early periods of its hiſtory.

RAMSBURY. By the returns of 1811, the pariſh of Ramſbury contained 398 houſes, and 2095 perſons; *viz.* 1028 males, and 1067 females: 248 families being employed in agriculture, and 85 in trade, manufactures, and handicraft.

RAMSDAL, *dele.*

RANDOLPH. Add—In 1810, their number was 1170; l. 3 of next article, inſert—including 798 ſlaves.

Randolph, a county of the Illinois (*dele* Indiana) territory, containing four townſhips; *viz.* Kaſkaſkia, United States' Saline, Shawanee, and the reſidue of Randolph county, and 12,282 inhabitants, including 168 ſlaves.—Alſo, a townſhip of Montgomery county, in Ohio, containing 936 inhabitants.

RAPIDES. Add—This is one of the beſt tracts in Louiſiana. No town, except Alexandria, on the right bank of the Red river, has been found, (ſays Mr. Darby, 1816,) in the pariſh of Rapides. This place is a thriving little village, and ſtanding at the head of conſtant boat navigation, is of conſiderable commercial importance. The ſtaples of the pariſh are, cotton, timber, beef, pork, and maize; the four firſt being the principal.

RATE, l. 8, for Ireland *r.* India; in Ireland ſix, legal intereſt charged by all private banks, though the intereſt charged by the bank of Ireland for money advanced is 5 *per cent.*

Rate *of a Ship*, &c. col. 2, l. 39, add—About ten years ago, an additional lieutenant was appointed to the line of battle ſhips. Ships of 50 and 38 guns have four lieutenants: l. 5 from bottom, after lieutenants, inſert—ſhips of 20 guns, and all ſhips upon the eſtabliſhment of ſloops of war, have two lieutenants. Col. 3, l. 14, add—See Ship.

Rate *of Ships of War*, add—By an order of council, the operation of which commenced Jan. 1, 1817, the following regulations were fixed with regard to rates in the navy; *viz.*

1ſt rate. All three deckers.
2d rate. All of 80 guns, and upwards, on two decks.
3d rate. All of 70, and under 80 guns.
4th rate. All of 50, and under 70 guns.
5th rate. All of 36, and under 50 guns.
6th rate. All of 24, and under 36 guns.
1ſt rate, 900, 850, and 800 men.
2d rate, 700 or 650 men.
3d rate, 650 or 600 men.
4th rate, 450 or 350 men.
5th rate, 300 or 280 men.
6th rate, 175, 145, or 125 men.

RAVA, in *Geography*, a town of the Perſian empire, in the pachalic of Bagdad, ſituated between Kerkeſia (the Roman *Circeſium*) and Annah (the Amatho of Ammianus Marcellinus), and conſiſting of about 200 ſtone houſes in the midſt of extenſive ruins. On the oppoſite ſide of the river are the remains of a caſtle, erected on the ſummit of a rock.

RAYUN, a town of Perſia, in the province of Kerman, which, like Tchroot and Mahim, is ſurrounded by numerous gardens.

READING, a townſhip of Fairfield county, in Ohio, having 789 inhabitants.

REALIZE, *r.* Realiſe, or Realize.

RED Antimony-Ore. See Mineralogy, *Addenda*.

REDSTONE. Add—the townſhip ſituated in Fayette county contains 1224 inhabitants.

REEL. See Manufacture *of Cotton*.

REFRACTION, col. 14, l. 40, for ſign *r.* ſine.

REFRIGERATION. The following laws have been deduced by MM. Dulong and Petit from their experiments on the cooling of bodies. See Heat.

1. If the cooling of a body in a vacuum ſurrounded by a medium whoſe temperature is conſtant could be obſerved, the velocity of cooling would decreaſe in a geometrical progreſſion, while its temperature would decreaſe in an arithmetical progreſſion.

2. When the temperature of the medium ſurrounding a vacuum remains conſtant, the velocity of cooling for exceſs of temperature in arithmetical progreſſion decreaſes as the terms of a geometrical progreſſion diminiſhed by a conſtant number. The ratio of this geometrical progreſſion is the ſame for all bodies, and is equal to 1.0077.

3. The velocity of cooling of a body in a vacuum for a conſtant exceſs of temperature increaſes in a geometrical progreſſion, the temperature of the ſurrounding medium increaſing in an arithmetical progreſſion. The ratio of that progreſſion is ſtill 1.0077 for all bodies.

4. The velocity of cooling ariſing from the ſimple contact of a gas is entirely independent of the nature of the ſurface of a body.

5. The velocity of cooling ariſing from the ſimple contact of a fluid varies in a geometrical progreſſion, the exceſs of temperature varying at the ſame time in a geometrical progreſſion. If the ratio of this ſecond progreſſion be 2, that of the firſt is 2.35, whatever may be the nature of the gas or its elaſticity.

This law may be alſo expreſſed by ſaying that the quantity of heat removed by a gas is in every caſe proportional to the exceſs of temperature of a body raiſed to the power of 1.233.

6. The cooling power of an elaſtic fluid diminiſhes in a geometrical progreſſion, while the tenſion diminiſhes in a geometrical progreſſion. If the ratio of this ſecond progreſſion be 2, the ratio of the firſt is 1.366 for air, 1.301 for hydrogen, 1.431 for carbonic acid, and 1.415 for olefiant gas.

This law may be alſo expreſſed in the following manner. The cooling power of a gas, *cæteris paribus*, is proportional to a certain power of the preſſure. The exponent of that power is 0.45 for air, 0.315 for hydrogen, 0.517 for carbonic acid, and 0.501 for olefiant gas.

7. The cooling power of a gas varies with its temperature in ſuch a manner, that if this gas can be dilated and be made to preſerve the ſame elaſtic force, the cooling power will be as much leſſened by the rarefaction of the gas as it is increaſed by the heating of it; hence the cooling power of a gas depends in a definite manner upon its tenſion.

REMONTOIR, col. 3, l. 15 and 23, for I *r.* L. Col. 9, l. 14, for balance *r.* balance-wheel; l. 26 and 29, for *i* r. *l*.

Vol. XXX.

RESPIRATION, col. 15, l. 21 from bottom, after inches *r. per* minute.

REVENUE. The ſtatement of the revenue of Great Britain, for the laſt four years, appears in the following table.

	1815.	1816.	1817.	1818.
Cuſtoms - - -	10,487,522	8,380,721	9,761,481	9,996,226
Exciſe - - -	26,562,432	22,868,196	19,726,297	22,894,450
Stamps - - -	5,865,413	5,969,721	6,127,421	6,391,270
Poſt Office - -	1,548,000	1,426,000	1,338,000	1,339,000
Aſſeſſed Taxes - -	6,214,987	5,783,322	6,127,529	6,217,594
Land Tax - -	1,799,993	1,127,929	1,163,320	1,209,682
Miſcellaneous - -	366,867	241,199	492,872	368,099
Penſion, &c. - -	16	4,016	—	—
	52,125,230	45,801,104	44,946,920	48,416,321

REVOLUTION, *French*. At the close, add—On the 4th of June 1814, the king (Louis XVIII.) came to the two chambers to make a declaration of the conſtitutional charter; and on the occaſion delivered a ſpeech diſtinguiſhed by its dignity and propriety. On the 1ſt of March 1815, however, Buonaparte, having eſcaped from Elba, landed in France, and by rapid and uninterrupted marches haſtened to Paris, and reſumed his power, March 22, 1815, but his fate was finally determined by the battle of Waterloo; and he made his ſecond abdication, in favour of his ſon, on the 23d of June 1815; and on the 8th of the following month, the foreign troops entered the capital. Diſappointed in his views of ſettling either in America or in England, he ſurrendered himſelf, with a ſuite of forty perſons, to captain Maitland of the Bellerophon, July 15, 1815; and at Torbay he was transferred to the Northumberland, which conveyed him to the iſland of St. Helena, decreed by the allied ſovereigns to be the place of his future abode. Here he arrived Oct. 16, 1815. Upon his departure from Paris, Louis XVIII. was again reſtored and fixed by the allied powers on the throne of France.

With reſpect to the events that have occurred ſince this article was written, ſuch as the famous battle of Waterloo (ſee Waterloo), the total defeat of Buonaparte, his depoſition from the government, his removal from the capital, his confinement in the iſland of St. Helena, the re-eſtabliſhment of Louis XVIII., the withdrawment of the allied troops, and the meaſures adopted for the ſecure and permanent ſovereignty of France, under the preſent dynaſty; they are ſo recent, and our limits are ſo reſtricted, that we muſt refer the reader to documents eaſy of acceſs for a minute detail and more ample information.

REUSSITE. See Mineralogy, *Addenda*.

RHEA, in *Geography*, a county of Eaſt Tenneſſee, containing 2504 inhabitants.

RHODE Iſland. Add—See United States.

RHUMB, col. 2, l. 20 from the bottom, for right angles *r.* equal angles.

RICCIO, Domenico, called *Bruſa-Sorci*, in *Biography*, an eminent painter, was born at Verona in 1494, and became a diſciple of Giovanni Franceſco Caroto, under whoſe inſtruction in deſign and colouring he laid the foundation of his ſubſequent celebrity. For further improvement he ſtudied the works of Giorgione and Titian at Venice; and his proficiency was ſuch, that his works have been generally admired and ſought after, on account of the beauty of his colouring and the attitudes of his figures. Under the patronage of cardinal Gonzaga, by whom he was invited to Mantua, he became a competitor in the exerciſe of his art with two of the moſt celebrated maſters of his time, Paolo Veroneſe and Paolo Farimato. In the church of St. George at Verona is a picture by Riccio, which repreſents the gathering of the manna in the wilderneſs, and which is accounted a fine compoſition, and diſtinguiſhed by the force of its colouring. This maſter died in 1567, at the age of 73 years.

RICE, *Chemical Compoſition of.* Braconnot has lately analyſed this grain: according to his experiments, 100 parts conſiſt of

	Carolina Rice.	Piedmont Rice.
Water	5.00	7.00
Starch	85.07	83.80
Parenchyma	4.80	4.80
Vegeto-animal matter	3.60	3.60
Uncryſtallizable ſugar	0.29	0.05
Gummy matter, approaching ſtarch	0.71	0.10
Oil	0.20	0.25
Phoſphate of lime	0.33	0.40
	100	100

RICHBOROUGH. The pariſh of Aſh, in which this hamlet is ſituated, contained, in 1811, 334 houſes, and 1685 perſons; *viz.* 868 males, and 817 females.

RICHFIELD, a townſhip of Geauga county, in Ohio, having 329 perſons.

RICHLAND, l. 4, add—It contains 9027 perſons, of whom 5238 were ſlaves in 1810. At the cloſe, add—Alſo, a townſhip of Belmont county, in Ohio, having 2831 perſons.—Alſo, a townſhip of Clinton county, in Ohio, having 783 inhabitants.—Alſo, a townſhip of Fairfield county, in Ohio, having 881 inhabitants.—Alſo, a townſhip of Guernſey county, in Ohio, having 227 inhabitants.

RICHMOND, in America, col. 2, l. 27, add—of whom 3178 were ſlaves in 1810; l. 54, add—of whom, in 1810, 2115 in the county, and 1321 in the town of Auguſta were ſlaves. At the cloſe, add—Alſo, a townſhip of Kentucky, in Madiſon county, having 366 inhabitants, including 102 ſlaves.

RINSING, an operation in calico-printing, for an account of which, as well as of *damping*, ſee Printing, *Calico.*

RIO, &c. col. 2, l. 15, *r.* Helen.

RIOT, l. 20, after pillory, inſert—(now aboliſhed).

RIVERHEAD, in *Geography*, a village, or liberty, in the pariſh of Seven-Oaks, and county of Kent, which, in 1811, contained 184 houſes, and 1012 perſons; *viz.* 474 males, and 538 females.

ROAD, col. 23, l. 11 from the bottom, *r.* 1^{a}, 1^{r}, 32^{p}, and 22 yards; l. 9, for 6300 *r.* 7272; l. 7, for 255,150*l.* *r.* 294,516*l.*

ROANE. Add—of whom 670 were ſlaves in 1810.

ROARING, a diſeaſe of horſes, well known to jockies and dealers in theſe animals. It takes its name from a ſingular noiſe which the horſe makes in breathing whenever he is put into a briſk motion. It uſually accompanies broken wind, or at leaſt is the forerunner of it. Mr. Ryding ſays, that it is owing to the extravaſation of lymph, and its coagulation on the inſide of the trachea, or wind-pipe, which thus obſtructs reſpiration: and if this account of it be juſt, it ſeems to reſemble the *croup* in children. The principal cauſe is ſudden or violent and long-continued exerciſe. At its commencement, bliſtering the whole length of the wind-pipe may be of uſe; but when the diſeaſe continues for a length of time, it becomes incurable.

ROBERTSON, in *Geography*, a county of Weſt Tenneſſee, containing 7270 inhabitants, of whom 1608 were ſlaves in 1810.

ROBESON, l. 3, add—of whom 1340 were ſlaves in 1810.

ROCKBRIDGE, l. 4, add—of whom 1724 were ſlaves in 1810.

ROCKCASTLE. Add—of whom 163 were ſlaves in 1810.

ROCK-CRYSTAL. See Mineralogy, *Addenda.*

ROCKDALE, in *Geography*, a townſhip of Crawford county, in Pennſylvania, having 401 inhabitants.

ROCKINGHAM, l. 17, add—of whom the ſlaves in 1810 were 2114; l. 23, add—of whom 1491 were ſlaves.

ROCKLAND, a townſhip of Berks county, in Pennſylvania, having 1026 inhabitants.

ROMANO, Giulio, l. 14 from bottom, for ſagacious *r.* ſalacious.

ROME, in *Geography*, a poſt-town of the diſtrict of Maine, in the county of Kennebeck, with 585 inhabitants.

ROMILLY, Sir Samuel, *Knight*, in *Biography*, no leſs diſtinguiſhed as a patriot and philanthropiſt, than for his legal knowledge and practice, has every claim which pre-eminent talents and character can give him to honourable notice in thoſe biographical ſketches which this work contains. Deſcended from a race of anceſtors, whoſe attachment to civil and religious liberty conſtrained them to ſacrifice their property, to abandon their native land, and to ſeek an aſylum from perſecution in this country, it was reſerved for him to maintain and perpetuate the honour of the family from which he derived his origin. Of his family and its emigration, it will be ſufficient to tranſcribe the following account given by himſelf in an addreſs to the citizens of Briſtol, when they invited him to become a candidate for repreſenting them in parliament. "It has been publiſhed in this city that I am a foreigner, and that if you elect me, you will ſend a foreigner to repreſent you in a Britiſh parliament. Gentlemen, I was born and educated, and have paſſed my whole life in England, with the exception of a ſhort interval, which was ſpent in viſiting foreign countries. My father too was born and educated in England, and ſpent his whole life in it; my grandfather, it is true, was not an Engliſhman by birth, but he was an Engliſhman by choice. He was born the heir to a conſiderable landed eſtate at Montpellier, in the ſouth of France. His anceſtors had early imbibed and adopted the principles and doctrines of the reformed religion, and he had been educated himſelf in that religious faith. He had the misfortune to live ſoon after the time when the edict of Nantz, the great toleration act of the Proteſtants of France, was revoked by Louis XIV., and he found himſelf expoſed to all the vexations and perſecutions of a bigoted and tyrannical government, for worſhipping God in the manner which he believed was moſt acceptable to him. He determined to free himſelf from this bondage; he abandoned his property, he tore himſelf from his connections, and ſought an aſylum in this land of liberty, where he had to ſupport himſelf only by his own exertions. He himſelf embarked in trade; he educated his ſons to uſeful trades; and he was contented at his death to leave them, inſtead of his original patrimony, no other inheritance than the habits of induſtry he had given them; the example of his own virtuous life; an hereditary deteſtation of tyranny and injuſtice; and an ardent zeal in the cauſe of civil and religious freedom. To him I owe it, among other ineſtimable bleſſings, that I am an Engliſhman. Gentlemen, this is my origin; and I truſt that I need not bluſh to own it.”

The father of ſir Samuel was an eminent jeweller, and realized a handſome fortune; his mother, whoſe maiden name was Garnault, was deſcended from a family of French refugees; and he being the youngeſt of nine children, of whom three only attained to maturity, was born in Frith-ſtreet, Soho, in the city of Weſtminſter, on the 1ſt of March, 1757.

In early life he manifeſted thoſe powers of the underſtanding, and thoſe affections of the heart, which, under proper direction and aſſiduous culture, augured his future advancement to eminence of ſtation and character. “He was remarkable,” ſays one of his biographers, “for the benevolence of his diſpoſition, his deep and generous ſenſibility, his high ſenſe of honour, the quickneſs of his apprehenſion, and the extraordinary maturity of his judgment;” combining “great vivacity and a conſtant flow of animal ſpirits, with a powerful imagination, a retentive memory, and the ſtrongeſt and moſt durable affections; he poſſeſſed a correct taſte in literature and the fine arts, and retained through life a keen reliſh for the beauties of nature.” It was his good fortune, at an early age, to form an intimacy with the Rev. Mr. Roget, a young gentleman reſembling himſelf in taſte and diſpoſition, and afterwards his brother-in-law; to whom he was much indebted, as he himſelf had the modeſty and gratitude to acknowledge, for giving direction to his talents, and a ſteady impulſe to his exertions.

Thus liberally endowed by nature, and aided by the counſel of an intelligent and affectionate friend, he overcame a variety of obſtacles which preſented themſelves in the way of his progreſs and advancement; and having choſen the profeſſion of the law for the exerciſe of his talents, he ſoon exhibited thoſe powers and that perſevering application, which, without the advantages of a patrimonial eſtate, and an education at a public ſchool or univerſity, enſured his future eminence. Having enrolled his name in one of the Inns of Court, and previouſly acquired ſome notion of buſineſs in the “Six-Clerks' Office,” connected with the court to which he directed his views, he was called to the bar in 1783; and from the reputation he gained as an “equity draughtſman,” he ſoon roſe to the higher departments of his profeſſion. Upon the removal of Thurlow, Scott, and Mitford, from the chancery court, Mr. R. became a leader, and was retained in almoſt every cauſe. “His indefatigable induſtry, his unwearied patience, his comprehenſive acuteneſs, his deep knowledge of the law, his correct notions of the practice of the court, were all calculated to give due weight to arguments ſelected with ſkill, propounded with modeſty, and enforced by a chaſtened eloquence.”

Raiſed to an independence by his own exertions, it was natural for a perſon of his diſpoſition to ſeek a domeſtic eſtabliſhment; and accordingly in the ſummer of 1797, whilſt he was upon a viſit at the ſeat of the marqueſs of Lanſdowne, he met with a daughter of Francis Garbett, eſq. of Knill-Court, in the county of Hereford; a young lady, whoſe youth and beauty and other amiable qualities engaged his affection, and determined his choice; and to whom he was married in the following year. This connection opened to his views the proſpect of a growing family, and of courſe induced him to apply to the buſineſs of his profeſſion with additional ardour and aſſiduity. Accordingly when Mr. Fox and lord Grenville aſſumed the reins of government in the year 1806, he was nominated ſolicitor-general, after ſome ſuſpenſe about committing to his cuſtody the great ſeal, and received the honour of knighthood.

It is recorded to the honour of ſir Samuel, as well as to that of his colleague ſir Arthur Pigott, the attorney-general, that, though the preſs, according to the language of lord Chatham, was become, during their time, a “chartered libertine,” and political contention had arrived at its height, yet with a kind of triumph over all provocations which aſſailed the adminiſtration of this period, no proſecution for libel occurred. Indeed, the mind of ſir Samuel was occupied about a much higher object, which was the reform of the Engliſh ſyſtem of juriſprudence. His firſt attempt with this view was an amendment of the bankrupt laws, and though he did not ſucceed to the extent of his wiſhes, ſo as to render the freehold eſtates of perſons liable to the bankrupt laws, who might die indebted, aſſets for the payment of their ſimple-contract debts, for which he was allowed to bring a bill into the houſe of commons in 1807, which bill was loſt on a diviſion; he nevertheleſs obtained an act by means of which the debts of traders have been more effectually ſecured, for the benefit of the public. About this time he acted as a manager at the trial of the late viſcount Melville, for high crimes and miſdemeanors in his office as treaſurer of the navy, which terminated in an acquittal. On occaſion of the abolition of the ſlave trade, which conferred immortal honour on this ſhort-lived adminiſtration, ſir Samuel delivered a ſpeech which made great impreſſion on the houſe: and it is ſaid that one paſſage of it, which he uttered with an uncommon degree of animation, was honoured by three diſtinct plaudits. On the diſmiſſal of the miniſtry, of which he formed ſo diſtinguiſhing a part, he vindicated and applauded their conduct, during the year of their exiſtence; expreſſing in terms of cordial approbation their deciſive meaſures with regard to the abolition of the ſlave-trade, and the emancipation of Ireland, as well as their refuſal to give the king a pledge not to renew the Roman Catholic queſtion; and deprecating the return of lord Melville to office, notwithſtanding his acquittal, as no one had moved for reſcinding the vote againſt him.

The attention of ſir Samuel, both in and out of office, was much occupied concerning the ſtate of our criminal code, and the adoption of meaſures for reforming it. He lamented, in common with many other enlightened patriots, that the loſs of life ſhould be annexed to a greater variety of actions in England than in any other country in the world, and that criminals of very different deſcriptions ſhould be ſubject, by the adminiſtration of our laws, to the ſame kind and degree of puniſhment. To rectify this anomaly in our juriſprudence appeared to ſir Samuel Romilly to be an object of great importance, in its connection, both with the equity and humanity of legiſlation, and the prevention of crimes. Accordingly on the 18th of May 1808, he moved for leave to bring in a bill for the repeal of certain objectionable laws; and in this bill he introduced a clauſe for granting compenſation to perſons who were unjuſtly accuſed and tried. He ſoon after publiſhed a pamphlet, intitled “Obſervations on the Criminal Law of England, as it relates to capital Puniſhments, and to the Mode in which it is adminiſtered.” In this pamphlet, which paſſed through three editions, he explained his views, and purſued his refutation of the theory of Dr. Paley. “The certainty of puniſhment,”

ment," ſays this excellent writer, "is much more efficacious than any ſeverity of example for the prevention of crimes. So evident is the truth of this maxim, that if it were poſſible that puniſhment, as the conſequence of guilt, could be reduced to an abſolute certainty, a very ſlight penalty would be ſufficient to prevent almoſt every ſpecies of crime, except thoſe which ariſe from ſudden guſts of ungovernable paſſion. If the reſtoration of the property ſtolen, and only a few weeks', or even a few days' impriſonment, were the unavoidable conſequence of theft, no theft would ever be committed."

Sir Samuel, having actively concurred in the abolition of the ſlave-trade, could not forbear expreſſing his indignation, when the houſe of commons, in the year 1814, took into conſideration that article in the treaty of peace which allowed of the proſecution of the ſlave-trade for a period of five years, and when he found that the miniſters of this country had acceded to any convention, in which this was a prominent ſtipulation. "If," ſays the biographer whoſe article we are citing, "the king of France has relaxed on his part, and declared the trade in human beings to be annihilated, ſo far as concerns his own dominions, it is to ſir Samuel Romilly, and thoſe who ſupported him on this occaſion, that we are to attribute the change."

The ſubject of this memoir ſoon afterwards diſtinguiſhed himſelf by his oppoſition to the appointment of a new judge and tribunal for facilitating public buſineſs and alleviating the labours of the lord-chancellor. This he conſidered and repreſented as an innovation, from which neither the chancellor, nor the ſuitors of his court, nor the public in general, would eventually derive any advantage. In a pamphlet under the title of "Objections to the Project of creating a Vice-chancellor of England," he announced to the public his opinions on this ſubject, "the general reſult of which was, that the new diviſion of chancery into two courts, and the creation of an intermediate court of appeal between it and the houſe of lords, would tend greatly to enhance the expence of ſuits 'already grievouſly and oppreſſively high,' to multiply the buſineſs of the court, and to protract the final deciſion of cauſes." "The remedy," he adds, "my lord, which I have to propoſe, is a very ſimple one, but I am much afraid, conſidering the force of ſeveral expreſſions which I find ſcattered in your lordſhip's pamphlet, that you will think me diſreſpectful even in mentioning it. You have, however, really left me no choice. You have impoſed upon me the neceſſity of being deficient in what you will think due reſpect, in order to avoid the reproach of being deficient in what you have made my duty. The remedy, then, my lord, ſeems to be, *That the houſe of lords, like all inferior tribunals, ſhould, when they are preſſed with an unuſual quantity of buſineſs, ſit on a greater number of days and at unuſual hours, in order to diſpatch it.*" His laſt, and as ſome have thought his beſt ſpeech, was delivered, at the cloſe of the laſt parliament, againſt the "Alien-bill;" and ſo powerful were his arguments, that, on his ſuggeſtion, the amendments introduced by the lords were thrown out. In this ſpeech, the eloquent ſenator details and reprobates the meaſures adopted and purſued by the parliament juſt expiring, and he cloſes with the following reflection: "who our ſucceſſors may be I know not; but God grant that this country may never ſee another parliament ſo regardleſs of the liberties and rights of the people, and of the principles of general juſtice, as this parliament has been!" However the political opinions of perſons may differ, they muſt concur in admiring the integrity and ardour of the ſpeaker; and conſidering it as the laſt ſpeech which he ever delivered in the national ſenate, the peruſal of it cannot be otherwiſe than awful and impreſſive.

No man ever devoted his time and talents to important and uſeful purpoſes with greater aſſiduity and zeal than ſir Samuel Romilly. His profeſſional practice, which was very extenſive, demanded a great portion of his time and attention; and yet whenever the public intereſt required his attendance in the houſe, he never abſented himſelf on account of any perſonal engagements. His practice and his parliamentary duties occupied the whole of the day from the morning dawn frequently till midnight; and his publications were the productions of thoſe hours that ought to have been devoted to reſt and ſleep. It is not at all ſurpriſing that talents like his, and ſo employed, ſhould command general notice and reſpect. In a former parliament many enlightened and reſpectable members of the city of Briſtol directed their views to him, and wiſhed for ſuch a repreſentative; but other intereſts prevailed againſt his abilities and character, and the influence of his friends. At the laſt general election, he was propoſed as a fit repreſentative for Weſtminſter, his native city; and he was choſen in the moſt honourable manner, without trouble, expence, and ſolicitation, by a decided majority, and amidſt the applauſes of an immenſe body of electors. But a circumſtance occurred which rendered the cloſing period of his life gloomy and diſtreſſing, and which diſappointed the expectations of his conſtituents. Lady Romilly, to whom he was affectionately attached, and with whom he had enjoyed a high degree of connubial felicity, had been for ſome time in a ſtate of declining health, and his mind was agitated by very diſquieting and depreſſing apprehenſions on her account. During their reſidence at their country-houſe at Tanhurſt, in Surry, in Auguſt 1818, her complaint ſeems to have abated, and with the flattering hope that her convaleſcence would be confirmed by the mild air of the Iſle of Wight, they accepted an invitation from Mr. and Mrs. Naſh, to ſpend the remainder of the vacation at their hoſpitable caſtle at Eaſt Cowes, whither they removed in the month of September. Here lady Romilly's diſorder recurred with circumſtances of peculiar aggravation; and Dr. Roget, the nephew of ſir Samuel, was ſummoned to her relief. Her complaint, however, was irremediable; and after various fluctuations, which excited alternate hope and alarm, ſhe died of a dropſy in the cheſt, in the night of the 29th of October. During the progreſs of her diſorder to its fatal termination, ſir Samuel's mind was kept in a ſtate of conſtant ſuſpenſe and anxiety, until at length his ſympathy with the amiable ſufferer and an apprehenſion of the uncertain iſſue of her complaint, diſordered his whole frame, deprived him of ſleep or ſcared him with frightful dreams; and it is ſaid, that on one occaſion, after having been in a ſtate of great diſtreſs, he intimated to a friend, that he felt a burning ſenſation in his head; and this ſeems to have been the only occaſion on which he made a complaint of this kind. Alarmed about himſelf, he ſought relief, and tried a variety of medicines without any permanent effect. "He frequently expreſſed his ſurpriſe, that his want of ſleep did not interfere with his bodily health, that his appetite and digeſtion continued in full vigour, that no indication of fever exiſted, and that he felt no uneaſy ſenſation in his head. In converſing with Dr. Roget and Mr. Dumont he dwelt much on this apparent anomaly, and drew from it the moſt ominous preſage, as to the probability of its ending in inſanity—an apprehenſion which unfortunately took deep root in his mind. Although in all other reſpects he was perfectly in poſſeſſion of his faculties, yet on this ſubject his imagination was certainly diſordered, and we may trace, in the intenſity of this dread, the incipient ſtage of mental derangement. A ſtriking inſtance of this feeling appears in one of the teſtamentary papers written by him about this time, in which he gave particular directions as to the management of his property, the care of his children, and the cuſtody of his perſon and eſtate, in the event of his becoming a lunatic. It may be remarked alſo, that the circumſtance of his loſing ſight, in a great meaſure, of the primary cauſe of his grief, and of fixing his attention ſo much upon his own feelings, was ſo oppoſite to his natural diſpoſition, as in itſelf to conſtitute a ſtrong feature of aberration." Other circumſtances, which occurred on his interviews with his friends, confirm the ſame obſervation.

On the morning after lady Romilly's death, when Dr. Roget informed him of the event, he received the intelligence with calmneſs and reſignation, and without any effuſion of grief; and prepared to quit the ſcene of his ſorrows at the ſuggeſtion of his friends without heſitation or demur. At Murrel-green, where they lodged in their way to London, we learn from Dr. Roget, who paſſed the night in the ſame room with him, that, although he was in general reſtleſs, yet, at intervals, he enjoyed tranquil ſleep: nor did he betray, at any period, the ſmalleſt ſign of impatience or irritability. As he approached London, however, on the following day, his agitation increaſed, and he once complained to his daughter that his head was diſturbed. After his arrival at his own houſe in town, he ate his dinner with his uſual appetite; he then ſent for Dr. Marcet, who inquired particularly concerning the ſtate of his head, and was informed by ſir Samuel, "that he had no head-ache, nor any uneaſy ſenſation whatever in his head." "The ſymptoms preſent were thoſe of a high degree of nervous irritation, unaccompanied by fever or any inflammatory action; but they were of a nature to excite conſiderable alarm as to the ſtate of his mind. Though he refrained from giving vent to his feelings, it was evident, from his manner and from the expreſſions which dropped from him, that he deſpaired of his recovery, in ſpite of every endeavour to inſpire him with hope and comfort." To the uſe of all means that were recommended for allaying his extreme irritation he objected; alleging, "that he muſt neceſſarily paſs a wretched night, and that if he were to uſe any medical preſcription, it would only have the effect of taking away all his confidence in the powers of medicine."

During the greateſt part of the night, Dr. Roget, who ſlept in the ſame room, reports that he was perfectly tranquil and apparently aſleep; though in the morning ſir Samuel aſſured him, that he had never, for an inſtant, dropped aſleep.

The next morning the reſtleſſneſs returned, and was attended with ſymptoms of fever; the tongue became white during the night, and the pulſe at one time roſe to 130 in a minute. Upon conſulting Dr. Marcet, it was propoſed, at his ſuggeſtion, to apply ice to the head, and to have recourſe to cupping; but before theſe meaſures were adopted, Dr. Babington was ſent for, and before he arrived the excitement had ſubſided, and ſir Samuel was much relieved by a copious perſpiration. Upon conſultation it was agreed, that the meaſures propoſed by Dr. Marcet, in exiſting circumſtances, would not be expedient; and other medicines of an active nature were preſcribed. Theſe were taken by ſir Samuel without reluctance; and he continued tranquil and apparently aſleep till about two o'clock. His daughter remained at the ſide of his bed, who obſerved upon his awaking, that he became reſtleſs and agitated. Upon being aſked whether Dr. Roget ſhould be called, he replied in the negative; but upon a ſecond inquiry, he faintly aſſented. During the ſhort interval of Miſs Romilly's abſence, a ſudden paroxyſm had ſeized him, hurried him from the bed, and armed his hand againſt his own life. The razor with which he had inflicted the fatal wound was in his hand when Dr. Roget entered his apartment. Before he expired, as his biographer proceeds in the relation of the melancholy cataſtrophe, he made ſigns that he wiſhed to write, but though ſupplied with pen and ink, nothing intelligible could be collected from his attempts. He then deſiſted from making them, and joining his hands, appeared, from the movements of his lips and eyes, to be abſorbed in fervent prayer. It is hardly neceſſary to ſtate, that the jury ſummoned on the coroner's inqueſt brought in a verdict, "that the deceaſed had deſtroyed himſelf in a ſtate of temporary mental derangement."

Sir Samuel and his lady were interred at the ſame time, in the ſame grave, at Knill, the ſeat of her anceſtors, in Herefordſhire. The funeral, agreeably to the inſtructions of his will, was private; being attended only by his neareſt relations and moſt intimate friends. Six ſons and one daughter ſurvived to lament the irreparable loſs which they ſuſtained. The calamitous event, which thus awfully terminated the life of ſir Samuel Romilly on the 2d of November, 1818, in the 62d year of his age, made a deep impreſſion, not only in the circle of his family and friends, but through the country in general. So highly was he reſpected and eſteemed, that, on this melancholy occaſion, "the ſolicitors ſuſpended their practice; the counſel abandoned the courts; while the judge forſook the bench, after he had ſhed a torrent of tears!" The following ſingular circumſtance is mentioned by his biographer, *viz.* that in the pariſh church of St. Bride, Fleet-ſtreet, there is a ſimple undecorated tablet placed againſt the wall, with an inſcription on it to the memory of Mr. Iſaac Romilly, F.R.S., who was the uncle of ſir Samuel, and who died in 1759 *of a broken heart*, ſeven days after the deceaſe of a beloved wife. For the materials and authentic documents that have furniſhed this article, we refer to the "Annual Biography and Obituary for the Year 1819," vol. iii.

ROMNEY, in *Geography*, a town of Grafton county, in New Hampſhire, containing 765 inhabitants.

ROOFS, in *Rural Economy*. Add—Roofs of iron have lately been introduced with advantage. Mr. T. Pearſall of Bath has conſtructed ſeveral in the neighbourhood of Briſtol and London: and on a compariſon of a roof of this kind with that of timber, he obſerves, that the iron-roof is fixed on the walls *complete* for the covering; that the ſtrength and durability of the iron muſt be allowed to be ſuperior to thoſe of wood; and that the prevention of fire ſhould not be forgotten. By his ſtatement, the whole expence of ſuch a roof, erected over a brick-kiln near Briſtol, 29 feet 3 inches in length, and 18 feet 6 inches in ſpan, appears to have been 18*l.* 6*s.* 11*d.*

ROSAMOND, col. 2, l. 17, *r.* if it cannot be, &c.

ROSS, in Ohio, l. 1, *r.* 16. Add—Alſo, a townſhip of Butler county, in Ohio, having 1321 inhabitants.

ROSSO *of Florence*, in *Biography*, called by the French *Maître Roux*, was born in 1496, and without regular tuition arrived at a conſiderable degree of eminence in the art of painting. The works of Michael Angelo were his favourite ſtudies, whoſe ſtyle he endeavoured to imitate without ſervilely following it. Hurried away by a lively imagination and great command of the pencil, he could not attach himſelf to the ſtudy of nature, or the antique, ſo ſteadily as he ought; hence, though his works exhibit great brilliancy of invention, grandeur in their maſſes, gaiety of colour, and taſte in the management of the draperies, they are frequently wild and extravagant in compoſition and effect.

He exhibited his talents early in life, and painted when very young a large picture of the Aſſumption of the Virgin for the church of La Nunciata at Florence, which was diſtinguiſhed by the novelty and intrepidity of its ſtyle. He painted ſeveral other pictures there, and then went to Rome, where reputation had already forerun him. In that city, he painted an altar-piece for S. Maria della Pace, and the Decollation of St. John for the church of St. Salviati. He remained there till it was ſacked in 1527, and then fled to Votterra, where he painted a fine picture for the oratorio of St. Carlo. He went afterwards to Venice, and there painted for Aretin his celebrated picture of Mars and Venus; but not being ſufficiently employed in Italy, he accepted an invitation from Francis I. of France, who then emulated the character of an encourager of art and ſcience. By this munificent monarch, Roſſo was employed both as an architect and painter, and the building and decoration of the palace of Fontainbleau were intruſted to his care, and he was gratified with a handſome penſion, and lived in affluence and eſteem, as he was not only an able artiſt, but a man of literary acquirements, and of poliſhed and agreeable manners.

The unhappy termination of the life of Roſſo affords a leſſon to thoſe whoſe minds are inclined to indulge ſuſpicious ſenſations. He had lived in friendſhip with one Franceſco Pellegrini, a Florentine painter, who was in the habit of viſiting him occaſionally. Soon after one of his viſits Roſſo's houſe was robbed of a conſiderable ſum, and he raſhly ſuſpected Pellegrini to be the thief. He accuſed and proſecuted him, but he having endured examination and the torture, to which he was cruelly put to extort confeſſion without any ſign of guilt, was declared innocent. As ſoon as he was releaſed, the unfortunate Florentine publiſhed a juſt and ſevere ſtatement of his caſe, and appealed for juſtice; to this Roſſo had nothing to plead, and to avoid the infamy and remorſe to which the injuſtice he had been guilty of muſt neceſſarily ſubject him, he put an end to his exiſtence by poiſon in 1541, at the age of 45. The greater part of his paintings at Fontainbleau was deſtroyed by his rival and ſucceſſor Primaticcio, to make room for his own productions.

ROSS-SHIRE, col. 2, l. 2, for 13,280 *r.* 12,829; and after inhabitants, add—*viz.* 27,640 males, and 33,213 females: 7490 families being employed in agriculture, and 2499 in trade, manufactures, and handicraft.

ROSTRATA. See WHALE.

ROT, DRY, l. 2, add—See BOLETUS. Col. 7, at the cloſe, add—Mr. Robert M'William, in a valuable "Eſſay on the Origin and Operation of the Dry-Rot, with a View to its Prevention or Cure; to which are annexed, Suggeſtions on the Cultivation of Foreſt-Trees, and an Abſtract of the ſeveral Foreſt Laws, from the Reign of Canute to the preſent Time," 4to. 1818, has demonſtratively ſhewn, that the common practice of felling oak in the ſpring is an error which ought to be avoided; and that the ſeaſoning of timber is not leſs important as a means of preventing this diſeaſe. This ingenious author conſiders fungi as a *proximate* cauſe of the dry-rot; and as to the origin of fungus, he knows of no ſound argument againſt its having been created, like other vegetables, at the beginning of all things. After many inveſtigations and reſearches, the cauſe of vitality has not been ſatisfactorily aſcertained. Dr. Darwin, in his Speculations on the Origin of Microſcopic Beings, adopted the incomprehenſible doctrine, that their vitality is ſpontaneous. Buffon, Reaumur, Prieſtley, Ellis, Ingenhouz, and many others, have been bewildered in their conjectures and hypotheſes reſpecting this ſubject. After all, whether the parents of microſcopic beings, animal and vegetable, exiſt univerſally and inviſibly in the atmoſphere, according to Dr. Prieſtley's theory; or whether their vitality be ſpontaneous, according to the hypotheſis of Dr. Darwin, we muſt admit the fact, that nature ſuffers no fit recipient for animal or vegetable life to remain void; that microſcopic beings of both kingdoms are always ready to ſeize on every thing which can afford them ſubſiſtence; and that fungi find an appropriate nidus in diſeaſed and decayed vegetable matter, more particularly if it continues in a ſtate of moiſture and warmth; whence the wood-work and walls of vaults are uſually covered with mouldineſs or mucor. It has been maintained by writers on this ſubject, as well as by our author, that fermentation always takes place in the vegetable matter deſtroyed, previouſly to the appearance of the fungus; but as all ſap-wood, whenever felled and employed either in a green or ſeaſoned ſtate, contains a greater or ſmaller quantity of ſaccharine matter, this matter, under certain degrees of continued warmth and moiſture, is diſpoſed to run into fermentation. In the proceſs of putrefaction, carbonic acid gas and hydrogen gas are evolved in great abundance; and as carbon and hydrogen are eſſential conſtituents in the pabulum of plants (whatever may be the *origin* of their vitality), we thus obtain ſome knowledge of their mode of ſupport. To deprive theſe noxious fungi of the means of ſubſiſtence is the great deſideratum in the prevention or cure of the dry-rot. Of the fungi which attach themſelves to buildings, Mr. M'William enumerates the following; *viz.* mucor or mould, boletus lachrymans, agaricus coriaceus, A. domeſticus, and an agaricus reſembling Mr. Sowerby's A. bulboſus. Theſe fungi are eaſily propagated either by ſeed or root; the latter ſhooting in various directions will lay hold of timber, and penetrate into its fiſſures or creeks. In preparing cement for buildings, theſe vegetable ſubſtances ſhould be carefully excluded; as they are ſometimes brought with the ſcrapings of public roads, ſometimes in the water from ſtagnant pools, which contain myriads of ſeeds that are capable of germination, and only require a favourable temperature to ſtart into life; and whoever conſiders the facility with which fungi are generated, it ſeems ſurpriſing that any building ſhould be exempt from the ravages of the dry-rot, rather than that ſome ſhould be attacked by it. Warmth, moiſture, and air, are acceſſary to the germination and ſupport of fungi; but a redundancy of any of the three, according to the preſent author, will deſtroy the equilibrium on which their action depends, and the dry-rot will ceaſe till that is reſtored, when the diſeaſe reſumes its activity. The range of temperature within the limits of which fungi will vegetate is prodigious. The dry-rot will proceed rapidly at 80°, as is evident from the circumſtance of ſhips returning from tropical climates, almoſt covered with fungi; at 90°, 100°, 110°, its progreſs becomes more and more ſlow, and at 120° it will in general be arreſted; but Mr. M'William thinks, that no degree of heat *ſhort of combuſtion* will deſtroy, though it may ſuſpend, its corrupting influence. In deſcending the ſcale of the thermometer, it is found that the dry-rot proceeds very faſt at 50°, more ſlowly at 40°, and is only ſuſpended at 32°: for no degree of cold with which we are acquainted will deſtroy the corrupting principle, and prevent its return after the temperature has been raiſed to 45° or 50°. Hence it is obvious, that the application of mere local and artificial heat can be of little or no avail. The great remedy, or preventive, on which Mr. M'William principally relies is, in accordance with the general theory, the free circulation of atmoſpheric air, and the application of heat may be uſeful as an auxiliary in promoting ſuch a circulation. He obſerves, that even atmoſpheric air itſelf muſt be applied with ſome diſcretion: for if in its paſſage through any part of a building which is damp and already affected it ſhould become impregnated with noxious gaſes, and be charged with any of the volatile ſeeds of fungi, it may do more harm than good. It is neceſſary, therefore, *in limine*, to remove the infected materials, the diſcovery of which requires a penetrating eye.

Water is likewiſe a powerful agent in preventing and remedying the ravages of the rot; and many inſtances have occurred that prove the antiſeptic properties of water acting on wood entirely ſubmerſed in it. But when water is applied as a ſubſtitute for air in cellars, vaults, &c. care muſt be taken that it does not ſtagnate, but flow regularly through the drains; in which caſe it will carry off with it much of the carbonic acid gas, which is ſo eſſential a pabulum to fungi.

The charring of timber is of very ancient uſe, and againſt external infection is an admirable preſervative; but when the principles of decompoſition are within, it is of very little advantage in reſiſting them. Paint, when the timber is properly ſeaſoned and dry, is likewiſe very beneficial. For other intereſting particulars relating to this ſubject, we muſt refer to the author's Eſſay.

ROVING. See Manufacture *of Cotton.*

ROUM. For Kala *r.* Kela.

ROWEN. Add—of whom 3757 were ſlaves in 1810.

ROXBURGHSHIRE, l. 23, for 6518 *r.* 6423; after inhabitants, add—*viz.* 17,113 males, and 20,117 females: 3763 families being employed in agriculture, and 2487 in trade, manufactures, or handicraft.

RUBY, Spinel. See Mineralogy, *Addenda.*

RUDGELEY. In 1811, the pariſh contained 453 houſes, and 2213 perſons; *viz.* 1089 males, and 1124 females: 101 families being employed in agriculture, and 277 in trade, manufactures, and handicraft.

RUMFORD, l. 1, for Cumberland *r.* Oxford. Add—It has 629 inhabitants.

RUSCOMB Manor, a townſhip of Berks county, in Pennſylvania, having 932 inhabitants.

RUTHERFORD. Add—of whom 979 were ſlaves in 1810. Add—Alſo, a county of Weſt Tenneſſee, having 10,265 inhabitants, of whom 2701 were ſlaves in 1810.

RUTILE. See Mineralogy, *Addenda.*

RUTLAND, in America, l. 7, *r.* 17 townſhips.

RYE, *Chemical Compoſition of.* This grain has been analyſed by Einhoff; according to whom 100 parts of good rye-meal conſiſt of

Albumen - - -	3.27
Gluten not dried - -	9.48
Mucilage - - -	11.09
Starch - - -	61.09
Saccharine matter - -	3.27
Huſk - - -	6.38
Loſs - - - - -	5.42
	100

According to the ſame chemiſt, 100 parts of good rye-ſeed yield

Huſk - - - - -	24.21
Moiſture - - -	10.15
Pure meal - - -	65.64
	100

S.

Vol. XXXI.

SABINE, in *Geography*, a river of Louiſiana, being a temporary boundary between the United States and the Spaniſh internal provinces, and part of the permanent weſtern limits of the ſtate of Louiſiana. This river diſcharges itſelf into the gulf of Mexico, in N. lat. 29° 23′ and W. long. 93° 57′, or 10° 57′ W. from Waſhington city. The depth of water at its mouth is not more than four feet on the bar in ordinary tides. This river about 12 miles from its mouth expands into a wide ſhallow lake, 10 or 12 miles wide and 25 long, with a bearing N.E. and S.W. At the extremity of this lake, it receives both the Sabine and Netchez. A line of ſea-ſhell banks is formed along the ſhore of the lake between the two rivers, and on the point on the left ſhore of the Sabine, an increaſed mount of theſe ſhells is found, covered with dwarf trees. About 15 or 20 miles above the lake, wood preſents itſelf in larger bodies, and the wood riſes by a ſlow gradation; and as we advance the woods incloſe the river on both banks, the ſtream becoming contracted to the width of 150 yards, and ſo continuing with little variation as high as the Alabama villages, where it ſhrinks to 70 or 80 yards in breadth, and it preſerves this breadth to N. lat. 32°. The ſource of the Sabine has not yet been preciſely aſcertained; nor have any ſettlements of civilized people, a ſingle family excepted, been yet made on the Sabine. The weſtern branch of the Sabine is called *Netchez;* which ſee.

SACLACTIC Acid, in *Chemiſtry.* This acid has been recently analyſed both by Gay Luſſac and Thenard, and by Berzelius. According to theſe chemiſts, it is compoſed of

	Gay Luſſac and Thenard.	Berzelius.
Hydrogen	3.62	5.105
Carbon	33.69	33.430
Oxygen	62.69	61.465
	100	100

Which coincide nearly with 5 atoms hydrogen + 6 atoms carbon + 8 atoms oxygen ; according to which, the weight of its atom will be 131.25.

SACO, in *Geography*, a town of Maine, in the county of York, having 2492 inhabitants.

SADDLE RIVER. Add—Alſo, a townſhip, containing 2174 inhabitants.

SADSBURY. Add—Alſo, a townſhip of Lancaſter county, in Pennſylvania, having 843 inhabitants.—Alſo, a townſhip in Crawford county, in the ſame ſtate, having 540 inhabitants.

SAHLITE. See SAHLITE, and MINERALOGY, *Addenda*.

SAL SEDATIVUS, &c. add—after *Sedative* SALT, under SALTS.

SALEM, l. 9, add—This county contains nine townſhips, and 12,761 inhabitants, including 29 ſlaves in 1810 ; l. 24, *r.* 12,693 ; l. 52, for two *r.* three ; l. 54, add—and a third in Mercer county, having 470 inhabitants.

SALEM, *New*, a town of Hampſhire county, in Maſſachuſetts, containing 2107 inhabitants.

SALEM, *Weſt*, a townſhip of Mercer county, in Pennſylvania, having 660 inhabitants. Col. 2, l. 5, add—SALEM, in Belmont county, Ohio, contains 374.—SALEM, in Champaign county, 1021.—SALEM, in Columbiana county, 839.—SALEM, in Jefferſon county, 912.—SALEM, in Tuſkarawa county, 442.—SALEM, in Geauga county, 334.—SALEM, in Waſhington county, 248 inhabitants.

SALFORD. Add—the upper contains 838, and the lower 558 inhabitants.

SALINE, a townſhip of Gallia county, in Ohio, having 262 inhabitants.

SALINES. Add—This town appears from the entrance into Salines bay covered with that white fog, ſo much dreaded, and ſo well known in Italy by the name of *mal-aria*. Whenever this phenomenon occurs, the heat upon the iſland is exceſſive. Salines, and the towns ſituated on the E. and N.E. coaſts of the iſland, are ſubject to ſuch dangerous temperature, that in the months of June and July, perſons fall victims to the afflicting malady called by the French Coup de Soleil (a ſun-ſtroke), if they venture out at noon without an umbrella. The great heat experienced upon the eaſtern coaſts of Cyprus is owing to two cauſes : to the ſituation of the iſland with reſpect to the Syrian, Arabian, and Lybian deſerts; and to its mountainous nature, preventing the cooler winds, the weſt and north-weſt, from the low ſhores to the eaſt and north-eaſt. See CYPRUS.

SALISBURY, a townſhip of Gallia county, in Ohio, containing 460 inhabitants.

SALIVA, *Chemical Compoſition of.* According to the experiments of Berzelius, 1000 parts of human ſaliva conſiſt of

Water	992.9
Peculiar animal matter	2.9
Mucus	1.4
Alkaline muriates	1.7
Lactate of ſoda and animal matter	.9
Pure ſoda	.2
	1000

The peculiar animal matter is ſoluble in water, inſoluble in alcohol, and is precipitated by ſubacetate of lead. Hence it appears to be a ſpecies of mucus. What Berzelius has termed *mucus*, Dr. Boſtock and Dr. Thomſon appear to conſider as coagulated albumen.

SALMO ALPINUS. Dr. Shaw ſuggeſts, that this is the gilt charr of Pennant, and the next ſpecies or Salvelinus is his red charr. TAIMEN, l. *penult.* *r.* 3½ feet. KUNDSCHA, l. 3, *r.* 2 or 3. LAVARETUS, add—See GWINIAD. Dr. Shaw ſuppoſed that the gwiniad of Pennant is the S. WARTMANNI ; *r.* LEUCICTHYS. EDENTULUS, or toothleſs, ſilvery-olive, ſalmon, with compreſſed yellow head, lanceolate red fins, and forked tail : a native of Surinam, where it is highly eſteemed as food ; *r.* ANASTOMUS.

SALT, col. 3, l. 31, *r. ſhivery* for *fiſhery*. Col. 4, l. 7, *r. ſhivery* for *fiſhery*.

SALT, *Laws relating to*, col. 7, l. 20, add—Mr. Parkes informs us, that he has made inquiry of one of the moſt conſiderable ſalt-importers, who informs him, that they pay only 5*s.* 8*d.* city-duty on the cargo, whether it be five tons or fifty tons of the ſalt imported.

SALTS, *Supertartrate of Potaſh*, l. 8, inſert—See TARTRATE.

SALTS, in *Chemiſtry*. It may be proper to obſerve here, that a large proportion of the numbers repreſenting the weights of the atoms of bodies given under our article SALTS in the Cyclopædia require correction ; for which purpoſe we refer our readers to the tables appended to ATOMIC *Theory*, and to the different articles in the *Addenda*, where they will find the moſt recent determinations.

SALT *Creek*, in *Geography*, a townſhip of Muſkingum county, in Ohio, containing 389 inhabitants.—Alſo, a townſhip of Pickaway county, in Ohio, containing 810 inhabitants.

SALT-*Lick Town*, l. 1, add—in the county of Pennſylvania, having 994 inhabitants.

SAMI, col. 2, l. 24 from bottom, for fiction *r.* friction.

SANBORNTOWN, l. 2, *r.* Strafford.

SANDERSFIELD, a town of Berkſhire county, in Maſſachuſetts, containing 1648 inhabitants.

SANDHURST, near Bagſhot, in Hampſhire.—The royal military college, part of which is now eſtabliſhed at Sandhurſt, conſiſts of a *ſenior* and *junior* department. The *ſenior* department was eſtabliſhed at High Wycombe, in the year 1799, (but has recently been removed to Farnham, in Surrey) for the purpoſe of inſtructing officers in the ſcientific parts of their profeſſion, with a view of enabling them better to diſcharge their duty when acting in the command of their regiments, and at the ſame time qualify them for being employed in the quarter-maſter and adjutant-general's department.

No officer can be admitted into this department until he has completed the twenty-firſt year of his age, and actually ſerved with his regiment as a commiſſioned officer for three years abroad, or four years at home. Applications for admiſſion muſt be made to the governor through the colonel or commanding officer of the regiment to which the individual belongs. Every candidate, previous to admiſſion, muſt undergo ſuch examination as may be deemed requiſite.

The ſtudents pay into the funds of the college ſuch ſum annually as is determined by the ſupreme board of commiſſioners. The preſent ſubſcription is thirty guineas *per annum*. They are ſubject to the rules and diſcipline of the army, as if ſerving with their regiments.

The ſtudies purſued at this department are as follows : —Mathematics in all its branches ; fortification ; gunnery ; caſtrametation ; military drawing and ſurveying ; the reconnoitring of ground; the diſpoſition and movement of troops under all the various circumſtances of offenſive and defenſive war; rules for eſtimating the military reſources of a country; and the German and French languages.

There are ſix profeſſors in this department, *viz.* one mathematics, &c.; one fortification; two military drawing; one French; one German.

Public examinations on points of ſcience are held half yearly, in preſence of the collegiate board, upon which occaſion one or more members of the ſupreme board, not being members of the collegiate board, attend. Thoſe officers who have gone through the regular courſe of ſtudies, and have paſſed that examination by which they may be duly qualified for ſtaff appointments, receive certificates thereof, ſigned by the board, and ſealed with the ſeal of the college.

The *junior* department was firſt eſtabliſhed at Great Marlow in 1802, (but has recently been removed to Sandhurſt, near Bagſhot,) to afford a proviſion for the ſons of officers who have fallen, or been diſabled, in the ſervice of their country; and the means of education to the ſons of thoſe officers who belong to any regular regiments. It conſiſts of four companies, of 103 cadets each. They are admitted upon three different eſtabliſhments, *viz.*

1ſt. Orphan ſons of officers who have fallen or been diſabled in the ſervice, are admitted free of expence, except in bringing the firſt ſuit of uniform on their admiſſion, and keeping up their ſtock of linen during their reſidence at the college. They are provided with board, clothing, and education, by the eſtabliſhment, free of charge.

2d. The ſons of officers actually ſerving in regular regiments of the line, who pay a certain ſum *per annum* (from 10*l.* to 60*l.*) according to the rank of their fathers.

3d. The ſons of noblemen and gentlemen, who pay 100*l.* *per annum* each.

Applications for admiſſion muſt be addreſſed to the governor. — Every candidate previous to admiſſion muſt paſs an examination in Latin and Engliſh grammar, and the firſt four rules of arithmetic. No candidate can be admitted who is under thirteen years of age, or above fifteen.

There are examinations held monthly, which are conducted by the profeſſors of the ſenior department, to aſcertain the progreſs of each cadet, previous to his removal from one claſs to another. There are alſo public half yearly examinations upon the ſame principle as thoſe at the ſenior department, previous to the cadets receiving commiſſions from the college; and, according to their proficiency in the courſe of ſtudies, they have certificates of qualifications to ſerve in the army as officers, granted to them by the board of commiſſioners, in whoſe preſence the examination takes place.

The ſtudies purſued at this department are as follows: — Mathematics; fortification; military drawing; landſcape drawing; hiſtory, geography, and claſſics; French; German; and fencing.

There are ſeven maſters of mathematics; four of fortification; five of military drawing; three of landſcape drawing; four of hiſtory, geography, and claſſics; ſix of French; one of German; three of fencing.

Gentlemen cadets are allowed to purchaſe commiſſions at any time during their continuance at the college; but no gentleman cadet can be recommended for a commiſſion by private intereſt until he has made a certain progreſs in his ſtudies. See WOOLWICH and *High* WYCOMB.

SANDISTON, a town of Eſſex county, in New Jerſey, having 703 inhabitants.

SAND-STONE, l. 10, *r.* to be viſible. In other ſandſtones, the grains, &c.

SANDY CREEK. Add—Alſo, a townſhip of Mercer county, in Pennſylvania, containing 327 inhabitants.

SANDY *Lake*, a townſhip of Mercer county, in Pennſylvania, having 403 inhabitants.

SANGUISORBA. Add after S. *officinalis*—Mr. Parkes, in his "Chemical Eſſays," (vol. v. p. 12.) informs us, on the authority of a tanner, that there is more of the tanning principle in the plant called burnet than in oak-bark. His informant ſuggeſted, that it might be cultivated for cattle, which (he ſays) are fond of it, and ploughed up every three years in order to collect together the root for the purpoſe of tanning.

SANSANDING. Add—Sanſanding is called Badoo, and in Park's laſt miſſion to Africa is repreſented as a ſmall town, conſiſting of 300 huts; another Badoo, N. of this, is called *Sanſanba*. Sanſanding is ſaid to contain 11,000 inhabitants; it has no public buildings, except the moſques, two of which, though built of mud, are not inelegant. The market-place is a large ſquare, ſtored with articles of merchandize, and crowded with people. Some of the ſtalls contain nothing but ſeeds; others, indigo in balls; others, wood-aſhes in balls; others, Houſſa and Jinnie cloth. Here are alſo, antimony, ſulphur, copper and ſilver rings and bracelets, amber, ſilks from Morocco, tobacco and ſalt, yellow leather, &c. &c. Park's Laſt Miſſion to Africa, p. 216.

SAP, *Chemical Compoſition of.* Add—Dr. Prout has examined the ſap of the common vine. He found its ſp. gr. did not differ from that of common water. It did not affect litmus paper, and contained ſo little of ſolid matter, that 2300 parts of it evaporated to dryneſs left only one part of reſiduum, of which about half was carbonate of lime, and the reſt a peculiar vegetable matter inſoluble in alcohol, with traces of an alkali.

SAPHIES, an African term which denotes certain charms or amulets, which the negroes conſtantly wear about them. Theſe ſaphies are prayers, or rather ſentences from the Koran, which the Mahometan prieſts write on ſcraps of paper, and ſell to the ſimple natives, who regard them as poſſeſſing very extraordinary virtues. Some of the negroes wear them to guard themſelves againſt the bite of ſnakes or alligators; and in this caſe, the ſaphie is commonly incloſed in a ſnake's or alligator's ſkin, and tied round the ankle. Others have recourſe to them in time of war, to protect their perſons againſt hoſtile weapons; but the common uſe to which theſe amulets are applied is to prevent or cure bodily diſeaſes; to preſerve from hunger and thirſt, and generally to conciliate the favour of ſuperior powers under all the circumſtances and occurrences of life.

Similar charms or amulets are common in all parts of Africa, under the different denominations of *domini*, *grigri*, *fetiche*, &c. &c.

SAPPHIRE. See MINERALOGY, *Addenda.*

SARASWATI, col. 2, l. 23 from bottom, for creature *r.* creative. Col. 3, l. 8, for Jayatri *r.* Gayatri. Col. 5, l. 11 from bottom, for painted *r.* pointed.

SARATOGA, l. *ult.* *r.* in 1810; add—of whom 107 were ſlaves.

SARKFOOT. Add—In 1811 the pariſh of Graitney contained 333 houſes, and 1749 perſons; *viz.* 797 males, and 952 females.

SAROS, l. 4, add—Beroſus uſed this period, and alſo *Neros* and *Soſos* (which ſee), in chronological calculations, and fixing the epochas of his hiſtory of Babylon. Ancient authors, however, are not agreed as to the number of years contained in the Saros. Syncellus, after Beroſus, Abydenus, Alexander Polyhiſtor, &c. affirm, that it was a period of 3600 years, which is by no means probable. Dr. Halley agrees with Suidas in identifying the ſaros with the period of 223 (not 222 of Suidas) ſynodic lunar months mentioned by Pliny, which amount to nearly eighteen of our years; a period which furniſhes an eaſy method of predicting eclipſes within the limits of the error of only half an hour; and the formation of this cycle evinces the ſkill of the Chaldæans in aſtronomical computation.

SAVANNAH, l. *penult.* inſert—the ſlaves in the county being 7557, and in the town 2195.

SAUCON, *Lower* and *Upper*, two townſhips of Northumberland county, in Pennſylvania, the former containing 1074, and the latter 1456 inhabitants.

SAVING-BANKS, or *Banks for Savings*, are inſtitutions which, under this appellation, are of recent origin, and which have been eſtabliſhed for the purpoſe of ameliorating the condition of the lower claſſes of mankind. Many ſchemes, of various denominations, have been propoſed with a view partly, or wholly, to this object. One of the moſt ancient of this kind is the inſtitution of male *Friendly Societies*, which was eſtabliſhed about a century ago, and which, to a certain extent, counteracted the preſſure of poor-rates, and the growth of thoſe baneful habits of dependence which poor-rates are adapted to produce. (See FRIENDLY *Societies*.) Theſe ſocieties, though they partake of the nature of inſurances on life and property, by promiſing certain advantages in the event of certain caſualties or contingencies, are, however, preferable to common inſurance offices, inaſmuch as the members inſure each other, and retain all the profits in their own hands for the general advantage. In theſe ſocieties, there is alſo a benevolent principle that influences thoſe who form them, and induces them to feel and expreſs a ſolicitude for each other's welfare. Nevertheleſs, the benefits derived from them by individual members are often diſtant, and in their nature uncertain; ſo that thoſe who have regularly contributed to them for forty or fifty years have not received a ſhilling from their funds. In the year 1772, baron Maſeres publiſhed "A Propoſal for eſtabliſhing Life Annuities in Pariſhes, with a View to the Benefit of the Induſtrious Poor;" and this was accompanied with the ſuggeſtions of ſome alterations by the Rev. Dr. Price. The ingenious baron recommended to the nation, to obtain a law for enabling the pariſh-officers in England to grant, upon purchaſe, to the labouring inhabitants life-annuities, payable out of the pariſh-rates. The plan was approved by perſons of the moſt diſtinguiſhed character at that period, and a bill was brought into the houſe of commons by Mr. Dowdſwell, under the auſpices of Mr. Burke, ſir George Savile, Lord John Cavendiſh, Mr. Dunning, Mr. Thomas Townſhend, and others, for carrying it into effect. The bill was paſſed, but it miſcarried in the houſe of lords at the ſecond reading. However deſirable and excellent this plan might appear in theory, it was not likely to prove effectual; becauſe, for the purchaſe of the propoſed annuities, a ſum of money, of great amount to the purchaſer, was demanded at once; and it was out of his power to procure it. A ſcheme ſomewhat reſembling that of a ſaving-bank was publiſhed in 1797 by Mr. Bentham, in Young's "Annals of Agriculture." One part of his plan comprehended an inſtitution which he denominated "A Frugality-Bank." Into this bank he propoſed to receive the depoſits of the poor, not for the mere purpoſe of yielding an intereſt, and being withdrawn when wanted, but to form or purchaſe an annuity for old age, when the ability for earning would be deſtroyed or impaired. He ſuggeſted, however, that this ſuperannuation annuity ſhould, either wholly or in part, be converted into any other ſpecies of benefit adapted to the exigencies of the owner. *E. gr.* It might be changed into an annuity for an exiſting wife, in the event of widowhood, or into an annuity during the nonage of a certain number of children; or it might ſerve as a pledge for money borrowed; or part of it might be ſold for raiſing a marriage-fund; or it might be ſimply withdrawn. As no attempt was made for the accompliſhment of Mr. Bentham's plan of a frugality-bank, it remained without effect. It is needleſs to mention, or to detail, the various particulars of a plan ſubmitted to the public by Mr. Bone in the years 1805 and 1806; as it comprehends a great number of objects which lay beyond the attainment of the poor.

It was ſtill a matter of regret that, notwithſtanding various ſchemes that had been ſuggeſted, no plan had been deviſed for ſecuring to the labouring claſſes a place of ſafe depoſit for the fruits of their induſtry, ſo as to encourage them to ſave, in the years of active exertion, ſuch a portion of their gains as they might be able to ſpare from their preſent neceſſities, ſo that they might have a reſource in the ſeaſon of miſfortune, or in the decline of life; and more eſpecially to afford them the advantage of receiving regular intereſt for their ſmall ſavings, on a ſcale advancing to a certain extent, in proportion to the amount and continuance of their depoſits. Of the firſt eſtabliſhment of an inſtitution that may properly be called a ſaving-bank, we have an account in N° 84. of "The Reports of the Society for bettering the Condition of the Poor." From this report it appears, that a female benefit-club was eſtabliſhed on the 22d of October, 1798, at Tottenham, near London, under the patronage of a number of ladies. This inſtitution comprehended within its general deſign and plan two other objects, *viz.* a fund for loans to prevent the uſe of pawnbrokers' ſhops, and a "bank for the earnings of poor children." "Children of either ſex," ſays Mrs. Priſcilla Wakefield, an ingenious and benevolent lady, whoſe pen was employed in the inſtruction of the public, and whoſe heart was actuated by a generous concern for benefiting thoſe by whom ſhe was ſurrounded, "or of whatever age, whether belonging to a member or not, are permitted to bring any ſum above a penny to the monthly meeting of the ſtewardeſſes, to be laid up in the funds of the ſociety; where their ſmall earnings may accumulate in ſecurity, until wanted for an apprentice-fee, clothing, or going to ſervice, or ſome other important purpoſe." It is added, "although the children receive no addition to the pittance they depoſit in the fund, yet it anſwers ſeveral purpoſes; it ſtimulates them to earn and to ſave that which would probably be idly ſpent, as of too ſmall importance for care; it often encourages their parents to lay by a little ſtore for them, which they would not have thought of doing, had they not been invited by this opportunity of placing it in ſafety. It habituates the children to induſtry, frugality, and foreſight; and by introducing them to notice, it teaches them the value of character, and of the eſteem of thoſe who, by the diſpenſations of Providence, are placed above them; and in many inſtances, it may ſupply a reſource when it is eſſentially requiſite. The ſucceſs has already exceeded expectation; above ſixty children bring their little treaſure monthly." The ſucceſs of this children's-bank gave riſe to a more extenſive plan in the ſame place in 1804, called "The Charitable or Benefit Bank." This was begun for the expreſs purpoſe of providing a ſafe and profitable place of depoſit for the ſavings of labourers, ſervants, &c., and opened once a month for receipts and payments. The books were at firſt kept by a lady; ſix wealthy individuals were appointed to act as truſtees, each of whom agreed to receive an equal part of the ſums depoſited, and each to be reſponſible to the amount of 100*l.* for the repayment of the principal with intereſt. Any ſum above 1*s.* was to be received, and, to encourage perſeverance, intereſt at the rate of five *per cent.* was to be allowed for every 20*s.* which ſhould remain a year with the truſtees. For every additional 100*l.* it was agreed that a new truſtee ſhould be choſen; and thus the loſs to the truſtees in fulfilling their engagement, with the fluctuation of intereſt, could not be conſiderable. The benefits of the inſtitution were to be confined excluſively to the labouring claſſes; but the reſidence of the depoſitors was not reſtricted. One great advantage attending this plan is, that it holds out to the lower claſſes fixed advantages, and preſerves their little property from that fluctuation of value to which the public funds are liable. This was the firſt diſtinct "Bank for Savings," publicly ſet on foot for the benefit of the lower claſſes: it was founded by Mrs. Wakefield, and remained for ſome time under her inſpection and management. Mrs. Wakefield was ſucceeded in the labour of conducting it by Mrs. Powell, who has appointed a treaſurer, "to whom," ſhe ſays, "I account after every monthly meeting, that I may not be reſponſible *myſelf* for the money lodged in my hands; and I have the purchaſes made in the funds placed in the names of two truſtees." This excellent female adds, that the benefits reſulting from this inſtitution are incalculable, as it has enabled many to ſave ſums which have made them comfortable for life, who would otherwiſe have ſpent the money at an ale-houſe, or lent it to their friends. "I keep," ſays Mrs. Powell, "the whole of the accounts myſelf; and carry on the buſineſs on ſo eaſy and ſimple a plan, that I have nothing to relate. I merely receive and pay principal and intereſt the firſt Monday in every month, for an hour and a half. I have no aſſiſtance whatever, except that I ſend any money I have to the treaſurer, and now and then compare his caſh-book with my own. The only care I have is to keep the reſpective accounts correct. I have a ledger, a caſh-book, an intereſt account, and a waſte-book. — I call a meeting of the truſtees once a year to audit my accounts, and thoſe of the treaſurer, which are the counterpart of mine." In July 1817, an act was paſſed for the protection and encouragement of banks for ſavings in England; and the ſeveral proviſions and arrangements of this uſeful act are minutely detailed in the laſt edition of Mr. Roſe's excellent "Tract on Saving Banks." Societies ſimilar to thoſe of the banks for ſavings have become of late years very numerous both in England and Scotland; and in England and Wales many of them have opened accounts with the bank of England under the late act of parliament.

Although ſome few inſtitutions of the ſame and others of a ſimilar kind had been eſtabliſhed ſoon after the commencement of the preſent century, yet their increaſe was ſlow and inconſiderable until the year 1810; when the Rev. Mr. Henry Duncan, availing himſelf of one of the proviſions of Mr. Bone's plan already mentioned, publiſhed an account of it, and propoſed that the gentlemen of Dumfriesſhire ſhould eſtabliſh banks for ſavings in the different pariſhes of the county. Whilſt his zeal was applauded, his recommendation was diſregarded. However he ſteadily perſevered, and determined to make the experiment in his own pariſh; and denominated his new eſtabliſhment "The Pariſh Bank Friendly Society of Ruthwell." He ſo far ſucceeded, that at the time of publiſhing the ſecond edition of his eſſay, his capital amounted to a ſum exceeding 1400*l.* About the beginning of the year 1813, a very reſpectable and uſeful ſociety was eſtabliſhed at Edinburgh for the ſuppreſſion of beggars. Mr. J. H. Forbes, an active director of this anti-mendicant ſociety, having acquainted himſelf, by a peruſal of the reports for bettering the condition of the poor, with the plan of the charitable bank at Tottenham, and with the regulations of the ſervants' fund at Bath inſtituted in 1808, propoſed a plan and adopted regulations for the eſtabliſhment of a ſavings' bank in the metropolis of Scotland. From the time of the publication of the firſt edition of the Eſſay on Pariſh Banks, the ſecond Report of the Edinburgh Society, and the Report of the Provident Inſtitution at Bath, ſaving banks have multiplied to ſuch a degree as to leave no room for doubt that the benefit of the ſyſtem will be ſoon communicated to every town and village in Great Britain and Ireland. It does not appear, however, that any inſtitution of this kind of any note was opened in London till the end of January in 1816, when the "London Savings' Bank" commenced its operation. But they are now prevalent through various parts of the city and ſuburbs. Of their importance and utility none can entertain any doubt; although, like other uſeful ſchemes, they may be liable to ſome objections. The lords' committee in their report on the poor laws, bear the following teſtimony in their favour. "The committee are decidedly of opinion, from every information they have received, that it is expedient to recommend the adoption of 'Provident or Saving Banks,' as likely to increaſe the comforts and improve the condition of the poor, and to render them leſs dependent on parochial relief; which, under the beſt and moſt conſiderate adminiſtration of it, can never be ſo ſatisfactory to the perſon who is the object of it, or ſo conſiſtent with thoſe honourable feelings of pride and independence, which are implanted in the breaſt of man, as that reſource which is the reſult of his own induſtry and the produce of his own exertions." The commons' committee alſo report, "that they have had no difficulty in perceiving how every extenſion of the poors' fund is in general ſure to be followed up by a more than proportional increaſe of actual poverty;" nor has it eſcaped their obſervation, "that the relaxation of *providential* and *economical habits* is ſure to go much beyond the capability of any inſtituted fund to meet the effects of this relaxation." "If your committee have been deſirous to recommend ſome gradual but effectual check to the otherwiſe certain growth and ultimately inevitable effects of the preſent ſyſtem of poor laws, they have not been leſs attentive to the duty of ſuggeſting every poſſible means of affording ſpecial encouragement and facility to meritorious induſtry, for reſcuing itſelf from the evils of an habitual reliance on parochial relief; and they have looked to this part of the ſubject with the more anxiety, from the entire conviction, that in proportion to the aggregate number of perſons who are reduced to this unfortunate dependence, muſt be not only the increaſe of miſery to each individual, but alſo the moral deterioration of the people, and ultimately from the concurrent tendency of theſe evils, the inſecurity and danger of the ſtate itſelf. The encouragement of frugal habits would, in any ſtate of ſociety, be an object of importance, but your committee are ſtrongly impreſſed with the opinion, that, in the preſent ſituation of the poor of this country, it is chiefly by the gradual reſtoration of a feeling of reliance upon their own induſtry, rather than upon the parochial aſſeſſments, that the tranſition to a more wholeſome ſyſtem can be affected.

“Your committee have the ſatisfaction of ſeeing the inſtitutions for the ſecure and profitable depoſit of the earnings of the induſtrious, which was heretofore projected, are now by the ſpontaneous exertions of individuals, in actual and ſucceſsful operation ; and from the growth of the ſyſtem of ſaving-banks, they are inclined to expect very beneficial reſults, not only in affording to the induſtrious poor a ſecure depoſit for their ſavings, but in familiarizing them with a practice, of which the advantage will be daily more apparent.” Both the above cited reports are juſtified by ample evidence from the teſtimony of individuals, which is annexed to them. We ſhall here ſubjoin an extract from the third report of the “Edinburgh Society for the Suppreſſion of Beggars,” 1815. “To improve permanently, and effectually to better the condition of the poor, can be accompliſhed only by encouraging among them habits of induſtry, ſobriety, prudence, and foreſight. The very general adoption of the plan of inſtituting ſavings' banks ſhews, that the genuine and enlightened principles of benevolence are beginning to be well underſtood, and will be zealouſly acted upon whenever a proper opportunity occurs ; for no ſcheme ſeems better calculated for the comfort of the poor than this ſimple plan for enabling the poor man to lay up in the day of health for the hour of ſickneſs. *It relieves from want without checking induſtry ;—it ſecures independence without inducing pride ;—it removes thoſe painful miſgivings which render the approaches of poverty ſo appalling, and often paralize the exertions which might ward off the blow ;—it leads to temperance and the reſtraint of all the diſorderly paſſions, which a waſteful expenditure of money nouriſhes ;—it produces that ſobriety of mind, and ſteadineſs of conduct, which afford the beſt foundation for the domeſtic virtues in humble life.* The effects of ſuch an inſtitution as this upon the character of the people, were it to become univerſal, would be almoſt inappreciable.” But it would be endleſs to cite authorities for eſtabliſhing a principle ſo univerſally acknowledged by all whoſe obſervation and experience render them competent judges. We are therefore the more ſurpriſed to find it aſſerted in the part of the Supplement to the Encyclopædia Britannica recently publiſhed, that “taken by themſelves, it is at leaſt a doubt whether ſavings' banks may not produce as great a quantity of evil as good.” See Annals of Banks for Savings. London. Richardſon, &c. 1818.

SAUSSURITE. See Mineralogy, *Addenda*.

SAYBROOK. Add—In 1810 it contained 3994 inhabitants, including 5 ſlaves.

SCALE *of Chemical Equivalents*. The deſcription of this ingenious and uſeful inſtrument, contrived by Dr. Wollaſton, has been omitted in its proper place ; but its importance demands that it ſhould be introduced here.

The author ſtates, that he does not offer this inſtrument as an attempt to correct the eſtimates that have been formed by others, but as “a method by which their reſults may be advantageouſly applied, in forming an eaſy approximation to any object of our inquiries.”

“The means (to uſe Dr. W.'s own words) by which this is effected, may be in part underſtood by inſpection of the plate, (*Chemiſtry, Plate* XXI. *figs.* 5, 6.), in which will be ſeen the liſt of ſubſtances intended to be eſtimated, arranged on one or other ſide of a ſcale of numbers in the order of their relative weights, and at ſuch diſtances from each other, according to their weights that the ſeries of numbers placed on a ſliding ſcale can at pleaſure be moved, ſo that any number expreſſing the weight of a compound may be brought to correſpond with the place of that compound in the adjacent column. The arrangement is then ſuch, that the weight of any ingredient in its compoſition, of any re-agent to be employed, or precipitate that might be obtained in its analyſis, will be found oppoſite to the point at which its reſpective name is placed.

“In order to ſhew more clearly the uſe of this ſcale, the plate exhibits two different ſituations of the ſlider, in one of which oxygen is 10, and other bodies are in their due proportion to it ; ſo that carbonic acid being 27.54, and lime 35.46, carbonate of lime is placed at 63. In the ſecond figure, the ſlider is repreſented drawn upwards, till 100 correſponds to muriate of ſoda, and accordingly the ſcale then ſhews how much of each ſubſtance contained in the table is equivalent to 100 of common ſalt. It ſhews with regard to the different views of the analyſis of this ſalt, that it contains 46.6 dry muriatic acid and 53.4 of ſoda, or 39.8 ſodium and 13.6 oxygen : or if viewed as chloride of ſodium, that it contains 60.2 chlorine and 39.8 ſodium. With reſpect to re-agents it may be ſeen, that 283 nitrate of lead containing 191 of litharge employed to ſeparate the muriatic acid, would yield a precipitate of 237 muriate of lead, and that there would then remain in ſolution nearly 146 nitrate of ſoda. It may at the ſame time be ſeen, that the acid in this quantity of ſalt would ſerve to make 232 corroſive ſublimate, containing 815.5 red oxyd of mercury, or would make 91.5 muriate of ammonia, compoſed of 62 muriatic gas, (or hydromuriatic acid,) and 29.5 ammonia. The ſcale alſo ſhews, that for the purpoſe of obtaining the whole of the acid in diſtillation, the quantity of oil of vitriol required is nearly 84, and that the reſiduum of this diſtillation would be 122 dry ſulphate of ſoda, from which might be obtained by cryſtallization 277 of Glauber's ſalt, containing 155 water of cryſtallization. Theſe and many more ſuch anſwers appear at once by bare inſpection, as ſoon as the weight of any ſubſtance intended for examination is made by motion of the ſlider, correctly to correſpond with its place in the adjacent column.

“With reſpect to the method of laying down the diviſions of this ſcale, thoſe who are accuſtomed to the uſe of other ſliding rules, and are practically acquainted with their properties, will recognize upon the ſlider itſelf the common Gunter's line of numbers (as it is termed), and will be ſatisfied that the reſults which it gives are the ſame that would be obtained by arithmetical computation.” See Gunter's *Scale*.

This ſcale may be had at the different mathematical inſtrument-makers; and we need ſcarcely add, that the numbers laid down upon it differ a little from thoſe recently determined by Dr. Thomſon. Theſe differences, however, are in general very trifling ; but ſhould any one prefer uſing the new numbers, they will find them ſtated in the tables appended to Atomic *Theory*.

SCAPOLITE. See Mineralogy, *Addenda*.

SCHILLER-SPAR. See Mineralogy, *Addenda*.

SCHOOLS, *Military*, the principal inſtitutions of this kind in our country, where officers may be formed for the profeſſion by acquiring ſound knowledge both in theory and practice, are the Royal Academy of Woolwich, the inſtitution at Sandhurſt near Windſor, and the academy at Portſmouth.

SCHUYLKILL. Add—Alſo, a townſhip of Berks county, containing 353 inhabitants.

SCIOTO. Add—Alſo, a townſhip of Pickaway county, having 216 inhabitants.—Alſo, a townſhip of Roſs county, having 840 inhabitants.

Vol. XXXII.

SCOTLAND, col. 22, l. 29, for extent *r.* extinct.

SCOTS, l. 2, inſert—thoſe of the town included.

SCREEN, Skreen, or Altar-skreen, in *Architecture.* (See Reredos.) The choir-ſcreen is the fence which ſeparates the choir from the nave of the church.

SCRIVAN. Add—of whom 1816 were ſlaves in 1810.

SCROFULOUS, or Scrophulous *Tumours*. See Scrophula, Hip-joint, *Diſeaſe of,* White-swelling, &c.

SCRUBGRASS, in *Geography*, a townſhip of Venango county, in Pennſylvania, containing 540 inhabitants.

SCULPTURE, col. 2, l. 22, omit the colon after required, and inſert a comma after manner.

SEABROOK, l. 2, *r.* 774.

SEAL. Add—The broad ſeal of England was ſtolen from the lord chancellor's houſe in Ormond-ſtreet, March 24th, 1784; and a new one was brought into uſe, upon the union of Ireland with Great Britain, January 1ſt, 1801.

Seal, in *Geography*, a townſhip of Scioto county, in Ohio, having 379 inhabitants.

SEBASTICOOK, a townſhip of America, in the diſtrict of Maine, and county of Somerſet, having 105 perſons.

SECRETIONS, Secreted *Fluids, Chemical Properties of.* See Fluids, *Animal.*

SECTS *of Hindoos*, col. 2, l. 8 and 23 from bottom for Bhon *r.* Bhow. Col. 10, l. 31, tranſpoſe the points.

SEDATIVUM Sal. Add after Salt—under the article Salts.

SEEING, col. 3, l. 5, add—Dr. Wells, in his "Eſſay on ſingle Viſion with two Eyes," has reduced the principal opinions upon this ſubject into two claſſes. The firſt claſs comprehends thoſe of Galen, Alhazen, Rohault, Dr. Briggs, and ſir Iſaac Newton; all of whom have regarded the queſtion as equivalent to the following one: Why ſhould the mind be affected with only one perception from two impreſſions upon the external organs of ſight, ſince either of thoſe impreſſions is of itſelf ſufficient to produce a ſimilar perception? To this queſtion they reply, that the two impreſſions are united before they are communicated to the mind, and they only differ concerning the manner in which ſuch an union takes place. Againſt the opinions now ſtated Dr. Wells objects, that they muſt be conſidered as mere conjectures, founded upon certain ſuppoſed changes in the brain and nerves, the exiſtence of which, from the nature of the parts, it is impoſſible either to demonſtrate or to refute by experiments; and that no one of them, though admitted to be true, is yet ſufficient to explain the phenomena on account of which it was framed. To the ſecond claſs, Dr. Wells refers the opinions of thoſe who maintain, that an object is ſeen ſingle by both eyes, becauſe it is ſeen by each of them in the ſame external place; and who profeſs to point out ſome law, or conſtant rule of viſion, from which this ſameneſs of place is to be derived as a neceſſary conſequence. This view of the queſtion, as our author imagines, was firſt ſuggeſted by Aguilonius, and it has been ſince adopted by Dechales, Dr. Porterfield, Dr. Smith of Cambridge, and Dr. Reid of Glaſgow.

Aguilonius, who has been followed in the ſame train of reaſoning by Dechales and Dr. Porterfield, begins with defining the terms *horopter* and *plane of the horopter*. If a line be drawn through the point of the mutual interſection of the optic axes, parallel to the interval between the eyes, this from its office is denominated the horopter; and a plane, ſuppoſed to paſs through this line perpendicular to the plane of the optic axes, is called by Aguilonius the plane of the horopter. According to his ſtatement, it is a law of our conſtitution, that all bodies which we ſee with one glance or look, whatever are their real places, appear to each eye to be ſituated in this plane; and upon this ſuppoſition he ſhews why ſome ſhould be ſeen ſingle with two eyes, and others double. For according to a recent opinion, which he has advanced, and which other writers on viſion have not contradicted, the two lines of direction in which an object is ſeen with both eyes, can meet each other only in one point, and therefore all bodies which are really ſituated in the plane of the horopter, muſt neceſſarily appear ſingle, as the lines of direction in which any one of them is perceived by the two eyes, coincide in that plane, and no where elſe; and all bodies which are not ſituated in the plane of the horopter muſt as neceſſarily appear double, ſince, in this caſe, the lines of their viſible directions interſect each other, either before or after they paſs through it. To this reaſoning Dr. Wells replies, that if the viſible places of all bodies were contained in the plane of the horopter, they would appear of magnitudes proportional to the angles which they ſubtended at the eye; *e. gr.* a finger held near to the face would ſeem as large as the part of a remote building which it might conceal from the ſight. But this is contrary to experience, and therefore no reaſoning that depends upon it can be admitted.

If it be aſked, ſays Dr. Smith, why, in ſeeing with both eyes, we do not always ſee double, becauſe of a double ſenſation, it is ſufficient to reply, that in the ordinary uſe of our eyes, in which the pictures of an object are conſtantly painted upon "correſponding places or points" of the retinas, the predominant ſenſe of feeling has originally and conſtantly informed us that the object is ſingle. What he means by "correſponding points," he thus explains: When the optic axes are parallel, or meet in a point, the two middle points of the retinas, or any points which are equally diſtant from them, and lie on the ſame ſides of them, either towards the right hand or left hand, or upwards or downwards, or in any oblique direction, are called "correſponding points." Accordingly our idea of the outward place of an object is connected with both theſe ſenſations; as is manifeſt by its appearing in two places when its pictures are not painted upon correſponding places of the retinas; which is only a direct conſequence ariſing from our general habit of ſeeing. If it be aſked why, in order to produce ſingle viſion, all men agree in directing their eyes toward the object in ſuch a manner as to receive its pictures upon correſponding points of the retinas, ſince cuſtom might have connected the ſenſations of any other two points with the information of its unity from feeling? To this objection, ſuggeſted by Dr. Reid, the reply may be made in Dr. Smith's own words (vol. i. p. 46.): "When we view an object ſteadily, we have acquired a habit of directing the optic axes to the point in view; becauſe its pictures falling upon the middle points of the retinas, are then diſtincter than if they fell upon any other places; and ſince the pictures of the whole object are equal to one another, and are both inverted with reſpect to the optic axes, it follows that the pictures of any collateral point are painted upon correſponding points of the retinas."

Dr. Wells is of opinion, that Dr. Smith's hypotheſis for the ſolution of this celebrated queſtion is liable to other objections not ſo eaſily repelled. Admitting the fact reſpecting correſponding points to be true, it may be obſerved, that if we are taught by *feeling* to ſee objects ſingle, notwithſtanding a ſenſation in each eye, the informations of the former ſenſe ought to be uniform, or elſe one ſet of viſual appearances would be aſſociated with different reports from feeling, and no certain mark would be afforded us which of them we ſhould truſt. Feeling, as Dr. Smith allows, is not always the predominant, but ſometimes the inferior ſenſe; and its informations are not conſtant and original, but variable and derived. When a difference occurs between the informations of the two ſenſes, it is natural to enquire what rule have we for determining which is moſt worthy of credit. But ſuppoſing that the ſenſe of touch to have originally and conſtantly informed us that objects are ſingle, it would not follow that we are thence taught to ſee them alſo ſingle. For, ſince the place which an object ſeems to either eye to poſſeſs, manifeſtly depends both upon its apparent diſtance and its apparent direction from that eye, if viſible place be, in the language of Dr. Smith, only an *idea* of real or tangible place, viſible direction muſt bear the ſame relation to tangible direction; whence it follows, that we can never have a more accurate knowledge of the direction, in which an object may lie from any part of our bodies, by ſight than by touch. Whereas the contrary is proved by facts. Moreover whatever be the direction in which an object may appear to either eye, it cannot be ſeen in the ſame place by both, except at ſome point common to the two directions. Accordingly Dr. Smith ſays, that when an object is perceived ſingle with both eyes, it is ſeen at the mutual interſection of the two viſual rays; the viſible direction of any object coinciding, according to him, with the viſual ray, or the principal ray of the pencil which flows from it to the eye. Should we then even allow, that all we know by ſight of the places of bodies has been borrowed from feeling, it will ſtill be eaſy to ſhew, that the rule of viſion for each eye, which he has derived from ſuch experience, that of our ſeeing objects in the directions of their viſual rays, is inconſiſtent with many of the phenomena of ſight with two eyes; and, conſequently, that he has left unremoved the chief difficulty of his ſubject, which was to explain the ſingle appearance of objects to both eyes, from thoſe laws, or rules of viſion, which affect each of them ſingly. For it is a well-known fact, that if two bodies of the ſame ſhape, ſize, and colour, be placed, one in each optic axis, they appear but as one body, provided they be at equal diſtances from the eyes. Agreeably to the theory of our ſeeing objects in the direction of their viſual rays, this cannot happen, except the united body appear at the interſection of the optic axes. Dr. Smith, accordingly, maintains that it does. In the firſt place, Dr. Wells appeals to experiment for a direct proof that it does not; and, in the ſecond, he obſerves, that, as the two bodies in the optic axes appear as one, whether they be ſituated within or beyond the concurrence of thoſe lines, and as a right line joining the bodies, and extended both ways, appears at the ſame time to the ſight as a right line, it follows, upon admitting the fact which he has denied, that all objects in the plane of the optic axes which are ſeen in one poſition and ſtate of the eyes, however near to us, or however remote they may in reality be, muſt appear to be equally diſtant, or rather in a line drawn through the concourſe of the optic axes, parallel to the interval between the eyes, and named by opticians the *horopter*. Again, if a right line be made to paſs through any part of the plane of the optic axes, at right angles to it, the portions above and below this plane are perceived to be in the ſame right line with the point which is ſituated in it, and the whole appears perpendicular to the plane. But the point in the plane is ſeen, by the laſt article or propoſition, in the horopter; the whole, therefore, of the perpendicular line muſt be ſeen in a plane paſſing through the horopter at right angles to that of the optic axes; or, in other words, in the *plane of the horopter*, in which conſequently all bodies will have their viſible places. But this was the very opinion of Aguilonius, to which he was probably led by a ſimilar train of reaſoning; though, as a teacher, he might chooſe rather to ground it immediately upon an original law of our conſtitution.

Dr. Reid agrees with Dr. Smith in his general principle, but differs from him in maintaining the property to be original by which any two places in the retinas exhibit only one object, while Dr. Smith derives it altogether from cuſtom. They differ alſo with reſpect to the meaning of a term; Dr. Smith calling *correſponding points*, ſuch as have the poſition juſt mentioned, whether they repreſent objects ſingle or not; whereas Dr. Reid ſays, that thoſe points correſpond, whatever their poſition may be, which repreſent objects ſingle; and he appears to Dr. Wells not always to attend to the double uſe of the ſame term, when he ſpeaks of the opinions of Dr. Smith.

Could it be ſhewn, ſays Dr. Wells, that the places of the two retinas, which repreſent an object ſingle when each receives its picture, are not the centres, or ſuch others as are ſimilarly ſituated, an obvious inference would be, that the ſingle appearance of the object is not occaſioned by a property in thoſe places, beſtowed upon them for this ſpecial purpoſe by nature; it being reaſonable to expect, that ſuch a property ſhould be found, if any where, in thoſe parts of the retinas which are the moſt like to each other.

Anatomiſts have commonly taught, that the centres of the ſpheres, to which the cornea, the ball of the eye, and the two portions of the cryſtalline belong, are all placed in the ſame right line, hence called the optic axis, and that this being produced both ways, paſſes through the centres of the cornea and retina, conſidered as ſurfaces. Opticians, on their part, obſerve, that an object appears ſingle to both eyes, when the axis of each is accurately directed to it; from which they infer, that the centres of the retinas agree in ſuggeſting but one object, though each receives its picture.—Again; ſince it is known by experience, that, while any object is ſeen ſingle, to which the optic axes are turned, others at the ſame diſtance from the eyes likewiſe appear ſo; and ſince the pictures of theſe lateral objects fall upon points in the two retinas, equidiſtant from their centres, and both upon the ſame ſide, that is, both to the right or left of the centres, or both above or below them, opticians conclude, that every two places of the retinas, which are ſimilarly ſituated with reſpect to the centres, muſt alſo agree in exhibiting but one object, though pictures are received by both.

But the whole of this reaſoning, ſays Dr. Wells, is built upon a circumſtance in the fabric of the eye, which has been ſhewn by ſome of the moſt eminent anatomiſts not to have place. For Varolius long ago obſerved, that the cryſtalline is not ſituated in the middle of the eye, but more *inwardly;* and the accurate Zinn has more lately mentioned, that if the eye be divided into a right and left half, the centre of the cryſtalline will be found in the inner portion. Haller confirms this fact; and Winſlow's obſervation, that the centres of the pupil and iris do not coincide, but that the former is nearer to the noſe than the latter, is connected with it; ſince both Zinn and Haller agree, that the centre of the pupil is placed in the axis of the cryſtalline, while that of the iris is evidently in the common axis of the cornea and globe. Now, a conſequence of this poſition of the cryſtalline is, that, contrary to what is univerſally maintained, no ray of light whatſoever can paſs unbent to the retina from the atmoſphere, or any other medium differing in refractive power from the aqueous humour. If, then, the line joining the centres of the cornea and globe of the eye be what is called the optic axis, and if it be true, that objects appear ſingle when we direct both theſe axes to them, it muſt be evident, to ſuch as are acquainted with the common rules of optics, that the pictures of thoſe objects do not fall upon the centres of the retinas, but more internally ; and, therefore, that the centres and all the other points of thoſe membranes, which by the preſent ſyſtem are ſuppoſed to repreſent objects ſingle, do in fact exhibit them double.

Admitting, however, that objects are repreſented ſingle, when their pictures fall upon the centres of the retinas, or upon any other two points which are equally diſtant from the centres, and both upon the ſame ſide, it appears to Dr. Wells, notwithſtanding, to be in violation of all analogy, to aſcribe this effect, with reſpect to the points at leaſt, on the right and left ſides of the centres, to any peculiar property which they poſſeſs from nature. For when anatomiſts find, in a new ſpecies of animals, organs ſimilar in ſtructure to thoſe of others they are already acquainted with, they immediately conclude, that they are alſo ſimilar in regard to their uſe. In animals of the ſame ſpecies, they believe with certainty, that the organs they ſee in one have the ſame properties as the correſponding organs of another ; and, if it be poſſible, they attribute with greater certainty the ſame properties to two organs of the like kind, which are found in the ſame individual. Such is the influence of the rule, that reſemblance of property is implied by reſemblance of ſtructure. Now it is an univerſal fact, that if an animal be divided into a right and left half, the correſponding parts of thoſe organs which exiſt in pairs are found at equal diſtances from the plane of partition. Thus, for inſtance, in reſpect to the eyes, the two optic nerves penetrate their outward coat at the ſame diſtance from this plane. Their muſcles, blood-veſſels, and every other of their component parts and appendages, are arranged in the like manner ; thoſe neareſt to the dividing plane, or the innermoſt, in the one, being ſimilar in ſtructure to the innermoſt in the other, the outermoſt to the outermoſt, and the intermediate to the intermediate. It is ſurely, therefore, natural to expect, that ſuch parts ſhould alſo be ſimilar in their properties ; and we in fact find this ſimilarity to exiſt, wherever it can be clearly aſcertained what the properties are. Every perſon, for example, admits, that the internal ſtraight muſcle of the right eye performs the ſame office, with reſpect to that eye, as the other internal ſtraight muſcle does with reſpect to the left eye. What judgment are we then to form of the opinion of Dr. Reid, which attributes the ſame original properties, or rather the joint poſſeſſion of one original property, to places in the retinas ſituated at unequal diſtances from the general plane of partition ; which makes an *external* point in one to correſpond, in uſe, with an *internal* point in the other, and this too by a principle implanted by nature ? If ſuch things exiſt, they may, at leaſt, be ſaid to ſtand oppoſed to a moſt extenſive analogy.

To theſe arguments, *à priori*, againſt the opinion of Dr. Reid, Dr. Wells adds others derived from a conſideration of its conſequences : but our limits oblige us to refer for theſe to the author's own account. If objects, it may be ſaid, appear ſingle neither from cuſtom, nor from an original property of the eyes, have we not an effect without a cauſe, and muſt there not be ſomething wrong in the facts or reaſoning which lead to ſuch a concluſion ? Dr. Wells replies : Since viſible place contains in it both viſible diſtance and viſible direction, it is not neceſſary that the ſingle appearance of an object to both eyes, ſhould depend altogether either upon cuſtom, or an original principle of our conſtitution ; for its viſible diſtance to each eye may be learned from feeling, and its viſible direction be given by nature ; in which caſe, the unity of its place to the two eyes, will be owing to neither of thoſe cauſes ſingly, but to a combination of both ; and this Dr. Wells regards as a ſufficient reply.

Dr. Wells proceeds to propoſe and illuſtrate his own theory for the ſolution of the queſtion, why objects are ſeen ſingle with two eyes ; or, in other words, why they appear in the ſame place to both ? The viſible place of an object being compoſed, as he conceives, of its viſible diſtance and viſible direction, it becomes neceſſary, for ſhewing how it may appear the ſame to both eyes, to explain in what mannner the diſtance and direction, which are perceived by one eye, may coincide with thoſe which are perceived by the other. He begins with a conſideration of the diſtance. In judging of diſtance by ſight, no perſon has ever obſerved, that while an object ſeemed to one of his eyes at a certain diſtance, it has appeared to the other to be at a different diſtance, and from this circumſtance alone has been ſeen double ; or, to expreſs the ſame thing in another way, that while the viſible appearance of an object to one eye, covered the viſible appearance of the ſame object to the other eye, the two appearances did not ſeem entirely to coincide, and make one, but were ſeen ſeparate by the two eyes. Hence it follows, that the difficulty in finding a true and ſufficient cauſe for the union of the two viſible places of one or two objects to two eyes, muſt therefore conſiſt altogether in ſhewing, in what manner the two apparent directions may coincide, conſiſtently with the attending phenomena.

From the time of Kepler's diſcovery of the ſeat and manner of viſion, there have been, ſays our author, only two theories offered reſpecting the apparent directions of objects. One is, that they are perceived in the direction of lines paſſing from their pictures on the retina, through the centre of the eye ; the other, that their apparent directions coincide with their viſual rays. But both of theſe theories are inconſiſtent with the phenomena of ſingle viſion with two eyes. For according to neither of them can an object, placed at the concourſe of the optic axes, be ſeen ſingle, unleſs we have a moſt accurate knowledge of its diſtance ; nor will either admit two objects to be ſeen as one, which are ſituated in the optic axes, whether on this ſide, or beyond where they meet, unleſs the united object be referred by ſight to their very point of interſection ; both of which concluſions are contradicted by experience. It is evident, therefore, that ſome other theory of viſible direction is required, which ſhall not be liable to theſe objections.

Dr. Wells's theory is illuſtrated in the following propoſitions, which we can merely ſtate without enlargement : 1. Objects ſituated in the optic axis do not appear to be in that line, but in the common axis ; *i.e.* in a line drawn from the middle of the viſual baſe, through the point of interſection of the optic axes, or parallel to them, if they be parallel to each other. 2. Objects, ſituated in the common axis, do not appear to be in that line, but in the axis of the eye, by which they are ſeen. 3. Objects, ſituated in any line drawn through the mutual interſection of the optic axes to the viſual baſe, do not appear to be in that line, but in another, drawn through the ſame interſection, to a point in the viſual baſe diſtant half this baſe from the ſimilar extremity of the former line, towards the left, if the objects be ſeen by the right eye, but towards the right, if ſeen by the left eye. In the application of the theory which Dr. Wells has endeavoured to eſtabliſh in the preceding propoſitions, he obſerves, that, if the queſtion be concerning an object at the concourſe of the optic axes, it is ſeen ſingle, becauſe its two ſimilar appearances, in regard to ſize, ſhape, and colour, are ſeen by both eyes in one and the ſame direction, or, if you will, in two directions, which coincide with each other through the whole of their extent. It therefore matters not, whether the diſtance be truly or falſely eſtimated; whether the object be thought to touch our eyes, or to be infinitely remote. And hence we have a reaſon, which no other theory of viſible direction affords, why objects appeared ſingle to the young gentleman mentioned by Mr. Cheſelden, immediately after his being couched, and before he could have learned to judge of diſtance by ſight.

When two ſimilar objects are placed in the optic axes, one in each, at equal diſtances from the eyes, they will appear in the ſame place, and therefore one, for the ſame reaſon that a truly ſingle object, in the concourſe of the optic axes, is ſeen ſingle. Here again, as the two viſible directions coincide in every point, it is not neceſſary that the united appearance ſhould be judged to be at any particular diſtance; that it ſhould be referred, for inſtance, to the concourſe of the optic axes, where the two other theories of viſible direction are obliged to place it, in oppoſition to the plaineſt obſervation.

Objects, any where in the horopter, will be ſeen ſingle, becauſe their apparent directions to the two eyes will then completely coincide. And for a contrary reaſon, thoſe placed in any other part of the plane of the optic axes will appear double. To make theſe things evident, let a line paſs through the point of interſection of the optic axes and any given object, to the viſual baſe, which is to be produced, if neceſſary; and let it be called the line of the object's real poſition. Take afterward, in the viſual baſe, or its production, two points, one on each ſide of the line of real poſition, and both diſtant from its termination there, half the viſual baſe. Lines drawn from theſe points, through the point of interſection of the optic axes, muſt conſequently contain the two viſible poſitions of the object. But when this is ſituated in the horopter, the line of real poſition will coincide with the horopter, and will not therefore reach the viſual baſe, unleſs at an infinite diſtance from the eyes. For which reaſon, the two lines, containing the viſible poſitions of the object, muſt fall upon the viſual baſe at a like diſtance, and muſt conſequently be regarded as coinciding with each other. When the object is not in the horopter, the two lines of viſible direction will be found, by the ſame means, not to coincide.

SEGO, col. 2, l. 13, *r.* Manſong; l. 17, *r.* Sanſanding.

SELENIUM, in *Chemiſtry*, the name of an elementary ſubſtance recently diſcovered by Berzelius, and conſidered by him as a kind of ſemi-metal. This ſubſtance was firſt miſtaken for tellurium. It was obtained from a ſulphuric acid manufactory at Gripſholm, where pyrites from the mines of Fahlun were employed, and which of courſe contained the ſubſtance in queſtion. It alſo exiſts in the ſame mines combined with copper. Selenium has the properties of a metal combined with thoſe of ſulphur to ſo great a degree, that it is difficult to know under which head to claſs it, and in ſhort whether it might not be rather conſidered as a new ſpecies of ſulphur. In its metallic ſtate it has a brilliant metallic luſtre externally, with a tinge of red. The fracture is vitreous, like that of ſulphur, but with a very brilliant luſtre of a grey colour. It becomes ſoft at a temperature of 212°, and at a higher temperature it melts; and at a temperature about equal to that at which mercury boils it may be diſtilled. When in a gaſeous ſtate, it is yellow, like ſulphur. When ſublimed in a large veſſel, it is depoſited in the form of flowers of a cinnabar colour, but not oxydized. During its cooling, it preſerves for ſome time a certain degree of fluidity, ſo that it may be moulded between the fingers, and drawn into threads, which are tranſparent, and of a ruby-red colour when held between the eye and the light; but by reflected light they exhibit a brilliant metallic luſtre. It burns with an azure-blue flame when heated with a candle, and exhales a ſtrong odour of horſe-radiſh.

Selenium combines with metals, and generally produces a reddiſh flame. The alloys are commonly grey, with a metallic luſtre. The ſeleniuret of potaſſium diſſolves in water, without evolving any gas, and produces a red-coloured ſolution, which has the taſte of hydroſulphuret of potaſh. When muriatic acid is poured upon this ſeleniuret, a ſeleniuretted hydrogen gas is diſengaged, which is ſoluble in water, and precipitates all metallic ſolutions, even thoſe of zinc and iron. This gas has the odour of ſulphuretted hydrogen gas when it is diluted with air, but if it be breathed leſs diluted it produces a painful ſenſation in the noſe, and a violent inflammation, ending in catarrh, which continues for a conſiderable time.

Selenium combines with the alkalies both in the humid way and by fuſion. Theſe combinations are red. The ſeleniurets of barytes and lime are alſo red, but they are inſoluble. It alſo diſſolves in melted wax, and in the fat oils; the ſolutions are red, but have no hepatic odour. There exiſt alſo ſeleniuretted hydroſeleniurets of the alkalies and of the earths.

Selenium diſſolves in nitric acid by the aſſiſtance of heat; the ſolution evaporated and ſublimed yields a maſs cryſtallized in needles, which is a pretty ſtrong acid. It has a pure acid flavour, and forms peculiar ſalts with the alkalies, earths, and metallic oxyds. The ſelenic acid is ſoluble in water and in alcohol: its combinations with potaſh and ammonia are deliqueſcent; the latter is decompoſed by fire, water is given out, and the ſelenium is reduced The ſeleniates of barytes and lime are ſoluble in water. The ſelenic acid mixed with muriatic acid is decompoſed by zinc, and the ſelenium is precipitated in the form of a red powder; by ſulphuretted hydrogen gas an orange-yellow precipitate is formed.

Such is a brief ſummary of the properties of this curious ſubſtance. From the ſmall quantities in which it has hitherto been found, we believe no experiments have been made to aſcertain the weight of its atom, &c.

SELKIRK, l. 23 from bottom, for 440 *r.* 439.

SELKIRKSHIRE. In 1811 this ſhire contained 1080 houſes, and 5889 perſons; *viz.* 2750 males, and 3139 females: 500 families being employed in agriculture, and 363 in trade, manufactures, and handicraft.

SENECA. Add—Alſo, a county of New York, containing 16,609 inhabitants, of whom 101 are ſlaves.—Alſo, a town of Guernſey county, in Ohio, having 300 inhabitants.

SEPOY, a term uſed in India to denote a native ſoldier.

SERA-WOLLIES. See KAJAAGA.

SERICA. Add—(See THIBET.) Hugh Murray, eſq. in his "Ancient Geography of Eaſtern and Central Aſia," publiſhed in the Edinburgh Tranſactions, concludes from the works of Ptolemy and his contemporaries, that Serica was China.

SERMON, col. 4, l. 38, for Buller *r.* Butler.

SERPENTARIUS, or Snake-eater, in *Ornithology*, a genus of birds allied both to Vultur and Falco, but moſt nearly to the former. The characters are, beak vulturine, tongue pointed, and legs very long. It includes one ſpecies, *viz.* the S. *Africanus*, or aſh-coloured ſnake-eater, with the hind-head creſted, the tail cuneated, and the middle tail-feathers lengthened. This is the V. Serpentarius or Secretary vulture of Latham, and the Falco Serpentarius of Gmelin's Linnæus. The moſt accurate deſcription is that of La Vaillant, who, in his African travels, had an opportunity of obſerving it in its native regions. We refer to the 7th volume of Shaw's Zoology. It is an inhabitant of dry open plains in the lower parts of Africa.

SERPENTES.—Ater, l. 1, *r.* is white with black bands.

SEVIER, l. 2, *r.* 4595, and 294.

SHAPLEIGH. Add—containing 2362 inhabitants.

SHARON. Add after Portland—containing 944 inhabitants.—After Litchfield, having 2506 inhabitants.—After Boſton, having 1800 inhabitants.—After Norwich, having 1363 inhabitants. Add—Alſo, a town of Hillſborough county, New Hampſhire, having 416 inhabitants.—Alſo, a townſhip of Franklin county, in Ohio, having 450 inhabitants.

SHARP, Granville, col. 3, l. 33, for taken up on *r.* taken upon.

SHAT-UL-ARAB, l. 16, *r.* Bamiſhere and Meſene; l. 20, *r.* Hafar.

SHENANGO. Add—Alſo, a townſhip of Mercer county, having 634 inhabitants.—Alſo, a townſhip of Beaver county, having 679 inhabitants.

SHEPEY. Add—The largeſt pariſh in this iſland is that of Minſter, which in 1811 contained 840 houſes, beſides 20 that were not finiſhed, and 5318 perſons; *viz.* 2596 males, and 2722 females: 87 families being employed in agriculture, and 1163 in trade, manufactures, or handicraft.

SHILLINGSTONE, or Shilling Okeford, a pariſh in the weſt-diviſion of Shanſton, in the county of Dorſet, which in 1811 contained 75 houſes, and 385 inhabitants; 163 males, and 222 females. On the right of the village are two high hills, called Hood and Hawkledon, on which are the remains of an ancient Roman encampment.

SHOES, col. 3, l. 29 from bottom, for felt *r.* left.

SHOREA, in *Botany*, in honour of ſir John Shore, lord Teignmouth, late governor of Bengal.—Roxb. Corom. v. 3. 9. Gærtn. v. 3. 48. t. 186.—Claſs and order, *Polyandria Monogynia*. Nat. Ord. *Guttiferæ*, Juſſ.

Gen. Ch. Calyx of five imbricated leaves, ſubſequently enlarged, permanent. Petals five. Capſule ſuperior, of one cell and one valve. Seed ſolitary.

1. S. *robuſta*. Saul-tree. Roxb. t. 212.—Found on the ſkirts of the northern mountains of India. A majeſtic *tree*, whoſe timber is much uſed, and next in value to the teak, (ſee Tectona,) being ſtronger, though far leſs durable. *Leaves* alternate, ſtalked, ovate, entire, acute, ſmooth, from four to eight inches long. *Panicles* downy, axillary and terminal, of numerous, pale yellow, ſtarry *flowers*, not an inch wide. *Capſule* accompanied by five oblong, ribbed, unequal wings, formed of the *calyx*. This genus is nearly allied to Dipterocarpus; ſee that article.

SHORT Creek, in *Geography*, a townſhip of Jefferſon county, in Ohio, having 1890 inhabitants.

SHORT-SIGHTEDNESS, l. 21, add—For Mr. Ware's obſervations on this ſubject, ſee Spectacles.

SHREWSBURY, in America, l. 8, add—of whom 577 are ſlaves. At the end, add—Alſo, a townſhip of Lycoming county, containing 294 inhabitants.

SHROUD, l. 3, add—but the ſtatute for this purpoſe has been repealed.

SHUKUSKU, *r.* or Shukashu.

SHUSTER, l. 24, for magnitude *r.* magnificence.

SIBH, a diſtrict of the Perſian empire, in the province of Mekran, conſiſting of an extenſive plain, governed by a chief, who reſides in a ſmall town of the ſame name. The country, almoſt deſtitute of water, though a river, nearly dry, flows through the centre of the plain, is, generally ſpeaking, barren, if we except ſome groves of date-trees which formerly grew in the bed of the river.

SIDNEY, *Sir* Philip, in *Biography*, the eldeſt ſon of ſir Henry Sidney, by a daughter of the duke of Northumberland, was born at Penſhurſt in Kent, in the year 1554. He was named Philip in compliment to the king of Spain, the huſband of queen Mary. In very early life he manifeſted a ſedate ſtudious diſpoſition; and he ſedulouſly improved every advantage for gaining knowledge, which he enjoyed, firſt at Shrewſbury ſchool, and afterwards at Oxford, where he was entered at Chriſtchurch college in 1569, and alſo at Cambridge. At the age of 18, the queen, according to the then exiſting cuſtom, granted him a licence to travel abroad; and he firſt viſited Paris, where he was introduced, by his maternal uncle, the earl of Leiceſter, to ſir Francis Walſingham, the Engliſh ambaſſador. Charles IX. who was then king of France, wiſhing to ſhew reſpect to Leiceſter, and probably with the perfidious deſign of lulling into ſecurity the Proteſtant party in France, previouſly to the horrid maſſacre of St. Bartholomew's, appointed Sidney one of the gentlemen of his bed-chamber. When the fatal day arrived, Sidney, together with ſeveral of his countrymen, found a refuge in the houſe of the Engliſh ambaſſador. Soon afterwards he purſued his tour to Germany; and at Frankfort formed an intimate acquaintance and friendſhip with Hubert Languet, then reſident for the elector of Saxony, whoſe communications were ſingularly uſeful to our young traveller. After viſiting Vienna, Hungary, Venice, and Padua, in company with his friend Languet, he returned through Germany and Flanders, and arrived in England in 1575, with thoſe accompliſhments, and with his moral principles in untainted purity, which rendered him the admiration and delight of his countrymen. In the following year, being only in the 22d year of his age, he was diſpatched as ambaſſador to the court of Vienna, to condole with and congratulate the new emperor Rodolph II.; and entruſted with a commiſſion to engage the Proteſtant princes of Germany in a league with each other, or with England. He was alſo entruſted to demand the repayment of the ſum advanced by Elizabeth to the elector palatine. In the diſcharge of theſe ſeveral truſts, he acquitted himſelf with ſingular reputation, and with ſatisfaction to all the parties concerned in the objects of his embaſſy. After his return, he received no other honorary recompence beſides the office of cup-bearer to the queen. With a temper ſomewhat iraſcible, and a high ſenſe of honour, blended in ſome degree with the ſpirit of chivalry, few characters in that age were ſo unexceptionable as that of Sidney. Of his diſintereſted patriotiſm, we have a ſtriking inſtance in his remonſtrance addreſſed to queen Elizabeth on her projected marriage with the duke of Anjou; and ſuch was the eſtimation in which he was held by the queen, that ſhe did not manifeſt her diſpleaſure againſt Sidney, though others ſuffered for their interference. Actuated by the ſpirit of chivalry, he exhibited his ſkill in military manœuvres at a tournament held, in 1580, in honour of the queen; and in the ſame year, he aſſerted his rank as a gentleman, againſt an inſult offered him at a tennis-court by Vere, earl of Oxford. In order to compoſe his mind, which had been thus diſquieted, he retired to the houſe of his brother-in-law, the earl of Pembroke, at Wilton, and engaged in the compoſition of his well-known romance, called “Arcadia,” which was not publiſhed till after his death. In 1581 his name appears as one of the knights of the ſhire for the county of Kent, and as one of the committee for drawing up acts, with a view to the ſecurity of the kingdom againſt the Pope and his adherents. His “Defence of Poetry,” written about this time, contributed more to his literary reputation than Arcadia. Of this treatiſe one of his biographers ſays, that it may be “conſidered as the earlieſt piece of criticiſm in the Engliſh language worthy of attention, and reckoned by ſome the beſt written of his works. In a ſimple and unaffected ſtyle, it diſplays much learning and judgment, and a true reliſh of the excellencies of that art which he undertakes to patronize and illuſtrate.” In the year 1583, he married the only daughter and heireſs of ſir Francis Walſingham, a lady, as it is ſaid, of great beauty and merit. On occaſion of being nominated by the prince palatine of the Rhine his proxy at the inſtallation of the garter in 1584, he received from the queen the honour of knighthood; an honour which ſhe was not laviſh in conferring. When ſir Francis Drake was projecting a ſecret naval expedition, ſir Philip Sidney wiſhed to join him, and with this view to equip a land and naval armament againſt the Spaniſh ſettlements in America; but the queen interpoſed, and abſolutely prohibited the execution of his deſign. Of his nomination as a candidate for the vacant crown of Poland, upon the death of Stephen Bathori in 1585, we ſhall ſay nothing; as one of his biographers has ſtated ſeveral particulars, which render the fact very improbable. In the year juſt mentioned, ſir Philip had a ſeat in the privy council; and queen Elizabeth determining to aſſiſt the Low Countries in their revolt, on condition of their putting into her hands ſome cautionary towns, indulged his martial diſpoſition by appointing him governor of Fluſhing. As ſoon as he had taken poſſeſſion of his charge, he was made colonel of all the Dutch regiments, and captain of a band of Engliſh ſoldiers. He was ſoon joined by his uncle Leiceſter, as general of the auxiliary forces, and ſir Philip was appointed general of the horſe, under his command. It ſoon appeared that Leiceſter was unfit for the truſt repoſed in him; his nephew was diſſatisfied, and endeavoured to allay the diſcontents which prevailed among the ſubordinate commanders. Sir Philip in his firſt exploit, which was the ſurpriſe and capture of Axell, in July 1586, without the loſs of a man, was ſingularly ſucceſsful; but in the month of September he fell in with a convoy ſent by the enemy to Zutphen, and having one horſe ſhot under him, he mounted another; and while charging the foe with great vigour, he received a muſket bullet above the knee, which broke the bone and penetrated deep into the thigh. On his way from the field to Leiceſter's camp, whither he was conveyed, he found himſelf faint and thirſty, and called for water; but as he was preparing to drink, he obſerved a ſoldier in the agonies of a mortal wound; he reſigned the draught to him, with an expreſſion which entails permanent honour on his memory: “This man's neceſſity is ſtill greater than mine!” Upon his arrival at Arnheim a mortification enſued, and on the 17th of October, after exhibiting the moſt unaffected piety, exemplary compoſure, and ſelf-poſſeſſion, he expired with tranquillity at the early age of 32 years. His death was univerſally regretted by his enemies as well as friends, and abroad as well as at home. The queen directed his body to be brought to London, and after lying in ſtate, he was interred with all the ſolemnity of a public funeral in St. Paul's cathedral; and although no monument was erected over his remains, James, king of Scotland, compoſed an epitaph to celebrate his memory, and both univerſities furniſhed ſome collections of verſes to record his fame. But his name will ever live in the records of hiſtory, as “one of thoſe who have reflected the higheſt honour on his country.” Of his “Arcadia,” we ſhall merely obſerve, that it was one of the earlieſt ſpecimens of grave or heroic romance; that it was left in ſcattered fragments of MS., which his ſiſter collected and publiſhed; and from this circumſtance, it was denominated “The Counteſs of Pembroke's Arcadia.” It became very popular, and was tranſlated into foreign languages. Lord Orford (Horace Walpole) ſpeaks of it very contemptuouſly; but Dr. Zouch has more candidly and more juſtly appreciated its value. Biog. Brit. Zouch's Mem. of Sir Philip Sidney. Gen. Biog.

Sidney, or Sydney, Algernon, the ſecond ſon of Robert, earl of Leiceſter, by Dorothy, eldeſt daughter of Henry Piercy, earl of Northumberland, was born in 1621 or 1622, and carefully educated under his father's inſpection. In early life he was deſtined to the military profeſſion, and in 1641 he had a commiſſion in his father's own regiment of horſe, when he was appointed lord-lieutenant of Ireland. During the rebellion in that kingdom he entered immediately into active ſervice, and had many opportunities of exhibiting his courage. In 1643, upon the commencement of the war in England between the king and parliament, he obtained permiſſion to return. He and his brother, upon their landing, were intercepted, and placed under guard: and the king, conceiving (juſtly, as the event proved) that they had been taken by their own contrivance, was much offended; and not without reaſon, for they both joined the parliamentary army. In 1644, the earl of Mancheſter appointed Algernon to the command of a troop of horſe in his own regiment; and in the following year, Fairfax promoted him to the colonelcy of a regiment of horſe. Having been preſent in ſeveral actions, he was entruſted with the government of Chicheſter. In 1646 he accompanied his brother to Ireland, and was advanced to the poſt of lieutenant-general of the cavalry and governor of Dublin. For his ſervices in that kingdom he received the thanks of parliament, and returning to his own country was made governor of Dover. Although he was nominated in 1648 a member of the high court of juſtice for the trial of the king, he was neither preſent when ſentence was pronounced, nor did he ſign the warrant for his execution. This part of his conduct, it is ſuppoſed, was owing to the particular requeſt of his father; for it appears, from his general conduct, that his principles would not induce him to condemn this act. When he was afterwards a voluntary exile in Denmark, and charged by his father with the violence of his political ſentiments, his father writes to this purpoſe: “It is ſaid that the univerſity of Copenhagen brought their *album* to you, deſiring you to write ſomething therein, and that you did *ſcribere in albo* theſe words:

> “Manus hæc, inimica tyrannis,
> Enſe petit placidam ſub libertate quietem,”

and put your name to it; alſo, that a miniſter, being there in company with you, ſaid, ‘I think you were none of the late king's judges, nor guilty of his death.’ ‘Guilty!’ ſaid you; ‘do you call that guilt? Why, it was the juſteſt and braveſt action that ever was done in England, or any where elſe.'" Conſiſtently with the ſentiments avowed on this occaſion, Sidney actually oppoſed the deſigns of Cromwell; and he afterwards refuſed to act under him and under his ſucceſſor Richard. During this period he paſſed a retired life at Penſhurſt, and employed himſelf, as it is ſaid, in writing his Diſcourſes on Government. But when the Long Parliament regained its power, Sidney hoping for the eſtabliſhment of a republic, to which form of government he was ardently attached, became an active partiſan, and was nominated one of the council of ſtate. He alſo accepted the office of one of the commiſſioners for mediating a peace between Denmark and Sweden, and was actually engaged in this embaſſy at the period of Charles II.'s reſtoration. Although he was ſolicited by general Monk and others to return to England, he could repoſe no confidence in the royal party, but remained in exile for ſeventeen years, finding that the few ſupplies which he received from home were inſufficient to ſupport him in a manner ſuitable to his birth and rank. He was, however, treated with reſpect and civility in various places, and particularly at Rome; and he employed his many leiſure hours in making addition to the ample ſtock of knowledge which he had already acquired. In 1677 his father, being advanced in life, was anxious to ſee him, and employed his intereſt in obtaining the king's permiſſion for his return, to which permiſſion was annexed a pardon for all his paſt offences. When he afterwards joined in cabals againſt the court, he incurred the cenſure of thoſe who were diſpoſed to take offence; and Mr. Hume has charged him with acting counter to the moral principles of gratitude and with a breach of faith: others, however, have vindicated him, alleging that unconſcious of guilt he might conſider the royal permiſſion to return, after ſo long an abſence, as a reparation of injuſtice rather than an act of clemency, and that perſonal obligation ought not to influence his public conduct, when he conceived the great intereſts of his country in danger. At the time of his return, parliament was urging the king to commence a war with France; but Charles, being a penſioner of the French court, wiſhed from ſelfiſh motives to avoid it; but as he was actuated by no ſound principles, it was apprehended that he would appear to concur with the wiſhes of the nation, that he might have a plea for raiſing ſupplies, for his own perſonal gratification, in the proſecution of his pleaſures or his deſigns to render himſelf arbitrary. The Engliſh patriots were averſe from war, and ſome of their leaders intrigued with Barillon, the French ambaſſador, for preventing it. In the liſt of thoſe perſons in England who were at this time penſioners in France, the name of Sidney appears. When this diſcovery was made by ſir J. Dalrymple's publication of Barillon's papers, the friends of liberty were aſtoniſhed and grieved; and they heſitated in admitting this diſhonourable charge. In vindication of Sidney ſome have ſuggeſted, that Barillon falſified his accounts of the money with which he had been entruſted; whilſt others have ſatisfied themſelves with that perſuaſion of Sidney's honour and integrity which was founded on his general conduct, and with the aſſurance that he always adopted and purſued thoſe political meaſures which appeared to him, all circumſtances conſidered, moſt beneficial to his country. Upon his father's death, he joined the oppoſition party without diſguiſe, and offered himſelf for a ſeat in parliament; but he was twice defeated by the influence of the court. Thus exaſperated, and apprehending the liberty of his country to be in danger, as well as dreading a popiſh ſucceſſor, the ardour of his mind urged him to aſſociate with the duke of Monmouth and his party; and in the hiſtory of the Rye-houſe plot he was charged with being one of ſix who were promoting an inſurrection. But the part which he was ſuppoſed to have taken in a conſpiracy for aſſaſſinating the king was the plea for arreſting him, together with Ruſſell and ſeveral others, in June 1683. When lord Ruſſell was ſacrificed, the next victim ſelected by the court was Sidney; and he was brought to trial for high treaſon, before that judge whoſe infamous character is indelibly recorded in the page of hiſtory, chief-juſtice Jefferies. Lord Howard, who was a diſgrace to the title he bore and to that rank in ſociety with which he was connected, was the only direct evidence againſt him; but the law required two witneſſes for conviction on a charge of treaſon. In order to ſupply this defect, the attorney-general produced ſome paſſages from diſcourſes found in manuſcript in his cloſet, in which the writer maintained the lawfulneſs of reſiſting tyrants, and his preference of a free to an arbitrary government; and without deciſive proof that they were written by him, or that they were even communicated to any living perſon, this kind of evidence was admitted, in defiance of law and common ſenſe, as equivalent to the teſtimony of a ſecond witneſs. His defence was of no avail, and a ſervile jury pronounced him guilty. From reſpect to his family, the diſgraceful part of his ſentence was omitted, and exchanged for beheading. On the 7th of December he was executed on Tower-hill, at the age of about ſixty-one years, delivering to the ſheriffs a paper which proved the injuſtice of his condemnation, and offering a prayer for that "old cauſe" in which he had been from his youth engaged. This paper was afterwards printed, and made great impreſſion on the public mind. It is given at full length in the Memoirs of his Life. He ſuffered with the firmneſs, as it is ſaid, of an old Roman. After the revolution one of the firſt acts was the reverſal of his attainder, and his name has been held in high eſteem and veneration by all the avowed friends of free government. The following ſketch of his character is given by biſhop Burnet. "He was a man of moſt extraordinary courage, ſteady even to obſtinacy, ſincere, but of a rough and boiſterous temper that could not bear contradiction. He ſeemed to be a Chriſtian, but in a particular form of his own; he thought it was to be like a divine philoſophy in the mind, but he was againſt all public worſhip, and every thing that looked like a church. He was ſtiff to all republican principles, and an enemy to every thing that looked like monarchy. He had ſtudied the hiſtory of government in all its branches beyond any man I ever knew; and had a particular way of inſinuating himſelf into people that would hearken to his notions, and not contradict him." Of this character, it is ſaid, in the Notes to the Memoirs of his Life, that it was roughly and inaccurately drawn. Sidney's "Diſcourſes on Government" were firſt printed in 1698, fol. reprinted in 1704 and 1751, and in 4to. 1772 at the expence of Thomas Hollis, eſq., with his letters, trial, and memoirs of his life prefixed. Lord Orrery ſays of them, "they are admirably written, and contain great hiſtorical knowledge, and a remarkable propriety of diction; ſo that his name, in my opinion, ought to be much higher eſtabliſhed in the temple of literature than I have hitherto found it placed." Biog. Brit. Gen. Biog. Memoirs, &c. prefixed to Hollis's edition.

SIFEED Rook. See Rood.

SILENI, l. 20, for ſaccho *r.* Jaccho; l. 33, for ſecond *r.* ſixth.

SILICA, Silicon, in *Chemiſtry*. From the recent experiments of Berzelius and Stromeyer, the baſis of ſilicon does not appear to be a metal as formerly ſuppoſed, but a ſubſtance analogous to *boron* and *carbon;* hence it has been named *ſilicon*. Little is known, however, of the nature of this ſubſtance, except that it is dark-coloured, and will bear a conſiderable heat without undergoing change, and that it decompoſes water, and is converted into ſilica when brought in contact with that fluid. It is alſo capable of combining with iron, and probably other metals. Dr. Thomſon eſtimates the weight of the atom of ſilicon, from the experiments of Berzelius and Stromeyer above-mentioned, at 10, and of ſilica at 20. The ſame chemiſt alſo conſiders ſilicon to be an acid, and propoſes for it the name of *ſilicic* acid, in which caſe its compounds muſt be denominated *ſilicates*.

SILVER, in *Chemiſtry*. Dr. Thomſon, from the moſt recent experiments on this metal and its ſalts, eſtimates the weight of its atom at 137.5, that of oxygen being 10. See ATOMIC *Theory*.

SILVER *Ores*. See SILVER, and MINERALOGY, *Addenda*.

SILURES, col. 2, l. 32, *r.* Wiſk or Uſk.

SIMIA FATUELLUS, l. 1, for tailles *r.* long-tailed.

SITACA. Add—twelve geographical miles below Bagdad, and nearly oppoſite to the embouchure of the Dealla river.

VOL. XXXIII.

SITTINGBOURNE, a town and pariſh of Kent, 40 miles from London, in the road to Canterbury; contained, in 1811, 230 houſes, and 1362 perſons; 633 being males, and 729 females.

SKIDDAW, l. 15, after ſea, add—which differs little from 3017 feet, the barometrical meaſurement of Mr. W. Allen, according to the method propoſed by ſir H. Englefield. (See Tranſ. of the Geol. Soc. vol. iv. part 2.)

SLATE-SPAR. See MINERALOGY, *Addenda*.

SLAVE, col. 2, l. 40, for Almighty *r.* A mighty. Col. 7, l. 19 from bottom, for American *r.* African.

SLAVE-TRADE, *Abolition of the*, col. 2, l. 12, for principalled *r.* principled.

SLIDING-RULE. Add—Mr. Bevan has lately publiſhed in the Philoſophical Magazine an ingenious modification of the ſliding-rule. By the inverſion of the ſlider all the uſual operations are performed, together with the extraction of the ſquare root, and factors of any given number are found by ſimple inſpection. At the ſame time, the inſtrument is reduced to half its uſual ſize.

SMITH, in *Geography*, l. 2, add—of whom 2201 are ſlaves.

SNORING. Add—See LARYNX.

SNOW, col. 2, l. 3 from bottom, *r.* earth, and of bodies on its ſurface, is prevented from eſcaping by radiation to the heavens during ſtill or dewy nights. The cauſe of this additional cold does not, indeed, conſtantly operate; but its preſence, during only a few hours, might effectually deſtroy plants, which now paſs unhurt through the winter. Moreover, while low vegetable productions are prevented, by a covering of ſnow, from becoming colder than the atmoſphere in conſequence of their own radiation, the parts of trees and tall ſhrubs, which riſe above the ſnow, are little affected by cold from this cauſe: for their outermoſt twigs, now that they are deſtitute of leaves, are ſo ſmall, that they will very ſeldom become more than 2° colder than the atmoſphere. The larger branches too, which, if fully expoſed to the ſky, would become colder than the extreme parts, are, in a great degree, ſheltered by them; and, in the laſt place, the trunks are ſheltered both by the ſmaller and larger parts, not to mention that the trunks muſt derive heat, by conduction through the roots, from the earth kept warm by the ſnow. In a ſimilar way is partly to be explained, the manner in which a layer of earth or ſtraw preſerves vegetable matters in our own fields, from the injurious effects of cold in winter. It may be remarked, however, that a thick covering of ſnow, while it renders the ſurface of the earth warmer than it would otherwiſe be, muſt occaſion the lower atmoſphere to be colder, by preventing the paſſage of the heat of the ground to the air, either by radiation or conduction. Wells's Eſſ. p. 258. See DEW and HEAT.

SNOWDON, l. 17, after ſea, add — according to Mr. W. Allen's barometrical meaſurement, 3595,9 feet.

SOAP-STONE. See MINERALOGY, *Addenda*.

SODA. See SODIUM. Add—under NATRON, l. 5, *r.* Natron, from an erroneous ſuppoſition of its being of the nature of nitre, has been by many. Col. 2, l. 35, *dele* vegetable alkali. Col. 4, l. 33, for a further account of barilla, ſee CARBONATE *of Soda*. Under the article LEATHER, l. 17, for a ſpecies of ſalt-petre *r.* a CARBONATE *of Soda*; which ſee.

SODA, *Sodium*, in *Chemiſtry*. From the moſt recent and correct experiments, the weight of the atom of ſodium has been eſtimated by Dr. Thomſon at 30, and conſequently the weight of the atom of ſoda at 40, that of oxygen being 10.

SODAIC POWDERS, denote powders which are uſed as a ſubſtitute for ſoda-water. Profeſſor Brande, in his courſe of chemical lectures at the Royal Inſtitution, took occaſion to obſerve, that though theſe powders produce an efferveſcence when diſſolved, ariſing from the diſengagement of carbonic acid, the ſolution is very different from ſoda-water, both in its conſtituent parts and its properties. Theſe powders conſiſt of an alkaline carbonate, either of potaſh or ſoda, and a concrete acid, reduced to powder. The acid, though ſold as the citric, is in reality the tartaric acid, produced from the ſubſtance known as cream of tartar. When the powders are diſſolved, the tartaric acid unites with the alkali, and the carbonic acid, or fixed air, immediately eſcapes, occaſioning a momentary efferveſcence. A ſalt is formed in the ſolution, called by chemiſts the tartrate of potaſh, or ſoda: if the former alkali has been uſed, and the acid is in exceſs, the ſalt formed is nearly inſoluble, and has a harſh taſte, and an irritating effect on the ſtomach. Thus, a quantity of alkaline tartrate is taken into the ſyſtem, which rather tends to increaſe than remove obſtructions, and in many inſtances muſt be highly injurious. Soda-water, if prepared in the beſt manner, ſhould contain a very ſmall portion of carbonate of ſoda, which has a tendency to correct acidity on the ſtomach; it ſhould contain alſo about eight times its own bulk of carbonic acid gas, part of which is in a ſtate of looſe combination with the water. A conſiderable quantity of this gas, however, appears to be united by a ſtronger chemical affinity, and will remain in the water ſome hours after it is poured out. This gas, acting as a ſolvent of all the different earths, and various other ſubſtances, gives to the ſoda-water a more diluent and deobſtruent efficacy, than is poſſeſſed by common water; and to this cauſe we may aſcribe the good effects of ſoda-water in removing bile and calculary concretions. The carbonic acid, in its concentrated ſtate, as it exiſts in ſoda-water, is a more powerful ſolvent of metallic ſubſtances than is generally ſuppoſed. On which account the manufacture of ſoda-water, in veſſels of copper, or other metals, ought carefully to be avoided, and too great caution cannot be obſerved by thoſe who are in the habit of drinking ſoda-water, to have it free from any metallic impregnation, or improper admixture.

SODALITE. See Mineralogy, *Addenda*.

SOMERSET, l. 6, *r.* 14,725.

SOONTAARS, a wild and unlettered tribe of Hindoos, who inhabit the diſtrict of Ramgur, the leaſt civilized part of the Company's poſſeſſions, and who have reduced the detection and trial of perſons ſuſpected of witchcraft to a ſyſtem. For an account of their practices, we refer to the fourth volume of the Aſiatic Reſearches, p. 343. See Benares.

SORBIC Acid, in *Chemiſtry*. This acid was ſo named by Mr. Donovan its diſcoverer, becauſe obtained from the berries of the *mountain aſh* (formerly denominated *ſorbus aucuparia*, but now *pyrus aucuparia*). The juice of the ripe berries is to be ſtrained and mixed with a filtered ſolution of acetate of lead. The precipitate is then to be ſeparated by a filter, and waſhed in cold water. A large quantity of boiling water is then to be poured upon the filter, and allowed to paſs through the precipitate into jars. After ſome hours this liquid becomes opaque, and depoſits cryſtals of great luſtre and beauty. Theſe cryſtals are to be boiled for half an hour with 2.3 times their weight of ſulphuric acid, ſpecific gravity 1.090, ſupplying water as faſt as it evaporates, and taking care to keep the mixture conſtantly ſtirred. While ſtill hot a ſtream of ſulphuretted hydrogen is to be ſent through the reſulting liquid, which will precipitate the lead, and leave the ſorbic acid in ſolution in the water.

Sorbic acid thus obtained is a tranſparent colourleſs inodorous fluid, ſoluble in alcohol, and in any portion of water. It does not cryſtallize, nor is it volatile. Its taſte is exceedingly acid, and it does not appear to undergo much change when kept.

The *ſorbates* of potaſh, ſoda, and ammonia, are cryſtallizable ſalts, containing an exceſs of acid. They are ſoluble in water, but not in alcohol. The *ſorbates* of barytes and lime are neutral and white inſoluble powders. The ſorbic acid combines with lead in three proportions. The *ſubſorbate* is a hard maſs or a gritty powder. The *ſorbate* is a white powder, which by ſolution in ſorbic acid may be obtained cryſtallized in beautiful ſilvery cryſtals. The *ſuperſorbate* has a ſweet taſte, and is ſoluble in water. The other *ſorbates* are little known, and do not ſeem to be very intereſting.

There appears to be a great reſemblance between the *ſorbic* and *malic* acids. Indeed it has been aſſerted that they are identical. The *malic* acid having recently been obtained in a more pure ſtate than formerly, has enabled chemiſts to inveſtigate its properties more completely, and in this pure ſtate it is ſaid in no circumſtance to differ from *ſorbic* acid.

SOSOS, a Chaldæan period of 60 years, which doubled gave the return of the lunar months to within the 20th part of a month. By multiplying this cycle as many times as are neceſſary to obtain the preciſe returns of the ſun and moon to the ſame points of the heavens, aſtronomers found a period of 600 years, called the *Neros;* which ſee.

SOUND, for Roberts *r.* Robarts.

SOUTHAMPTON, in *Geography*, a townſhip of Cumberland county, in Pennſylvania, having 700 inhabitants.

SOUTH-END. In 1811, the pariſh of Prittlewell with Milton contained 285 houſes, and 1541 perſons; 759 being males, and 782 females.

SOUTHWARK, East, a townſhip of Pennſylvania, in Philadelphia county, having 726 inhabitants.

Southwark *Bridge*, an elegant ſtructure deſigned by Mr. Rennie, and forming a communication between the city of London and the borough of Southwark, in nearly a ſtraight line between Guildhall and the Bank-ſide. It conſiſts of three grand arches; the centre arch being 240 feet in ſpan, and each of the ſide arches being 210 feet. The arches are compoſed of caſt-iron, and the piers and abutments of ſtone. The eſtimate of the expence was 287,000*l.*, and that of the tolls, on the ſuppoſition that London bridge ſhould be rebuilt, was conjectured to amount annually to 50 or 60,000*l.* The firſt ſtone of this bridge was laid in 1815, and it was opened for paſſengers and carriages in February 1819.

SOWANS, a nutritious article of food prepared in Scotland from the huſks of oats, by a proceſs not unlike that by which common ſtarch is made. The huſk of the oat after having been ſeparated by the ſieve ſtill retains a conſiderable portion of farinaceous matter. It is mixed with water, and allowed to remain till the water becomes ſour. The whole is then thrown upon a ſieve; the milky water paſſes through loaded with ſtarchy matter, which ſoon ſubſides. The ſour liquor is poured off, and about an equal quantity of freſh water added. This mixture when boiled forms a very nouriſhing article of food, and the portion of the ſour water which ſtill adheres to the ſtarch gives the whole a pleaſant acidity.

SPANGLES, *paillettes*, Fr. are ſmall thin round leaves of metal, pierced in the middle, which are ſewed on garments, &c. as ornaments. They are prepared by firſt twiſting wire round a rod into the form of a ſcrew; this is then cut into ſingle ſpiral rings, like thoſe uſed by pin-makers in forming heads to their pins; and theſe rings being placed upon a ſmooth anvil are flatted by a ſmart ſtroke of the hammer, ſo that a ſmall hole remains in the middle, and the ends of the wire which lie over each other are cloſely united. The ſmaller ſpangles were firſt made in the French gold and ſilver manufactories, and imitated in Germany, for the firſt time, in the beginning of the 18th century. Beckmann's Hiſt. of Inventions, vol. ii.

SPARROW, in *Agriculture*. Add—It has been ſuggeſted, however, that the miſchief done by ſparrows may be fully compenſated by their uſefulneſs in deſtroying caterpillars; a ſingle pair has been found to conſume 40,000 in one ſeaſon, in feeding their young. We may here add, that in a diſtrict in which great pains had been taken to extirpate the moles every vegetable was for a conſiderable time deſtroyed by cockchaffers, which grubs had been thus preſerved by the ſhort-ſighted policy of the farmers.

SPARTA, l. 13, for country *r.* city.

Sparta, col. 2, l. 3, containing 179 inhabitants.

SPAVIN. Add—In healing the blood ſpavin, Mr. Denny recommends repeated bliſtering, and afterwards a compreſs of folded linen, moiſtened in the following lotion, and confined by a long bandage: Take 4 oz. of ſal ammoniac, 2 oz. of acetated ceruſe, 2 quarts of vinegar, and 4 of water, mix them. The uſual method of treating the bone ſpavin is by bliſtering and firing.

SPECULUM, col. 15, l. 23 from bottom, for cord *r.* card.

SPEECH. See Larynx.

SPERMACETI, *Chemical Properties of.* See Cetic *Acid.*

SPERMADICTYON, in *Botany*, from σπερμα, *ſeed*, and δικτυον, *a net*, becauſe of the reticulated tunic of the ſeeds.—Roxb. Coromand. v. 3. 32.—Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Rubiaceæ*, Juſſ.

Eſſ. Ch. Corolla funnel-ſhaped. Calyx in five deep awl-ſhaped ſegments, permanent. Stigma five-cleft. Capſule inferior, of one cell and five valves. Seeds five, each in a latticed tunic.

1. S. *ſuaveolens*,

1. S. *ſuaveolens.* Fragrant Net-ſeed.—Diſcovered by Mr. William Roxburgh, on the Rajamahl hills. *Stem* erect, ſhrubby, with oppoſite branches; downy when young. *Leaves* oppoſite, ſtalked, with triangular intermediate *ſtipulas*, lanceolate, acute, entire, near a ſpan long, ſmooth. *Flowers* white, an inch long, delightfully fragrant, copious, in numerous terminal tufts. A very curious and diſtinct genus, which we hope to ſee introduced from the Calcutta garden into the ſtoves of England.

SPHAGEBRANCHUS. See SYNBRANCHUS.

SPRIGE, or SPRIGG.

SPRINGS. Add—See UXAHVER.

STAMMERING. See LARYNX.

STAPHYLINUS, l. 5, add—The larvæ are ſubterraneous, and much reſemble the complete animals; l. 15, add—Mr. Marſham, in his "Entomologia Britannica," enumerates no fewer than 87 Britiſh ſpecies.

VOL. XXXIV.

STARCH, *Chemical Compoſition of.* Starch has been analyſed by three different experimentaliſts. The following were the reſults:

	Gay Luſſac and Thenard.	T. de Sauſſure.	Berzelius.
Hydrogen	6.77	5.90	7.066
Carbon	43.55	45.39	43.481
Oxygen	49.68	48.31	49.453
Azote		0.40	
	100.	100.	100.

Berzelius employed potatoe ſtarch. The other experiments were made with the ſtarch of wheat.

Kirchhoff, a Ruſſian chemiſt, found, that by boiling ſtarch with dilute ſulphuric acid it is converted into ſugar; and M. T. de Sauſſure has recently diſcovered, that this change takes place ſpontaneouſly when boiled ſtarch is expoſed for a conſiderable length of time to the action of the air.

STATISTICS, a term applied to the topography of a country, and comprehending its population, policy, manufactures, trade, and a variety of other circumſtances.

STEÄRIN, in *Chemiſtry*. A name given by Chevreul to a ſubſtance exiſting in animal tallows or fats. It may be ſeparated by alcohol, or ſimply by preſſure. Braconnot uſed the following method: The oil if fluid was congealed, and in this ſtate was ſubjected to ſtrong preſſure between folds of blotting paper. The elaïn (ſee ELAÏN) was imbibed by the paper while the ſteärin remained behind in a ſolid ſtate.

Steärin thus obtained is white, brittle, and ſomething like wax in appearance. It cryſtallizes in ſmall needles. It has little or no ſmell. It is taſteleſs, and produces no effect on vegetable blues. It melts, as obtained from different fats, between 109° and 120°; that from the fat of the duck being moſt readily melted, and that from human fat the leaſt. It is ſoluble in water, and combines with the alkalies, forming ſoaps.

STEUBEN, l. 15, add—of whom, in 1810, 87 were ſlaves.

STIPPLING, l. 7 and 9, *r.* pecks.

STIRLINGSHIRE. In 1811, this ſhire contained 8910 houſes, beſides 55 unfiniſhed, and 58,174 perſons (including 803 local militia); 27,745 being males (militia included), and 30,429 females: 2425 families being employed in agriculture, and 5912 in trade, manufactures, and handicraft.

STIRRUP. At the cloſe, add—The Roman manners required that young men and expert riders ſhould be able to vault on horſeback without any aſſiſtance. (Virgil, Æneid, l. 12. 288.) In many public places, particularly highways, ſtones were erected, to which a rider could lead his horſe, that he might mount with greater facility. Such ſtones Gracchus cauſed to be raiſed (Plutarch. de Vit. Gracchi); and they were to be found in many cities in the 16th century, eſpecially near the council-houſe, for the convenience of the members of the council, who at that time did not ride in coaches. It was uſual alſo to have portable ſtools, which were placed cloſe to the horſe when perſons wiſhed to mount: and this gave riſe to the barbarous practice of making conquered generals and priſoners ſtoop down, that the victor might more eaſily get on horſeback, by ſtepping upon their backs as upon a ſtool. In this ignominious manner was the emperor Valerian treated by Sapor, king of Perſia. Some horſes were ſo taught, that they kneeled until the rider mounted; and warriors had on their ſpears or lances a ſtep or projection on which they could reſt the foot until they got on horſeback. (Strabo, lib. iii. Sil. Ital. lib. x.) See ANABATHRA and ANABOLEUS. The firſt certain account of ſtirrups, ſays Beckmann, (Hiſtory of Inventions, vol. ii.) is in a book written by Mauritius, reſpecting the art of wars, about the end of the 6th century. Euſtathius, the commentator on Homer, informs us, that in his time, *i. e.* the 12th century, ſtirrups had not become very common; but on a piece of tapeſtry, of the eleventh century, cauſed to be engraven by Montfaucon, the ſaddles of all the horſes appear to have ſtirrups. However, after they became common, it was thought to be an evidence of ſuperior dexterity to ride without them.

STOKES, in *Geography*, a townſhip of Madiſon county, in Ohio, containing 267 inhabitants.

STONE *in the Bladder*. See LITHOTOMY, and URINARY *Calculi*.

STONE, *Mile*. See MILE-*Stone*.

STONES, *Chemical Analyſis of*. See ANALYSIS.

STONY CREEK, in *Geography*, a townſhip of Somerſet county, in Pennſylvania, having 943 inhabitants.

STRAFFORD, in New Hampſhire, add—divided into 31 townſhips, &c.

STRAINING. See LUNGS.

STRAND BRIDGE. See WATERLOO.

STRONTIAN, STRONTIUM, in *Chemiſtry*, the name of an elementary ſubſtance or earth, the deſcription of which has been omitted.

Strontian is always found in nature combined with the carbonic or ſulphuric acids. (See STRONTIANITE and CELESTINE.) It may be obtained pure from thoſe minerals preciſely in the ſame manner as *barytes* and *lime*.

Strontian thus obtained is in porous maſſes of a greyiſh-white colour. Its taſte is acrid and alkaline, and it converts vegetable blues to green. Its ſp. gr. according to Haſſenfratz, is 1.647. It does not act ſo ſtrongly on animal bodies as barytes, nor is it poiſonous.

Sir H. Davy, led by analogy, ſubjected it to galvanic influence, and thus ſucceeded in ſeparating its oxygen and obtaining *ſtrontium*, the metallic baſis of ſtrontian. This metal is white, much heavier than water, and bears a cloſe reſemblance to *barium* in its properties: when expoſed to air or thrown into water, it rapidly abſorbs oxygen, and is converted into ſtrontian.

Dr. Thomſon, from the recent experiments of Stromeyer and others, fixes the weight of the atom of ſtrontian at 65; from which the compoſition of its ſalts may be readily eſtimated.

The ſalts of ſtrontian require to be briefly noticed. They are in general more ſoluble than the ſalts of barytes, but leſs ſo than the ſalts of lime. Moſt of them are capable of being cryſtallized. They are precipitated by the ſulphates, phoſphates, and oxalates. Succinate of ammonia precipitates barytes, but not ſtrontian. When a piece of paper is dipped into a ſolution of a ſalt of ſtrontian, it burns with a red flame. The ſalts of ſtrontian are not precipitated by the pruſſiate of potaſh, nor are they poiſonous.

Nitrate of Strontian.—This ſalt cryſtallizes in ſix-ſided pyramidal dodecahedrons with their apexes truncated, ſo as to have the appearance of hexahedral plates with bevelled edges. Sometimes in eight-ſided priſms. It is perfectly tranſparent. It has a ſtrong pungent cooling taſte. Its ſp. gr. is 3.006. It is ſoluble in its own weight of water at 60°, and in little more than half its weight of boiling water. It is inſoluble in alcohol. It is not altered by expoſure to air. It deflagrates on hot coals. When a cryſtal of nitrate of ſtrontian is put into the wick of a candle, it communicates a beautiful purple flame.

Muriate of Strontian.—This ſalt cryſtallizes in long ſlender hexagonal priſms. Its taſte is ſharp and penetrating. Its ſp. gr. is 1.4402. It is ſoluble in leſs than its weight of cold water, and in any quantity in boiling water. It is ſoluble in about twenty-four parts of cold alcohol. The cryſtals do not deliqueſce on expoſure to the air, except in very damp weather.

Carbonate of Strontian.—This, when precipitated, is a white powder without taſte or ſmell, and ſoluble in about 1536 parts of boiling water. Its ſp. gr. is about 3.66, and it is not altered by expoſure to the air.

Sulphate of Strontian.—This ſalt is taſteleſs, ſoluble in 3840 parts of boiling water; readily ſoluble in ſulphuric acid when aſſiſted by heat, and poſſeſſes other properties very analogous to the ſulphate of barytes.

Phoſphate of Strontian.—This ſalt is likewiſe taſteleſs, inſoluble in water, and not altered by expoſure to the air.

Acetate of Strontian.—This is ſoluble in little more than twice its weight both of cold and hot water. It may be cryſtallized, and the cryſtals are not altered by expoſure to the air. It renders vegetable colours green.

The other ſalts of ſtrontian do not in general poſſeſs any remarkable properties. The *oxalate*, *tartrate*, *ſuccinate*, and *citrate* of ſtrontian, are all more or leſs ſoluble in water; the *oxalate* being the leaſt ſoluble, and the *citrate* the moſt. The *malate* of ſtrontian is more ſoluble in water than the *malate* of barytes.

STROUD, in *Geography*, a pariſh of Kent, part of which is included within the juriſdiction of the city of Rocheſter (ſee ROCHESTER); and the other part, in 1811, contained 242 houſes, and 1394 perſons; 718 being males, and 676 females.

STYLE, in *Painting*, is the manner in which a painter conceives and executes the ſubjects he adopts; or, in other words, in which he combines the various qualities of a picture. Style is properly diviſible into four diſtinct kinds, *viz.* the grand or ſublime, the beautiful, the natural, and the mean. There are indeed ſeveral varieties of ſtyle which have obtained ſpecific appellations; but they will be found upon examination to combine, in different ways, the qualities peculiar to thoſe above-mentioned; and are juſtly regarded as vicious in their nature: ſuch are the ornamental and the artificial ſtyles of art, which divert the attention of painters from the more pure application and exerciſe of their art, and lead them to adopt fictitious means of attracting attention, by contraſt and affectation, by glitter, and an idle diſplay of ſkill in workmanſhip, to the neglect of nature and juſt expreſſion, and ſometimes even of common ſenſe.

The object and aim of the grand ſtyle is to captivate the imagination. It is the only proper one for the repreſentation of grand and elevated ideas: of ſubjects which repreſent the actions of deities, or of heroes, or which relate to the higher qualities of the mind of man: the only juſt medium whereby the art of painting can embody ſuch ideas as the cultivation of thoſe qualities inſpires, and by which alone it can at all pretend to rival the grandeur and effect of heroic poetry. Its characteriſtics are ſimplicity and fulneſs of form and colour; and it is obtained, by adopting only eſſential parts, avoiding thoſe which add nothing to ſpecific character, and fixing ſolely upon thoſe general forms which particularly diſtinguiſh one race of beings, or one claſs of natural objects or of actions from another, giving them their greateſt poſſible degree of elevation, even to the verge of extravagance, in undulation of line, and fulneſs of form. This ſelection of form and of action requires an appropriate chiaro-oſcuro, arranged and combined in broad and ſimple maſſes, and painted with a ſerious tone of colour; in fact, ſuch a combination of the prime qualities of the art, as will moſt effectually unite in the production of one unmingled emotion.

The grand ſtyle does not admit attempts at illuſion, or too cloſe an imitation of natural objects; which, when carried to exceſs, neceſſarily diſturbs that ſingleneſs or ſimplicity of effect required where the object is to produce an elevated tone of thinking. It is not dependent upon ſize, but may be exhibited on a ſmall ſcale as effectually as on a large one: witneſs many of the beautiful bronzes and gems of the ancients, and the effect, as deſcribed by Statius, of the ſtatue of Hercules made by Lyſippus, which "though not more than a foot in height, filled the imagination in a manner equal to the Hercules Farneſe." Raphael's ſmall picture of the viſion of Ezekiel is alſo an effective inſtance of the truth of this aſſertion.

STYLE, for that word alone is adopted as ſignificatory of the grand in art, can only be acquired by thoſe who have made themſelves well acquainted with the juſt proportions and varieties of nature. Its aim being to repreſent her works with the greateſt degree of ſublimity commixed with truth, all attempts to produce it without real knowledge muſt neceſſarily lead to error, and a ſpecies of bombaſt, inſtead of expreſſion, yields only deformity. Of this, the works of Gottzius, of Spranger, and the Germans who followed them, are ſufficient evidence. And yet ſuch is the rarity of perfection in form among the human or the animal race of beings, that an artiſt whoſe aim is to produce grandeur of ſtyle muſt draw largely upon his imagination; and while he touches the verge of impoſſibility, will find that the difficulty he has to overcome is in uniting the principle on which he depends with propriety. Even Michael Angelo, great and glorious as he was among thoſe who have made it their principal object, has not unfrequently allowed himſelf to be miſled by the wiſh to aggrandiſe, and give his contours only redundancy for ſtyle; and for the ſake of a flowing and varied line, has ſometimes given forms of action to muſcles which ought to have been repreſented tranquil.

Of this ſtyle, as far as relates to form, the beſt among the ſculptures of the ancients afford the faireſt examples, particularly the torſo of the Belvidere, the head of Jupiter, the Laocoon, the Apollo, the figures on Monte Cavallo, &c. &c.; and it is a ſtriking feature in the works of Phidias,

dias, though with a chaſtened impulſe, as may be ſeen in the Elgin marbles. Indeed it appears to have been ſo perfectly underſtood among the artiſts of ancient Greece, that it ſpread generally in a greater or leſs degree through all their productions, at leaſt in thoſe of ſculpture; and from the few remains of painting left to us, it appears not improbable that the profeſſors of that art were no leſs maſters of its principles. In latter times, among the moderns, the Florentine ſchool made it their principal object of attention; and in the works of Leonardo da Vinci, Fra. Bartolomeo, and more particularly of Michael Angelo, it reached in quality nearly to a level with the taſte of thoſe from whom it was adopted. Raphael attempted it in imitation of M. Angelo, and ſometimes ſucceeded, but it evidently was not congenial to his feeling, which inclined to the beautiful and graceful, more than to the ſublime; and hence it is that his pictures of the Godhead rarely impreſs us with ſentiments of an exalted nature.

The beautiful ſtyle differs from the grand, in that it requires leſs force of contraſt in form and action, and greater ſoftneſs of colour and effect. Whatever is graceful and animated, void of ſuperfluous parts, and yet eſſentially characteriſtic and pleaſing in arrangement, combines to form the beautiful. Flowing lines, graceful contraſts, both in form and colour, ſoftened lights and ſhades, and rich and harmonious colouring, are its principles: on them it depends, and every departure from them neceſſarily diminiſhes its quality. It is the fit medium for every ſubject whoſe character is adapted to afford pleaſure.

As the grand ſtyle conſiſts in an elevated view of nature, a conception of perfection almoſt ſuper-human, built upon the poſſibilities of creative power, acting upon known and natural forms; ſo the beautiful alſo muſt be ſought in the regions of imagination, guided by the knowledge of exiſting objects, and ſupported by ſelection from the varieties of nature. Therefore, in order to comprehend the character of beauty as applied to art, we muſt conſider the perfection of that art, not as conſiſting in mere imitation of viſible objects, but as requiring a ſeparation and choice of parts, an ideal perfection, which, though it belongs to the works of nature in all claſſes of beings, yet is not to be found entire in any given object. Raphael, when he was painting his Galatea, ſaid in a letter to his patron count Baldaſſare Caſtiliglione, "that not being able to find perfect beauty upon earth, he was obliged to have recourſe to ideal excellence framed in his own mind." But Zeuxis took another method to produce the conſtellation of perfections recognized in his Helen; *viz.* by ſelecting and combining the various beauties of the moſt beauteous among the virgins of Agrigentum: thus ſurpaſſing the works of nature, with materials furniſhed by herſelf.

Beauty, it will be eaſily conceived, is not confined to one given line, or ſet of lines or colours, in uniſon or in contact with each other. There is neceſſarily one general form of the male among men and animals, and one of the female; diſtinct in their character, and yet each having its appropriate degree of beauty: ſo there is alſo a diſtinction of form among different creatures of the ſame ſpecies. Apollo, Hercules, and a Gladiator, have each diſtinct qualities which muſt be maintained in their repreſentatives, whilſt grace and beauty are given to their forms and actions: and it would be as great an abſurdity to ſoften each to the merely beautiful, and thus render them ſimilar in form and character; as it is ignorant and groſs to truſt to that which is characteriſtic alone for a graceful and agreeable effect.

Though theſe, which we have ſpecified, be the diſtinct ſeparations between the grand and the beautiful ſtyles in art, yet either may be rendered more perfect by the addition of the other; and when expreſſion is ſuperadded, then is exhibited the moſt perfect diſplay of the power of art: and it is this union of the beautiful and characteriſtic with the grand, which conſtitutes that mental and energetic application of the art of painting which elevates it above the mechanical arts, and entitles it to the higheſt pretenſions, as it is addreſſed to the nobleſt faculties. This is that beau-ideal ſo much the theme of praiſe and exultation among the connoiſſeurs; ſo univerſally felt when exhibited, ſo little underſtood, and ſo often the foundation of the groſſeſt follies and deceptions among both artiſts and amateurs. The former, purſuing the practice of it in theory, often become the dupes of their own imaginary ſyſtems; the latter more often impoſe themſelves upon the world as men of worth by the mere cant of its diction, and are ſcreened from diſcovery by the general want of information concerning the principles and proper objects of art.

In this happy combination of beauty and grandeur the Greeks ſtill remain unrivalled, as far as relates to ſculpture, and perhaps ſingle figures in pictures, but we have very little ground for conjecture how far they were able to conduct the principle in extended compoſitions in painting. Among the moderns, perhaps Parmeggiano in his latter and more perfect works, as his Moſes and his Viſion of St. Jerome, has effected more than any other painter this deſirable union; and moſt likely had he lived much longer the world would have ſeen the perfection of the art from his hands; more particularly if he had cultivated expreſſion in the ſchool of Raphael, as ſucceſsfully as he had the other branches of the art in thoſe of Corregio and M. Angelo. "The name of Corregio," ſays Mr. Fuſeli, "is the ſynonime of whatever is graceful and agreeable in painting;" to him we are principally indebted for chiaro-oſcuro, and that luminous and harmonious tone of colour, which faſcinates and delights the eye by its unity, blended with richneſs and variety. He may be regarded as the father of the beautiful in modern art, as M. Angelo is of the grand and ſublime.

That kind of ſtyle which is termed natural is, as its name imports, a mere imitation of the common forms of nature, without that ſelection which we have pointed out as neceſſary to the higher ſtyles of art. Of this we have many capital inſtances among the ſmaller antique bronzes of Fauns, Nymphs, &c. and in many of the works of Titian in his ſecond manner. Moſt of the principal portrait painters have almoſt neceſſarily adopted it, though that branch of the art admits, when highly practiſed, of that ſelection of parts which conſtitutes the beautiful, and of being treated with dignity and even ſublimity, as many of the works of ſir Joſhua Reynolds, of Titian, and of Vandyke, ſufficiently prove. In a lower degree, the Dutch and Flemiſh maſters have moſt ſucceſsfully wrought in this ſtyle, as Jan. Steen, Oſtade, Teniers, Rembrandt, Metzu, Terburg, &c. and compenſated for the want of higher qualities, by the perfection of their arrangements and execution, and the exactneſs of their imitations.

Of what is mean in ſtyle, it is hardly neceſſary to ſpeak: examples of it may be found in all early eſſays; but in none more abundantly than among the works of the artiſts of the German and Flemiſh ſchools of the 16th century. Even in thoſe of Albert Durer, meanneſs is a never-failing alloy, amidſt all the brilliancy of imagination, and activity of mind, they diſplay; deforming actions and expreſſions otherwiſe well worthy of eſteem, and extending through every part of the compoſitions, be it of figures, drapery, or back-ground.

Of the four ſpecies of ſtyle above enumerated, all others are neceſſarily compoſed : but there have been ſome few remarkable aberrations from the ordinary courſe of art, by painters of uncommon talent, which bid defiance to all claſſification, and ſtand alone in their reſpective ſpheres. Such are thoſe of Rubens and Rembrandt, of Tintoretto and Salvator Roſa, compounds of all that elevates and degrades ; in which the grand and the mean, the beautiful, the natural, and the deformed, go hand in hand ; the evil counterpoiſed by the good, and the whole rendered engaging, in ſpite of defects, by the ſkilful diſplay of the maſter hand which wielded the materials. Such examples, great though they are, ought not to ſerve as excuſes for inattention to ſettled principles. Who ſhall ſay, that if Rubens had been more correct in form, his works would have been leſs engaging ; or, that if Tintoretto had been more pure and true in expreſſion, his productions would not have been more intereſting. (See the article PICTURE.) Combinations which will juſtify ſuch expectations have been formed, and we have ſeen them in our own great ſir Joſhua's productions, where fine form, rich and full-toned colour, and juſt chiaro-oſcuro, have been blended in ſkilful and free excution.

SUCCOWIA, in *Botany*, in honour of profeſſor Suckow, a learned botaniſt, of Heidelberg.—" Moench. Meth. 265." Brown in Ait. Hort. Kew. v. 4. 79.—Claſs and order, *Tetradynamia Siliculoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Eſſ. Ch. Pouch nearly globular, beaked with the awl-ſhaped ſtyle ; valves hemiſpherical, prickly ; cells ſingle-ſeeded. Cotyledons folded together.

1. S. *balearica*. Minorca Succowia. Ait. n. 1. (Bunias balearica ; Linn. Syſt. Nat. ed. 12. v. 2. 446. Mant. 429. Jacq. Hort. Vind. v. 2. 68. t. 144.)—Native of Minorca. Given to Kew garden, in 1781, by Dr. Brouſſonet. A hardy annual, flowering in ſummer. *Stem* branched, a foot high. *Leaves* ſmooth, elegantly pinnate and lobed. *Flowers* yellow, racemoſe.

SUFFOLK, col. 6, l. 13, add—In 1811 Suffolk contained 37,227 houſes, beſides 155 then unfiniſhed, and 234,211 perſons ; *viz.* 111,988 males, and 122,223 females : 26,406 families being employed in agriculture, and 15,180 in trade, manufactures, or handicraft.

SUGAR, *Chemical Compoſition of*. See FERMENTATION.

SUGAR-*Loaf*, in *Geography*, a townſhip of Luzerne county, in Pennſylvania, having 282 inhabitants.

SULLIVAN, l. 26, inſert—including 43 ſlaves in 1810.

SULPHUR, in *Chemiſtry*. According to the moſt recent determinations, the weight of the atom of ſulphur is 20, and of ſulphuric acid 50 ; from which data the compoſition of the compounds of this ſubſtance can be accurately aſcertained. See ATOMIC *Theory*.

SULPHUR *Iſland*, l. 8, add—The ſulphur is collected by a few individuals reſident on the iſland ſolely for that purpoſe ; ſent to the Great Loo-choo, and thence exported to Japan and China. N. lat. 27° 56′. E. long. 128° 11′. Ellis's Journal of an Embaſſy to China. 1818.

SULPHURETTED CHYAZIC *Acid*. See CYANOGEN.

SULPHURIC ACID. It is ſtated in our article on this ſubject, that ſulphuric acid cannot exiſt without water ; and that the ſulphuric acid prepared at Nordhauſen from green vitriol probably differs from common ſulphuric acid by containing *leſs* water. The fact is, according to Dr. Thomſon, that the latter, when moſt concentrated, contains *no water whatever*, and conſequently a perfectly anhydrous ſulphuric acid can exiſt.

SULPHURIZED MURIATIC *Acid*, in *Chemiſtry*. The ſubſtance deſcribed under this name in the Cyclopædia is a *chloride* of ſulphur. See CHLORINE. See alſo the original article SULPHUR.

SULTANABAD. For TARSHISH *r.* TURSHISH.

SURABHI, col. 2, l. 44, for proſcribe *r.* preſcribe.

SURRY, in Virginia, l. 4, *r.* 6855.

SURYA, col. 5, l. 24, for drawn *r.* driven.

SUTTEE, l. 3 and 4 from bottom, *r.* thus—out number. As well as meritorious ſuffering for religion's ſake, ſuicide is in ſome caſes legal, and even commendable.

SUTTON, a village and pariſh of Surry, in the ſecond diviſion of Wallington hundred, which in 1811 contained 121 houſes, and 638 perſons ; *viz.* 310 males, and 328 females.

SWADHA, l. 5, for Galaka *r.* Golaka.

SWIMMING *Bladders of Fiſh, Nature of the Air contained in.* We may introduce here the curious experiments made by Biot on this ſubject. This gentleman and Mr. Laroche found in general a mixture of azote and oxygen, but no hydrogen or carbonic acid in the ſwimming bladders of fiſh ; the air-bladders of thoſe fiſh living near the ſurface of the water containing leaſt oxygen, and thoſe of fiſh brought from a great depth the moſt. The following table exhibits the proportion of oxygen in 100 parts of the air in the different fiſh examined.

Names of Fiſh.	Proportion of Oxygen.
Mugil cephalus (*Linn.*) -	Quantity inſenſible.
Ditto - - - -	do.
Murænophis helena (*Lacepede*)	very little.
Sparus annularis (*Linn.*), female -	.09
Ditto, male - - -	.08
Sparus ſargus (*Linn.*), female -	.09
Ditto, male - - -	.20
Holocentrus marinus (*Lacepede*) -	.12
Labrus turdus (*Linn.*) - -	.16
Sparus melanurus (*Linn.*) -	.20
Labrus turdus (*Var. Linn.*) -	.24
Sciæna nigra, female - -	.27
Ditto, male - -	.25
Labrus turdus (*Linn.*), female -	.24
Ditto, male - - -	.28
Sparus dentex (*Linn.*), female -	.40
Sphyræna ſpet. (*Lacepede*) -	.44
Sparus argenteus - -	.50
Sparus erythrinus - -	much.
Holocentrus gigas - -	.69
Gadus merlucius (*Linn.*) -	.79
Trigla lyra (*Linn.*) - -	.87

The depth at which the fiſh in the preceding table are caught increaſes gradually, as well as the proportion of oxygen, from the beginning to the end of the table. The trigla lyra is always caught at a very great depth. M. Laroche found, that fiſhes taken at a depth greater than 150 feet, furniſhed at a mean about .70 oxygen, while the mean reſult furniſhed by the fiſh caught at leſs depths was only .29. The ſame law holds with reſpect to freſh-water fiſh. M. Biot's experiments were made near the Balearic iſlands.

SYCAMORE, in *Geography*, a townſhip of Hamilton county, in Ohio, containing 1552 inhabitants.

SYMPATHY. See *Mental* PHILOSOPHY.

T.

Vol. XXXV.

TAIGAREE, for Tegerly *r.* Tegerhy.

TALBOT. Add—of whom 4878 were ſlaves in 1810.

TAMUL, the name of an Indian language, which is ſpoken in the tract extending to the ſouth of the Telinga, as far as Cape Comorin, and from the ſea to the great range of hills, including the greater part of the Barbamakal and Salem, and the country now called Coimbetore, and formerly Kangiam, along which line it is bounded to the W. by the Canara and Malabar. In the northern part of Myſore, this language is, at this day, named the Kangea; in the central portion of Myſore it is named the Drauvader, and further N. the Aravee.

TAMWORTH, l. *ult.* *r.* Strafford county.

TANACETUM, in *Gardening*, col. 2, l. 22, add—Dr. Withering ſays, that the Finlanders obtain a green dye from this plant.

TANK, a term uſed in India for a pool or reſervoir.

TAO-TSE, a term which denominates one of the two religious ſects in China; the other being diſtinguiſhed by the appellation of Fo. The ſect of Tao-tſe is ſaid to have been founded about 600 years before the Chriſtian era by Laokiun in the Tcheou dynaſty, and to have been more philoſophical than religious. In the Koong-foo, or poſtures of the Tao-tſe, and their ſuppoſed influences upon diſeaſes, may be traced a practice ſomewhat analogous to animal magnetiſm. See *Religion of* China.

TAPAS, col. 2, l. 11, for inflexions *r.* inflictions.

TAPIOCA. See Cassava and Jatropha.

Tapioca, *Chemical Properties of.* See Cassava.

TARTARIC Acid, *Chemical Compoſition of.* This acid has been lately analyſed by Gay Luſſac and Thenard, and alſo by Berzelius. The following are the reſults of theſe chemiſts.

	Gay Luſſac and Thenard.	Berzelius.
Hydrogen - -	6.629 -	3.951
Carbon - -	24.050 -	36.167
Oxygen - -	69.321 -	59.882
	100	100

TATE, in *Geography*, a townſhip of Clermont county, in Ohio, having 969 inhabitants.

TATNALL. Add—The number of inhabitants in 1810 was 2206, of whom 542 were ſlaves.

TAUNTON, l. 3, add—in Briſtol county, containing 3907 inhabitants.

TAYLOR, Henry, l. 23, for rector *r.* vicar; for Rotherhithe *r.* Reading; l. 24, for four *r.* eight; for two *r.* three. Col. 2. l. 9, for Diſcourſe *r.* Dialogue; l. 10, *r.* 1777.

TAZWELL, in *Geography*, a county of Virginia, containing 3907 inhabitants, of whom 328 were ſlaves in 1810.

TCHUKOTSKIJA. Add—See Chukotskija.

TEGERHY, *r.* Taigaree.

TELESCOPE, p. 5, col. 1, l. 9, for *Plate* XXIV. *r.* *Plate* XXVIII. P. 20, col. 2, l. 27, for I E M *r.* I F M. P. 27, col. 1, l. 6, 8, 15, and 23, for 1.3827 *r.* 1.3287; l. 23, for 12.61 *r.* 12.17774. P. 39, col. 1, l. 15 from bottom, for convex *r.* concave, and let the whole ſentence ſtand thus: *viz.* "To effect this improvement, the concave lens, with equal diſperſive power to that of rock-cryſtal, muſt be at one ſide of the concave of flint, and the convex of crown glaſs muſt be at the other ſide. P. 55, col. 1, l. 25, for $\frac{120 \times 46'}{68' - 48'}$ *r.* $\frac{120 \times 46'}{68' - 46'}$.

TELFAIR, in *Geography*, a county of Georgia, containing by the cenſus of 1810, 744 perſons, of whom 218 were ſlaves.

TELINGA, formerly called the Kalinga, and by the Europeans Gentoo, an Indian language occupying the ſpace to the E. of the Mahratta, from near Cicacole, its northern, to within a few miles of Pulicat, its ſouthern boundary, with the intervention of a ſtripe of ſmall dimenſion. This ſpace was divided into the Andra and Kalinga countries; the former S., the latter N. of the river. At the period of the Mahometan conqueſt, the ſouthern part of theſe united provinces ſeems to have been known to that people by the name of Telingana, and Warankul is the capital of the whole.

TELLURIUM, in *Chemiſtry*. Add—This metal has the property of combining with hydrogen, forming a gaſeous compound, to which the name of *telluretted hydrogen gas* has been given. This compound was diſcovered by ſir H. Davy, and its properties were afterwards inveſtigated by Berzelius.

Telluretted hydrogen may be formed by mixing together oxyd of tellurium, potaſh, and charcoal, and expoſing the mixture to the action of a red heat. It is then put into a retort, diluted ſulphuric acid is poured on it, and the beak of the retort is plunged into a mercurial trough. A gas comes over, which may be collected in glaſs jars previouſly filled with mercury. This gas is tranſparent and colourleſs, and poſſeſſes the mechanical properties of common air. It has a ſtrong peculiar ſmell, ſomething like ſulphuretted hydrogen. It burns with a blueiſh flame, and oxyd of tellurium is depoſited. It is ſoluble in water, and gives that liquid a claret colour. Davy was not able to determine whether it reddens vegetable blues, but in other reſpects it poſſeſſes the properties of an acid, combining with alkalies, and precipitating moſt metallic ſolutions like ſulphuretted hydrogen. Chlorine gas immediately decompoſes it. The other properties of this gas have not been ſatisfactorily examined. From the experiments of Ritter, there appears to be a ſolid compound of tellurium and hydrogen.

Tellurium ſeems alſo to have the property of combining with carbon.

TEMPTATION, col. 2, l. 28, *r.* eminence.

TERRITORY, Missouri, col. 2, l. 5, add—It was firſt diſcovered by Sebaſtian Cabot in 1487, and in 1512 viſited by John Pontio de Leon, a Spaniard, who endeavoured to form a ſettlement. In 1684 M. de la Sella, a Frenchman, diſcovered the mouth of the Miſſiſſippi, and built Fort Louis; but being aſſaſſinated, it was again abandoned. In the year 1698, captain Ibberville ſailed to the Miſſiſſippi, formed a ſettlement, and named the country Louiſiana. About twenty-two years afterwards, M. de la Suieur alſo ſailed up the Miſſiſſippi, and proceeded to the diſtance of 2280 miles from its mouth. In 1762 France ceded it to Spain: in 1800–1801 Spain ceded it back to France; and by a treaty of April 30th, 1803, the French government ſold it to the United States for the ſum of fifteen millions of dollars, payable in fifteen years at the rate of one million annually. Bradbury's Travels, p. 214.

TEST-Act, col. 10, l. 4, for office *r.* offence.

TEUTATES. Add—See Druids.

TEUTHIS, Hepatus, l. *penult. r. Tang.*

TEWKESBURY, in *Geography*, a town of Hunterdon county, in New Jerſey, containing 1308 perſons, of whom 66 were ſlaves in 1810.

THEOPHILANTHROPISTS, a ſect which ſprung up, flouriſhed, and became extinct in France during the period of the Revolution. It has been ſaid, that the "temple of nature," opened in Margaret-Street, London, in 1776, by the lately deceaſed David Williams, an active member, if not the founder of the ſociety for the relief of decayed and indigent authors, for worſhip on Deiſtical principles, ſuggeſted to the unbelievers of France the idea of a ritual and liturgy of deiſm, which was firſt carried into execution in the year 1796. The reſemblance of the principles of ſome members of the ſect to thoſe of Robeſpierre, and of its ceremonies to the worſhip of the goddeſs of Reaſon, has led ſome perſons to repreſent the Theophilanthropiſts as partiſans of the tyrant, and their meetings as Jacobinical clubs; but the abbé Gregoire (*ubi infra*) has laboured to vindicate them as a body from this charge. The firſt perſon who planned the celebration of the rites of natural religion appears to have been D'Aubermenil, a romantic enthuſiaſt, who wiſhed to revive a part of the doctrines of the ancient Magi. In his work intitled "Culte des Adorateurs," which is a rubric, a liturgy, and a treatiſe of morals, eight days are appointed for labour, and the ninth for reſt; but the temples were to be conſtantly open, and the ſacred fire kept burning in them with the moſt religious care. The prieſts, whoſe coſtume was preſcribed, were to offer to the Deity grain and fruits of different kinds, ſalt and oil, and, turning to the four cardinal points, to pour libations and make apoſtrophes to the elements. The twelve ſigns of the zodiac were to be painted on the walls of the temple, (or aſylum, as it was denominated,) and under each thirty butterflies, to repreſent the number and ſhortneſs of our days. Sacred dances were to be performed at different periods; the elderly men leading off with the matrons, the young men and the virgins following. At funerals a libation was to be poured out to the manes of the deceaſed, and the eldeſt of his relations was to throw water on the fire, addreſſing the element in a prepared formula. D'Aubermenil propoſed to denominate his followers "Théoantropophiles," which appellation was afterwards changed to "Théophilantropes." As the churches had all become national property, the Theophilanthropiſts applied to the civil authorities for the uſe of them jointly with the Catholics; and their requeſt was granted, on condition that each party ſhould remove the emblems and decorations of its own worſhip, while that of the other was performed. We ſhall not detain our readers with deſcribing their ritual, the dreſs of their orators, or the circumſtances attending their worſhip, and their marriage-ſervice, nor ſhall we detail their moral leſſon, or give ſpecimens of their hymns and ſacred poetry. This ſect did not ſubſiſt for a long time; the zeal of its partiſans began to decline in the provinces; and it appears, from the regiſters of a ſociety at Bourges, that their firſt ſitting was held in the cathedral, Feb. 29, 1798; and that on the 18th of Auguſt, 1800, their number being reduced to ſeven or eight, they diſperſed, and the Theophilanthropic church of Bourges became extinct two years and a half after its firſt formation. In about five years, the whole ſect had quietly diſappeared; the laſt trace of it being that Chemin, who wrote a work defending their principles, made uſe of their manual as a ſchool-book in a ſeminary at Paris, where he taught Latin. See Abbé Gregoire's Hiſtoire des Sectes Religienſes, &c. 2 vols. 8vo. Paris.

THOMPSON'S Pond, and *Shaker Settlement*, in *Geography*, a townſhip of America, in the diſtrict of Maine, and county of Cumberland, having 191 inhabitants.

THORINA, in *Chemiſtry*. The name of an earth recently diſcovered in Sweden by Berzelius.

This celebrated chemiſt firſt detected thorina in the *Gadolinite* of Korarvet, and afterwards in the *deutofluate of cerium*, and the *double fluate of cerium* and *yttria*, both minerals found at Fahlun.

Thorina may be obtained from the minerals containing protoxyd of cerium and yttria in the following manner. Precipitate the iron by means of the ſuccinate of ammonia. Thorina when alone is precipitated by this ſalt, but this is not the caſe when it is mixed with the other bodies that exiſt in the fluates of cerium and yttria. After the iron is removed, precipitate the cerium by means of ſulphate of potaſh. Ammonia now precipitates the thorina mixed with yttria. Diſſolve them in muriatic acid. Evaporate the ſolution to dryneſs, and pour boiling water on the reſidue, which will diſſolve the greateſt part of the yttria, but not the whole. Rediſſolve the reſidue in muriatic or nitric acid, and evaporate till it becomes as exactly neutral as poſſible. Then pour water upon it, and boil it for an inſtant, the thorina precipitates, and the ſolution contains a diſengaged acid. If we ſaturate this acid, and boil it a ſecond time, an additional portion of thorina is precipitated.

Thorina when ſeparated by the filtre has the appearance of a gelatinous ſemi-tranſparent maſs. When waſhed and dried it becomes white, abſorbs carbonic acid, and diſſolves with effervеſcence in acids. Though calcined it retains its white colour. After a violent heat it is difficultly ſoluble in muriatic acid. The ſolutions in this acid are yellowiſh, but become colourleſs when diluted.

The neutral ſolutions of thorina have a purely aſtringent taſte, which is neither bitter, ſweet, ſaline, nor metallic; a property in which it agrees with zirconia, and differs from all other earths.

Thorina is little ſoluble in the alkalies or alkaline earths.

It has not yet been reduced to the metallic ſtate. It is infuſible *per ſe* before the blow-pipe, but with borax it melts into a tranſparent glaſs. It differs from alumina by its inſolubility in hydrate of potaſh; from yttria by its purely aſtringent taſte without ſweetneſs; and by the property its ſolutions poſſeſs of being precipitated by boiling, when they do not contain too great an exceſs of acid. It differs from zirconia by the following properties: 1. After being heated to redneſs, it is ſtill capable of being diſſolved in acids. 2. Sulphate of potaſh does not precipitate it from its ſolutions, while it precipitates zirconia from a ſolution containing even a conſiderable exceſs of acid. 3. It is precipitated by oxalate of ammonia, which is not the caſe with zirconia. Sulphate of thorina cryſtallizes readily, while ſulphate of zirconia, ſuppoſing it free from alkali, forms when dried a gelatinous tranſparent maſs, without any tendency to cryſtallization.

Thorina combines with the different acids. The *ſulphate of thorina* is ſoluble, and yields tranſparent cryſtals, which are not altered by expoſure to the air, and which have a ſtyptic taſte.

The *nitrate* and *muriate of thorina* do not cryſtallize. The *carbonate of thorina* is very readily formed, the earth having a very great affinity for this acid. None of the other ſalts of thorina known appear to be capable of cryſtallizing.

THORN, in *Geography*, a townſhip of Fairfield, in Ohio, having 497 inhabitants.

THORNBURY, a townſhip of Cheſter county, in Pennſylvania, having 200 inhabitants.

THORNTON, a town of Grafton county, in New Hampſhire, containing 794 inhabitants.

THRIPS, col. 2, under VARIEGATA, l. 13, add—The Thrips phyſapus has been ſuppoſed to do much injury to wheat, rye, &c. by cauſing the young flowers to decay, and thus preventing the growth of the embryo grain. Some, however, have diſputed this opinion, contending that the thrips does not attach itſelf to ſuch of the cerealia as are in a perfectly healthy ſtate, but rather to ſuch as are diſeaſed, by having the germina covered with the duſt of a very minute fungus, often growing on wheat, &c. and belonging to the genus Æcidium or Lycoperdon, and which appears in the form of a flattiſh, ſmooth, irregular exſudation of a yellow colour in various parts of the plant. (See on this ſubject, vols. iii. iv. and v. of the Tranſactions of the Linnæan Society.) The ingenious Mr. Kirby, however, ſeems convinced, that the thrips is in reality an inſect highly injurious to corn, by deriving its nouriſhment from the embryo grain. Shaw's Zool. vol. vi.

TIC DOULEUREUX, in *Medicine*, an extremely painful diſeaſe of the nerves of the face, commonly, if not excluſively, affecting ſome branch of the fifth pair of nerves, and moſt frequently the infra-orbital branch, where it paſſes through the foramen, ſo named in the cheek.

The complaint commences with ſlight and almoſt imperceptible attacks of pain, and generally without any warning; though ſome patients feel in the affected part peculiar and inexplicable ſenſations preceding its approach, from which they announce with horror the coming enemy; the patient at the ſame time enjoying a good or an indifferent ſtate of health. The pain, however, ſoon becomes moſt acute, ſhooting and darting along the various ramifications of the affected nerves. It generally continues from a quarter to half a minute, and never exceeds the ſpace of one minute. It returns at intervals more or leſs frequent; there being ſometimes ſeveral paroxyſms in a few minutes, and at other times there are intervals of from fifteen to thirty minutes, or longer. There is no determinate period; we always find the utmoſt irregularity even in the ſame patient.

The pains vary in their degree of intenſity, at one time exciting the moſt piercing cries, and diſtracted writhings and motions in the miſerable patient; while at another, they are more bearable. When at the acme of their violence, the parts affected are often convulſed, and ſometimes various contortions and grimaces are obſervable. Theſe are to be diſtinguiſhed from the convulſive twitchings of the muſcles, with which the diſeaſed nerves communicate, and which are occaſioned by irritation from the exceſſive pain; while the contortions and grimaces are voluntary, being cauſed by the patient's writhing and twiſting from the agony of his torture, and may be prevented by a firm reſolution to reſiſt any impulſe of ſhrinking from the attack.

The pain does not always confine itſelf to the ſeat of the diſeaſe, but darts with the rapidity of lightning to the neighbouring parts, ſhooting in different directions like radii from a centre. It rarely gives warning of its approach, and often the firſt ſign of an attack, is the patient's ſtarting up in a ſtate little ſhort of phrenſy. In this condition, ſome patients beat the part with violence, or forcibly rub it with ſome rough ſubſtance till excoriation takes place; and in ſome inſtances, they have ſucceeded in diminiſhing the intenſity of the pain.

The pains are more frequent during the day than in the night, probably from there being fewer cauſes of irritation; and they are more frequent during converſation than in ſilence; and ſtill more ſo, at the time of maſtication, when the attacks often ſucceed each other with ſuch rapidity as to appear like one continued paroxyſm, with ſcarcely one interval of ceſſation. The eye at times is red, inflamed, and watery, as we ſometimes obſerve in ſevere tooth-ach. In other caſes, it is particularly dry, and in ſome patients a copious flow of ſaliva ſucceeds a paroxyſm. In general, only one ſide of the face is affected with this dreadful malady. But as there are caſes recorded in which both ſides ſuffered at the ſame time, we cannot lay it down as a certain characteriſtic of the diſeaſe. Fouquet obſerved at Montpellier two women who had both cheeks affected at the ſame time; and Pujol knew a lady, who, for ſeveral months, had the pain in one cheek, which after a while was free from pain; but the other cheek was immediately attacked in the correſponding place, the pain continuing for two months, and then reſuming its former poſition.

When the diſeaſe continues for a great length of time with increaſing violence, the patient can neither obtain reſt by night nor by day. His appetite fails; and, as may be expected, there is ſome degree of feveriſhneſs. But this rarely happens, and only in caſes of the utmoſt ſeverity. The complaint uſually terminates without any apparent cauſe, leaving the patient for a time to enjoy the comforts of life. But whoever has had one attack may with conſiderable certainty anticipate another; and though he is to-day well, and free from all pain, to-morrow's dawn may uſher in a renewal of his torment. So varied is the duration of this affection, and ſo limited is our knowledge of it, that we can aſſign no determinate or even probable period for its continuance; and unleſs a cure is effected it returns at intervals more or leſs frequent, and with increaſed violence, till the great final cataſtrophe, which, however, it does not ſeem to accelerate. For though Dr. Banſch is ſaid to have died of it, we can place little reliance on the report, and ſubſequent caſes and obſervations do not corroborate ſuch a ſuppoſition.

Hartenkeil, Hildebrande, and Baldinger, and ſome other Germans, relate caſes of what they call tic douleureux; which, though in ſome particulars, they reſemble that affection, in others differ moſt materially. The firſt of theſe writers deſcribes it as having been very prevalent at Saltzburgh. But the pain was periodical, recurring generally once in twenty-four hours; and ſometimes, though rarely, once in twelve hours; often remaining for ſeveral hours at a time, and then ſuddenly departing. Theſe, however, were obviouſly caſes of hemicrania; for that has, in many inſtances, been obſerved to attack the patients periodically, and to yield to bark. See HEMICRANIA.

The *prediſpoſing cauſe* of this diſeaſe would ſeem to be a certain period of life, when the ſtrength begins to fail, the functions to be impaired, and the whole corporeal frame to feel the firſt ſigns of approaching decay. We rarely find it commence before the fiftieth year, though two or three caſes of an earlier date are recorded. Women do not ſeem to be more liable to the complaint than men; though Dr. Fothergill, having a great proportion of female patients, imagined they were more prediſpoſed to it; as likewiſe did Pujol, from their greater ſenſibility. The latter author (in his Eſſay, p. 14.) ſays, "we generally obſerve in ſuch people as are ſubject to tic douleureux an exceſs of mobility, which renders them more or leſs diſpoſed to hyſterical and hypochondriacal affections. Experience, however, teaches us, that people very far removed from exceſs of ſenſibility are equally liable to the diſeaſe; that women are not more liable to it than men; and that the prediſpoſing period of life is that when the ſenſibility or mobility of fibre is moſt defective.

The *exciting cauſes* are, cold applied to the face in a ſtream, whether of air or of water; particularly when the patient is fatigued by previous exhauſtion. Expoſure then to ſtormy, damp, moiſt, windy, and tempeſtuous weather, frequently excites an attack; alſo external injuries, as blows or contuſions on the face. Paſſions of the mind, as exceſs of anger or of grief.

The diſeaſe being once eſtabliſhed in the ſyſtem, the ſlighteſt cauſes in ſome individuals will bring on a paroxyſm; ſuch as eating, drinking, and talking, or indeed any motion of the facial muſcles, or the gentleſt touch with a handkerchief, or any other ſubſtance to the noſe, lips, cheek, &c. of the affected ſide. Shaving is an operation moſt particularly ſhunned and dreaded by the unhappy patient; and often cannot be endured till after a conſiderable interval of eaſe. Blowing the noſe is abſolutely impracticable; or, if attempted, a moſt pungent and diſtracting torture attends the performance. M. Andrée, in a work entitled "Obſervationes ſur les Maladies de l'Urétre," mentions a very obſtinate caſe of tic douleureux, which he attempted to cure by deſtroying the nerve that he ſuppoſed to be the ſeat of the diſeaſe. He began by laying it bare, and was aſtoniſhed to find, that every time he touched the denuded nerve, he immediately excited ſymptoms of the diſorder; the paroxyſm ceaſing in the uſual time, and recurring whenever the nerve was touched. This fact is very clear and deciſive as to the part affected by the diſeaſe, and hence we readily perceive, why the leaſt touch or motion on the ſurface of the ſkin produces a paroxyſm.

When the pain has continued with frequent acceſſions for a length of time, a moſt diſtreſſing ſcene is ſometimes witneſſed. The patient, whoſe health at the time is generally good, after deſiſting from eating and drinking, till the keenneſs of his appetite, and the intenſity of his thirſt, are too irreſiſtibly urgent to be longer unrelieved, attacks whatever food is placed before him with maniac fury and hurried precipitancy; his countenance ſuffuſed with crimſon, and convulſed and contorted with pain. This horrid conflict does not laſt long; he ſoon throws down his knife and fork with deſperate violence, obliged to ſolicit a ceſſation of pain by a ſtate of inaction.

Treatment of Tic Douleureux.—Of the inefficacy of moſt medicines in the cure of this cruel diſeaſe, we have abundant and melancholy proof. Thoſe which have been ſaid to procure eaſe are, opium, cicuta, zinc, ſtramonium, belladonna, argentum nitratum, and arſenic. But the inſtances in which a cure was effected by their uſe are very rare; indeed ſome practitioners, from painful experience, deny their efficacy altogether. All manner of topical applications, from bliſters to the ſmoking entrails torn from living pigeons, have been in vain applied, and baths and bleeding of all ſorts.

M. Watſon, profeſſor of chemiſtry in the central ſchool of Vaucluſe, relates two caſes of tic douleureux ariſing from venereal cauſes. The firſt was of an officer in the French army, aged thirty; the other that of a lady, aged forty. They were both completely cured by a courſe of mercury. Theſe caſes, in ſome reſpects, differed from the tic douleureux, but had its moſt diſtinguiſhing characteriſtic darting pains in the direction of the nerves. We learn nothing more from them, however, than that, where the ſymptoms of the tic douleureux are excited by the exiſtence of a venereal taint in the habit, they will depart when that taint is overcome by the action of mercury; but it is found from experience, that in ordinary caſes, the ſymptoms are not in the leaſt relieved by the uſe of mercury. Recourſe has next been had to electricity, to magnetiſm, to actual cautery, and finally, to the ſection of the affected nerves. Electricity ſometimes procures temporary eaſe, but as frequently increaſes the pain; though Mr. Blunt, in the Medical Journal, relates the caſe of a lady afflicted with tic douleureux being cured by electricity. The pain was chiefly ſeated in the right temple, and the ſymptoms are ſo well deſcribed as not to be diſputed. She was electrified twice in the day for ſeveral minutes each time; firſt with ſparks, then with ſhocks, after having previouſly endured a long and ineffectual courſe of powerful medicines. Immediately after the ſecond application of electricity ſhe ventured to eat, and performed that neceſſary operation without any inconvenience. The pains afterwards recurred very ſlightly; the electricity was continued; and in the courſe of a ſhort time, ſhe became entirely free from the complaint. The decided ſucceſs of this, though a ſolitary caſe, in ſuch a dreadful diſeaſe, authoriſes us to hope, that future trials may be made of the application of electricity, which under the direction of an able practitioner is often a very powerful inſtrument in the cure of diſeaſe, and much oftener fails from want of care and aſſiduity in the application, than from inefficiency in itſelf as an agent.

The mode of deſtroying the affected part of the nerves by cauſtic has been adopted by ſome practitioners, and ſaid to be attended with ſucceſs. But, till more experience has better eſtabliſhed the utility of ſuch a cruel operation, we cannot recommend its uſe; it has not been had recourſe to in this country: and ſome caſes are related in which it did not ſucceed, and others in which deformity of the face was the conſequence. M. Andrée, however, has tried it, and recommends its general uſe. In his work will be found an account of the method of operating.

The ſection of the affected nerve was thought of and tried many years ago in the cure of this diſeaſe ; and of late years, from a temporary ſucceſs, ſome practitioners have confidently aſſerted, that the cure was effectual and radical ; but more recent experience has deſtroyed the validity of ſuch aſſertions.

So long back as the year 1768, Veillard publiſhed a theſis, in which he decided this queſtion in the negative. "Utrum in pertinacibus capitis, facieique doloribus, aliquid prodeſſe poſſe ſectio ramorum nervi quinti paris ?" Now it is not likely, that he ſhould have treated this important queſtion ſuperficially, but that he would rather collect all the information that at that time could be obtained upon the ſubject. He mentions two caſes where the diſeaſe returned after the diviſion of the nerves ; and others, in which bad conſequences enſued after the operation. Mareſchal, about the middle of laſt century, operated twice without ſucceſs. Pujol was ſo convinced of its uncertainty, that he would not venture upon it. He has ſeen the muſcles paralyſed, and the face diſtorted in conſequence of the operation. Sabatier relates, that Ritah, ſurgeon to the king of Poland, performed the operation with ſucceſs; but the patient, after being free from the complaint for ſome time, was again attacked with his former pains.

Modern practice ſeems alſo to confirm our ſcepticiſm in the permanent ſucceſs of dividing the nerves. We ſee that what was at firſt ſuppoſed to be the moſt deciſive caſe in its favour, the operation performed, and the account of it ſo ably recorded by Dr. Haighton, is now not to be relied upon. Mr. A. P. Cooper has frequently performed the operation with ſimilar preſent ſucceſs, but with what permanency time only can determine.

There is a caſe related by Darwin, in the Zoonomia, of a gentleman who firſt had the ſecond branch of the fifth pair of nerves divided ; then the firſt branch ; and thirdly, the remaining third branch. But the patient was not yet relieved. He then had ſeveral inciſions made acroſs the ſide of the noſe, and oſſa naſi, through the maſſeter muſcle to the jaw-bone, through the parotid gland. And laſtly, ſome more twigs from the ſecond branch of the fifth pair, paſſing into the cheek, and lying between the pterygoideus internus muſcle, and the upper part of the lower jaw. Theſe operations were performed by Mr. Cruikſhank and Mr. Thomas. The patient, it ſeems, at length eſcaped alive and cured. De Haen has divided the ſuborbitar nerve, as have alſo Moreau and Guerin, without any bad conſequences. For the beſt method of operating, ſee Dr. Haighton's paper in the medical records.

It appears then, that as yet we know of no certain and radical cure for this painful affection. The ſection of the nerves promiſes the faireſt ; but when it is had recourſe to, the patient ſhould be warned of the poſſibility of the complaint returning, and not amuſed with the certainty of its being completely cured. Admitting, however, that the diſeaſe may return in the courſe of a few years, the operation is ſo ſimple, is attended with ſo little inconvenience or danger, and the relief in general ſo complete and inſtantaneous, that there can be little heſitation on the part of the practitioner in recommending its being performed, when the ſeat of the diſeaſe is accurately aſcertained.

Lentin declares, he has had the misfortune to treat, in the courſe of twenty-ſeven years, fourteen patients attacked with this painful malady, without radically curing one ; and calls upon all practitioners to make public any means they may have found to ſucceed, either in performing a complete cure, or even a partial relief of the ſymptoms. The only remedies from which he experienced any good effects, were the tincture of thornapple, Datura Stramonium Linnæi, and the ſulphureous baths of Meundorf.

A French writer relates a method of taking nutriment for thoſe patients who feel an appetite, but dare not indulge it, on account of the extreme pain ; and that is, to ſuck through a ſmall tube, as a quill, reed, &c. ſoup, broth, milk, or any nouriſhing fluid, ſo gently as not to excite any pain.

TILE-ORE. See Copper, and Mineralogy, *Addenda*.

TIN, Crystallized, a kind of manufacture ſaid to have been accidentally diſcovered in France by M. Baget, called metallic watering, or *moiré metallique*. It depends upon the action of acids, either pure or mixed together, and in different degrees of dilution, on alloys of tin. The variety of deſigns reſembles mother-of-pearl, and reflects the light in the form of clouds. The proceſs is this :—Firſt, diſſolve four ounces of muriate of ſoda in eight ounces of water, and add two ounces of nitric acid.—Second mixture ; eight ounces of water, two ounces of nitric acid, and three ounces of muriatic acid.—Third mixture ; eight ounces of water, two ounces of muriatic acid, and one ounce of ſulphuric acid. One of theſe mixtures is to be poured warm upon a ſheet of tinned iron, placed upon a veſſel of ſtone-ware : it is to be poured on in ſeparate portions, until the ſheet is completely watered ; it is then to be plunged into water, ſlightly acidulated, and waſhed. The watering obtained by the action of theſe different mixtures upon tinned iron, imitates very cloſely mother-of-pearl and its reflections ; but the deſigns, although varied, are quite accidental. By heating the tinned iron to different degrees of heat, ſtars, fern-leaves, and other figures, are produced ; and by pouring one of the above mixtures, cold, upon a plate of tinned iron, at a red heat, a beautiful granular appearance is obtained. Theſe metallic waterings will bear the blow of a mallet, but not of a hammer ; hence the invention may be uſed for emboſſed patterns, but not for thoſe which are punched. Different colours and ſhades may be given by varniſhes, which, when properly poliſhed, will ſet off the beauty of the watering. When the tin is upon copper, the cryſtallization appears in the form of radiations or ſtars. M. Lewis Felix Vallet obtained a patent for an invention of this kind, upon delivering the following ſpecification, Feb. 5th, 1818. The proceſs of giving the new ornamental ſurface on metals or metallic compoſitions, conſiſts in employing thoſe acids and ſaline compounds and ſubſtances which chemically act upon tin, and which, when employed in the manner to be ſtated preſently, give to the metals or metallic compoſitions to which they are applied the appearance of a cryſtalline ſurface variouſly modified. To produce this effect, the metal or metallic compoſition ought to be previouſly tinned, or covered with a thin coat of tin. If the metal be pure tin, it requires no previous preparation. All greaſe remaining on the tinned ſurface in conſequence of tinning is to be taken off with a ſolution of potaſh, ſoap, or any other alkaline ſubſtances. The tin or tinned ſurfaces ſhould then be waſhed with pure water, dried and heated to a temperature which the hand can bear. When the ſurface has thus been cleaned and heated, any of the acids which act upon tin, or the vapours of thoſe acids will cauſe the deſired appearance of cryſtallization ; but I give the preference to the following compoſition, which may conveniently be laid over with a bruſh or a ſponge. Take one part by meaſure of ſulphuric acid, dilute it with five parts of water ; take alſo one part of nitric acid, and dilute it with an equal bulk of water, and keep each of the mixtures ſeparate. Then take ten parts of the ſulphuric acid diluted in the manner before ſtated, and mix it with one part of the diluted nitric acid, and then apply this mixed acid to the tin, or to the tinned ſurface with a pencil or ſponge, as above directed, and repeat the application of the ſaid compoſition for ſeveral times ſucceſſively, or until the reſult you expect proves ſatisfactory. When this has been done, the cryſtalline ſurface may be covered with a varniſh or japan more or leſs tranſparent or colourleſs, or coloured, and laſtly poliſhed in the uſual manner. Mr. Shaw, of Brunſwick-ſquare, purchaſed this patent, and tin-plates were made under its protection, at the manufactory of Mr. Burnell, at Batterſea. But the proceſs being generally known among chemiſts, the manufacture declined, and the patent, for which a conſiderable ſum was paid, became of little value.

TIN-*Plates*. Add—The manufactory for tinning iron-plates was eſtabliſhed at Pontypool by major John Hanbury, where he reſided until his death in 1734 ; and the invention of the art has by ſome perſons been erroneouſly aſcribed to him. His monument may be ſeen in Trevellin church.

TIOGA, in New York. Add—By the cenſus of 1810, the number of its inhabitants was 7899, including 61 ſlaves.

TIOGA, a county of Pennſylvania, including two townſhips, and 1687 inhabitants.—Alſo, a townſhip of the ſaid county, having 803, the other Delmer, having 884 inhabitants.

TISBURY, including the Elizabeth iſlands, in Duke's county, Maſſachuſetts, contains 1202 inhabitants.

TITANIUM, *Chemical Properties of*, are given under TITANIUM, in *Mineralogy*.

TITICACA. Add—See CHUCUITO.

TOBACCO, l. 3, for 1560 *r.* 1584. See DRAKE.

TOBAINA, a townſhip of Cumberland county, in Pennſylvania, having 1799 inhabitants.

TOBY. Add—Alſo, a townſhip of Armſtrong county, in Pennſylvania, having 611 inhabitants.

TOLERATION, l. 18, add—The late abbé Gregoire, in his "Hiſtoire des Sectes Religieuſe, &c." obſerves, that "we muſt not confound civil and religious toleration. The latter ſuppoſes that truth and error are indifferent ; which truth can never be, for it is only one ; and this being the caſe religious toleration would be an affront to God, who is truth itſelf. Civil toleration is that which grants to every one the power of publicly exerciſing the mode of worſhip to which he is attached ;—an inalienable right of every member of ſociety, and which, incorrectly denominated *toleration*, ought to be called *liberty of worſhip*. It has been already obſerved, and cannot be too often repeated, that the only authority which the civil magiſtrate poſſeſſes over religious aſſociations is to ſee that they neither ſuffer moleſtation nor moleſt one another." Col. 6, l. 13, add—and extended to Ireland by 57 Geo. III. c. 70.

VOL. XXXVI.

TOLLAND. Add—Alſo, a town of Maſſachuſetts, in the county of Hampton, having 798 inhabitants.

TOOLAVA, an Indian language, which extends from Niliſuram to Sedeſhagar, S. of Goa.—Alſo, the name of a country conſidered as a ſubdiviſion of Kérela, which extended from Gocuro, round Cape Comorin, to the river Tumbrapurai in Tinnavelly.

TOOMBUDRA, a river of Hindooſtan, which is a ſouthern branch of the *Kiſhwa ;* which ſee.

TOPASSES, an Indian denomination of native black Chriſtians, the remains of the ancient Portugueſe.

TOPHANIA, or TOFFANIA, the name of a woman who reſided firſt at Palermo, and afterwards at Naples, and who rendered herſelf infamous by preparing and adminiſtering poiſon. She ſold thoſe drops which from her acquired the name of *Aqua Tophania*, *Aqua della Toffana*. It was called alſo *Acquetta di Napoli*, or only *Acquetta ;* but ſhe diſtributed her preparation, by way of charity, to ſuch wives as wiſhed to have other huſbands. From four to ſix drops were ſufficient to deſtroy a man ; and it has been aſſerted, that the doſe could be ſo proportioned as to operate in a certain time. As ſhe was watched by the government, ſhe fled to an eccleſiaſtical aſylum ; and when Keyſler was at Naples in 1730, ſhe was then living ; her life being ſecure under that protection. It was her practice to diſtribute her poiſon in ſmall glaſs phials, upon which was this inſcription, "Manna of St. Nicholas of Bari," and ornamented with the image of that ſaint, whoſe reputation prevented its being particularly examined by the cuſtom-houſe officers. About the year 1709, Tophania fled from one convent to another ; but ſhe was at length ſeized and thrown into priſon. Her impriſonment, as ſhe was under eccleſiaſtical protection, excited the indignation of the clergy, who endeavoured to raiſe an inſurrection among the people ; but they were appeaſed upon Tophania's confeſſion, that ſhe had poiſoned all the ſprings in the city. Upon the rack ſhe acknowledged her wickedneſs ; her protectors fled, and ſhe was ſtrangled ; and in order to inſtigate the archbiſhop, her body was thrown, at night, into the area of the convent from which it was taken. Her ſecret did not die with her ; but her poiſon was ſecretly prepared and adminiſtered at Naples after her death. It was afterwards preſumed, from the effects of her poiſon, that it was a preparation of arſenic. Kayſler. Beckmann, Hiſt. Invent. vol. i.

TORPEDO, a kind of deſtructive machine, invented by Mr. Fulton, to whom we owe the conſtruction of the much more uſeful naval machine, *viz.* the ſteam-boat. Add—This ſubmarine mine, however it may give celebrity to the ingenuity of the inventor, will, we truſt, for the ſake of humanity and the honour of naval conflicts, never be adopted in any civilized nation.

TORRES VEDRAS. Add—This ancient town lies about ſeven leagues from Liſbon, and is ſituated in a ſmall plain, about three leagues from the ſea, on the river Zigandra. It owes its name to the circumſtance of there being the ruins of many old towers in its neighbourhood. The principal one, or caſtle, has been repaired, and ſerves as a point of defence to the works thrown up at this important paſs, which covers two great roads leading to Liſbon from this point, one by Mafra, the other by Euxarra dos Cavalleiros. Although this may be a ſufficient deſcription of it in a geographical point of view, we do not think it ſhould be omitted to be here ſtated, that the celebrated poſition occupied by the duke of Wellington to cover Liſbon in the fall of the year 1810, took its name from this town, which formed one of the principal points of the line of defence, which was carried acroſs from the Tagus to the ſea, preſenting a *contour* of about forty miles, of ſuch an impoſing nature as to render unavailing all the efforts of an almoſt overwhelming French army, under one of their moſt diſtinguiſhed marſhals, to expel the Anglo-Portugueſe from the Peninſula. This line of defence (with another about five miles in its rear), ſtretched from the Tagus at Alhandra to the ſea where the Zigandra falls into it, being a direct line of about twenty-ſix miles. The whole of this moſt extenſive, varied, and gigantic poſition, was ſelected and formed under the duke of Wellington's direction, with the moſt unwearied exertion by thoſe able and ſcientific engineers the late ſir Richard Fletcher and colonel Chapman, and with the retreat of the French from before it, may be ſaid to have commenced the ſeries of achievements which finally ended in the triumphs of the Britiſh army in the heart of France.

TORRINGTON, l. 1, after Connecticut, add—in the county of Litchfield, containing 1586 inhabitants.

TORSK. See Gadus *Broſme.*

TORTURE. At the cloſe, add—Torture was aboliſhed in Sweden by order of the king in 1786; in Poland, in 1776; in France by edict, Aug. 16, 1780; in Spain, Aug. 1814; and in Auſtria, in 1776.

TOURACO. See Cuculus and Opæthus.

TOWIACHES, l. 1, inſert—(ſee Panis); l. 5, after miles, add—N. lat. 35° 20′. W. long. 97°.

TOWNSEND, l. 1, add—in the county of Middleſex, containing 1246 inhabitants.

TOWNSHIP, *Upper*, *Middle*, and *Lower*, three townſhips of Capemay county, in New Jerſey; the firſt having 1664, the ſecond 1106, and the third 862 inhabitants.

TRACHYMENE, in *Botany*, from τραχυς, *rough*, and ὑμην, (as we preſume,) *a membrane*, alluding to the roughneſs of the covering of the ſeeds.—Rudge Tr. of Linn. Soc. v. 10. 300.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Eſſ. Ch. Umbel ſimple. Involucrum of many leaves. Perianth a ſlight border. Petals acute, ſtraight, undivided. Fruit nearly orbicular, compreſſed, muricated.

1. T. *inciſa*. Smooth Trachymene, or Botany-bay Carrot. Rudge as above, t. 21. f. 2.—Stem nearly naked, ſmooth. Umbels terminal.—Sent, many years ſince, under the above Engliſh name, from Port Jackſon, by Dr. White. We have heard that the *root* is eatable, and like a carrot. The *herb* is ſmooth, two or three feet high. *Stem* round, ſlender, alternately branched, each of the long, terminal, naked, ſimple branches bearing a denſe, ſimple *umbel*, ſcarcely an inch broad, of numerous, white or reddiſh, uniform, equal *flowers*. Leaves of the *involucrum* awlſhaped, ſhorter than the umbel, combined at the baſe. *Fruit* ſomewhat heart-ſhaped, broader than long, muricated all over, when quite ripe, with crowded, blunt tubercles. One *ſeed* is often abortive. The *leaves* are chiefly radical, ſtalked, ſmooth, ternate, with wedge-ſhaped, three-cleft, notched ſegments.

2. T. *piloſa*. Hairy Trachymene.—Stem leafy, hairy, as well as the leaves and footſtalks. Umbels lateral.—Gathered by Mr. Menzies, at King George's Sound, on the weſt coaſt of New Holland. Whole *herb* rough with ſhort ſhaggy hairs. *Umbels* on ſtout ſtalks, from the forks or ſides of the *ſtem*. Tubercles of the *fruit* acute, briſtlepointed. See Fischera.

TRAETH Coch, for Redwharf *r.* Redwaeth.

TRELLECH, or Trelleck. Add—In 1811 the town contained 23 houſes, and 121 perſons; *viz.* 58 males, and 63 females. The pariſh of this name, in the upper diviſion of Ragland hundred, conſiſts of the pariſh diviſion, the town diviſion, and the Grange diviſion: the former contained 131 houſes, and 568 perſons; 275 being males, and 293 females: and the latter included 20 houſes, and 134 perſons; 74 being males, and 60 females.

TRENTON, l. 6, *r.* 3000.

TREVETHIN, a populous pariſh of the county of Monmouth, in the upper diviſion of Abergavenny hundred, which, including Pont-y-pool, contained, in 1811, 466 houſes, and 2423 perſons; *viz.* 1211 males, and 1212 females: 123 families being employed in agriculture, and 280 in trade, manufactures, or handicraft.

TRICHECUS—Rosmarus, *r.* Jonſtone.

TRIDACTYLUS, a ſpecies of *Bradypus;* which ſee. See alſo Sloath.

TSCHUTSKI. See Chukstskija.

TURCOMANIA. Add—See Armenians.

TURNER, l. 2, add—and county of Oxford, having 1129 inhabitants.

TURNSTILE, in *Fortification*, a kind of barrier, which conſiſts of two or three pieces of timber, formed croſſways, and making four or ſix rays like the ſpokes of a wheel; the frame is put on a poſt in the middle of a paſſage to turn horizontally, ſo that two of its rays always ſtretch acroſs the paſſage, and prevent more than one perſon at a time from paſſing the ſame way.

TUSKARAWA, *r.* Tuscarawa.

TWEDDELL, John, in *Biography*, an accompliſhed ſcholar, whoſe early fate has been much lamented by all the lovers of literature and the arts, was the eldeſt ſon of Francis Tweddell, eſq. of Threepwood, in the county of Northumberland, was born on the 1ſt of June 1769; and after paſſing through the uſual courſe of preparatory education, was entered at Trinity college, Cambridge, where he diſtinguiſhed himſelf by ſuch proofs of original genius as are, perhaps, without example, even in the records of that learned ſociety. As a candidate for univerſity honours, his "Proluſiones Academicæ" atteſt his ſucceſs to have been equally brilliant and extraordinary, and ſuperſede the neceſſity of particular illuſtration. Mr. Tweddell was elected a fellow of Trinity college in 1792, and ſoon afterwards entered himſelf a ſtudent of Lincoln's Inn, where he kept his terms, and continued to reſide until the year 1795, when he left England to commence his travels on the continent of Europe—and met with that untimely fate which has mixed his aſhes with thoſe of the ſages and philoſophers of Greece. He viſited Switzerland, Germany, moſt parts of the Ruſſian empire, and particularly the Crimea, where his intercourſe with profeſſor Pallas was of the moſt intimate kind, and had ſo endeared him to that amiable ſcholar, that the admiration with which he ſpoke of him partook of the tenderneſs and affection of a father. From the borders of the Euxine, where his reſearches were both diligent and productive, he proceeded to Conſtantinople; and after ſpending ſome part of the ſummer of 1798 under the hoſpitable roof of Spencer Smith, eſq. the Engliſh miniſter, he took his departure for the Grecian iſlands; and having traverſed the provinces of Macedonia and Theſſaly, arrived at Athens; where, after a reſidence of ſeveral months, he reached the period of all his learned labours, on the 25th of July 1799.

Mr. Tweddell, independent of the advantages which his own merit ſecured for him in the countries which he viſited, poſſeſſed recommendations and facilities of a ſuperior kind for conducting his learned purſuits; and his induſtry keeping pace with his talents and opportunities, his collections and manuſcripts are known to have been extenſive and ſingularly valuable. Perhaps no traveller of modern times has enjoyed in an equal degree the means of inveſtigating the antiquities of Greece.

His remains were interred in the beautiful Doric temple of Theſeus at Athens; and his grave was ſimply a ſmall oblong heap of earth, like thoſe over the common graves in all our Engliſh church-yards, without a ſtone or inſcription of any kind; and his body was careleſsly depoſited at about three or four feet beneath the ſurface. The part of the temple where it has been buried is now converted into a Greek church, dedicated to St. George; but as this building is occaſionally open and liable to the intruſion of animals, who ſometimes ſeek ſuch retreats, Dr. Clarke and his companions, in their travels to Athens, obtained leave to take up the coffin, and to have it properly covered; and a Greek epitaph, compoſed by Mr. Walpole in 1805, has been inſcribed on a large block of Pentelician marble from the Parthenon, for recording the merits of the deceaſed. The completion of this buſineſs has been owing to the exertions of lord Byron, and Dr. J. F. Lee, of St. John's college, Cambridge. Clarke's Travels, vol. vi.

TWIGGS, l. 2, add—of whom 642 were ſlaves in 1810.

TWIST, and TWISTING. See MANUFACTURE *of Cotton*.

V and U.

VAMANAVATARA, col. 3, l. 11, for admirer *r.* adviſer.

VANDELLIUS, VANDEL, in *Ichthyology*, a genus of fiſhes of the order Thoracici, conſidered by Dr. Vandelli of Coimbra as nearly allied to the genus Trichiurus; the characters of which are, body extremely long, ſword-ſhaped, gill-membrane five or ſix-rayed, and teeth ſubulate, thoſe in front largeſt. This fiſh is the ſilvery vandel, with forked tail, which occurs, very rarely, in the Mediterranean and Atlantic ſeas, and ſometimes near Liſbon.

VANDER WEYDE, ROGER, called Roger of Bruges, in *Biography*, an hiſtorical and portrait painter, was born at Bruges about the year 1455, and became the diſciple of John Van Eyck, who, at a ſhort period before his death, diſcovered to him the ſecret of painting in oil. From this time he diſtinguiſhed himſelf by many grand compoſitions in a large ſize, and was conſidered as one of the firſt Flemiſh artiſts who improved the national taſte, diveſting it in ſome degree of the Gothic, and manifeſting grace in the airs of his heads, as well as correctneſs in his deſign. He painted the portraits of ſeveral princes, and of many perſons of eminence, and obtained a conſiderable degree of fame and fortune. His paintings in the town-hall of Bruges have been much commended; one of which is formed on the ſubject of Trajan's juſtice, executed on one of his ſoldiers, on the complaint of a mother, whoſe ſon had been murdered by him; and that of another is Archambrant, prince of Brabant, ſtabbing his nephew, who was his next heir, when he himſelf was near dying, for having raviſhed a maid of that country.

VAN UTRECHT, ADRIAN, was a native of Antwerp, where he was born in 1599, and learnt the art of painting: at firſt painting peacocks and other fowl for his amuſement, in which he ſo much excelled that he was encouraged to proſecute this branch of his art. The ſubjects to which his attention was principally directed were fruit, birds, flowers, dead game, and objects of ſtill life; imitating and copying nature, and diſtinguiſhed by correct drawing, and the colouring of nature. He was deemed next to Sneyden in that ſtyle of any of the artiſts in the Low Countries; and though he was very induſtrious, he could not execute one half of the orders which he received. His manner of pencilling was peculiarly delicate, and gives an uncommon tranſparence to his colours. Moſt of his works were engroſſed by the king of Spain, ſo that they became ſcarce, and they now produce very high prices. This artiſt died in 1651, at the age of 52 years.

VASSALBOROUGH. Add—containing 2063 inhabitants.

VATICAN. Add—The Vatican, deſpoiled during the French revolution, can again boaſt of poſſeſſing the Apollo, the Laocoon, the Antinous, and all thoſe fine examples of the exquiſite taſte and delicate ſentiment of that refined people, the Greeks. The Transfiguration of Raffaelle, the St. Jerome of Domenichino, and the St. Petronilla by Guercino, ſince their return from Paris, have been placed in a room by themſelves, but inconveniently dark.

VAUXHALL BRIDGE, a bridge over the Thames, extending from Millbank to Smith's tea-gardens, which nearly adjoin Vauxhall Gardens, and connecting the roads branching from that ſpot to Hyde Park Corner by a ſtraight road and ſtreet acroſs Tothill-fields to Eaton-ſtreet, Pimlico, and Groſvenor-place. This bridge, conſtructed by Mr. J. Walker, conſiſts of nine arches of equal ſpan in ſquares of caſt-iron, on piers of ruſticated ſtone, formed of fragments, united by means of Parker's cement. The total width is 809 feet, the ſpan of the arches 78 feet, the height 29 feet, and the clear breadth of the road-way 36 feet. The eſtimated coſt of this bridge was above 300,000*l.*

VELOCIPEDE, ACCELERATOR, or *Swift-Walker*, a machine originally invented by baron Charles de Drais, maſter of the woods and foreſts of his royal highneſs the grand duke of Baden, who, in his account of its nature and properties, ſays, that on a well-maintained poſt-road, it will travel up hill as faſt as an active man can walk; that on a plain, even after a heavy rain, it will move ſix or ſeven miles an hour; that, when roads are dry and firm, it runs on a plain at the rate of eight or nine miles an hour, which is equal to a horſe's gallop; and that on a deſcent, its motion is equal to that of a horſe at full ſpeed. This machine, the theory of which is founded on the application of a wheel to the action of a man in walking, conſiſts of two wheels, one behind the other, connected by a perch, on which is placed a ſaddle for the ſeat of the traveller. The front wheel is made to turn on a pivot, and is guided in the ſame manner as a Bath-chair. On a cuſhion in front, the fore-arm is reſted, and by ſo doing the machine and the traveller are kept in equilibrio.

The management is as follows :—The traveller, having placed himſelf on the ſaddle, with his elbows extended, and his body a little inclined forward, muſt reſt his arms on the cuſhion, and preſerve his equilibrium by preſſing lightly on that ſide which appears to be riſing. The rudder (if it may be ſo called) muſt be held by both hands, which are not to reſt on the cuſhion, but to extend ſomewhat beyond it, that they may be at full liberty, as they are no leſs eſſential to the conduct of the machine than the arms are to the maintenance of the balance of it, for which purpoſe ſufficient dexterity will be ſoon acquired by attention and practice ; then, placing lightly the feet on the ground, long but very ſlow ſteps are to be taken in a right line, at firſt care being taken not to turn the toes out, leſt the heels ſhould come in contact with the hind wheel. Dexterity in managing the equilibrium and direction of the machine ſhould be acquired before any attempt is made to accelerate the motion of the feet, or to keep them elevated while it is in rapid motion. This machine will run for a conſiderable diſtance while the rider is inactive, and with the ſame rapidity as when his feet are in motion ; and in deſcent it will ſurpaſs the beſt horſes in a great diſtance, without being expoſed to the riſks incident to them, as it is guided by the mere gradual motion of the fingers, and may be inſtantly ſtopped by the feet. The ſaddle, as well as the cuſhion, may be raiſed or lowered at pleaſure, ſo as to ſuit the height of different perſons. The inventor propoſes to conſtruct theſe machines to carry two perſons, and to be impelled by each alternately, or by both at once ; and with three or four wheels, with a ſeat for a lady ; beſides the application of a paraſol or umbrella : and he alſo propoſes to avail himſelf of a ſail, with a favourable wind.

The velocipede has been introduced into this country under letters patent, by Mr. Johnſon, a coach-maker in Long Acre, by whom it has been much improved, both in lightneſs and ſtrength.

VENICE, col. 5, l. 10 from bottom. Add—At the laſt cenſus, taken about the year 1815, the population was ſtated to be about 100,000 ; and it is ſaid to be decreaſing.

VENTRILOQUOUS, l. 7, add—and LARYNX.

VOL. XXXVII.

VERMILION, col. 2, l. 20, add—The painter's vermilion is a factitious cinnabar, made by ſublimating a compound of ſulphur and mercury.

VERNON, in *Geography*, a town of Tolland county, in Connecticut, containing 827 inhabitants.

VESICULA FELLIS. See LIVER for GALL-*Bladder*.

VESTIS ANGELICA, for ANGELIC.

VIENNA, in *Geography*, a townſhip of Trumbull county, in Ohio, including 234 inhabitants.

VIOLIN. Add—The art of holding the bow, and of placing and moving it on the ſtrings, is the moſt difficult and important to incipient practitioners on the violin, which they have to encounter ; as upon that depend the force, ſweetneſs, and penetrating power of the tone. They muſt pay great attention not to preſs too hard upon the ſtring, ſo as to make it curve and deviate from a right line ; for then the tone would be harſh and coarſe. Neither muſt the bow be laid too lightly on the ſtrings, as the tone would then whiſtle and be too feeble. The juſt point of accuracy in this particular is, to place the hair on the ſtrings in ſuch a manner, that every part of it is in contact with whichever may be wanted. The bow muſt not act too near the bridge, nor too diſtant from it, as only dull and unpleaſing ſounds would be produced.

VIRAJ, l. 11, for her *r.* ten

VISHNU, col. 2, l. 4, for ſent *r.* ſcent.

VITELLUS. See YOLK.

UNDERSTANDING. See *Mental* PHILOSOPHY.

UNITED STATES, col. 6, l. 13 from bottom, add—See CANAL. Col. 7, l. 8 from bottom, add—The *manufactures* of the United States, previouſly to the peace of 1815 which reduced their number and value, were eſtimated at the following yearly amounts :

		Span. Dollars.
viz. Manufactures of	Wood - -	25,000,000
	Leather - - -	24,000,000
	Soap and tallow candles	10,000,000
	Spermaceti candles and oil	500,000
	Refined ſugar - -	1,600,000
	Cards - - -	300,000
	Hats - - -	13,000,000
	Spirituous and malt-liquors - - -	14,000,000
	Iron - - -	18,000,000
	Cotton, wool, and flax	45,000,000
	Total -	$151,400,000

Their preſent value has not been aſcertained, but it appears that the exports of their manufactures amounted in 1811 to a total of $1,553,000, including thoſe for domeſtic materials at $1,321,000, and thoſe from foreign materials at $232,000 ; and in 1816 to $1,755,000, including $1,415,000 of the former kind and $340,000 of the latter.

The manufactures from foreign materials were, ſpirits from molaſſes, refined ſugar, chocolate, gunpowder, braſs and copper, with medicines. The manufacture of wool is rapidly extending, as are alſo thoſe of iron and hemp, and eſpecially the latter, and alſo that of cotton. The manufacture of gunpowder nearly ſupplies the home market, which is alſo the caſe with regard to coarſe earthen-ware, window-glaſs, glaſs bottles, and decanters. About a million of buſhels of ſalt are manufactured annually ; and ſalt-petre is largely manufactured in Virginia, Kentucky, Maſſachuſetts, Eaſt and Weſt Tenneſſee. Sugar from the maple-tree is produced in Ohio, Kentucky, Vermont, and Eaſt Tenneſſee, to the amount of nearly 10 millions of pounds annually. Weſt Tenneſſee and Vermont afford abundance of good copperas : 25 millions of gallons of ardent ſpirits are annually diſtilled and conſumed in the United States : 400 water and horſe mills, working 120,000 ſpindles, are employed in ſpinning cotton. The fulling-mills amount to 2000, and the number of looms exceeds 400,000 ; and the number of yards of cloth, manufactured from wool, cotton, and flax, is about 100 millions. They have 300 gunpowder-mills, 600 furnaces, forges, and bloomeries, and 200 paper-mills.

In the ſtate of Vermont, the chief manufactures are thoſe of iron, lead, pipe-clay, marble, diſtilleries, maple-ſugar, flour, and wool. In Maſſachuſetts, the principal manufactures are, duck, cotton, woollen, cut-nails (by a machine invented in Newbury port, which is capable of cutting two hundred thouſand in a day), paper, cotton and wool cards, playing-cards, ſhoes, ſilk and thread lace, wire, ſnuff, oil, chocolate and powder mills, iron-works, and ſlitting-mills, and mills for ſawing timber, grinding grain, and fulling cloth, diſtilleries, and glaſs. In Rhode iſland, are manufactured cotton, linen, and tow cloth, iron, rum, ſpirits, paper, wool and cotton cards, ſpermaceti, ſugar, machines for cutting ſcrews, and furnaces for caſting hollow ware. In Connecticut, are manufactured ſilk, wool, card-teeth (bent and cut by a machine to the number of 86,000 in an hour,) buttons, linen, cotton, glaſs, ſnuff, powder, iron, paper, oil, and very ſuperior fire-arms. In New York, are manufactured wheel-carriages of all kinds, the common manufactures, refined ſugar, potters'-ware, umbrellas, muſical inſtruments, glaſs, iron, and ſteam-boats. In New Jerſey, are numerous tanneries, leather manufactories, iron-works, powder-mills, cotton, paper, copper-mines, lead-mines, ſtone and ſlate quarries. In Pennſylvania, there are valuable collieries on the Lehigh river, diſtilleries, rope-walks, ſugar-houſes, hair-powder manufactories, iron founderies, ſhot manufactories, ſteam-engines, mill machinery, type-founderies, improvements in printing, and carpet manufactory. In Delaware, there are cotton and bolting cloth and powder manufactories, fulling, ſnuff, ſlitting, paper, grain and ſaw mills. In Maryland, are iron-works, collieries, griſt-mills, glaſs-works, ſtills, paper-mills, and cotton. In Virginia, are lead-mines, iron-mines, copper-mines, vaſt collieries, and marble quarries. In Kentucky, are manufactured cotton, wire, paper, and oil. In Ohio, ſhip-building is carried to a great extent. In North Carolina, the pitch-pine affords excellent pitch, tar, turpentine, and lumber; alſo iron-works, and a gold-mine, which has furniſhed the mint of the United States with a conſiderable quantity of virgin gold. In South Carolina, are gold, ſilver, lead, black-lead, copper and iron mines, and alſo pellucid ſtones of various hues, coarſe cornelian, variegated marble, nitrous ſtone and ſand, red and yellow ochres, potters'-clay, fullers'-earth, and a number of dye-ſtuffs, chalk, crude alum, ſulphur, nitre, and vitriol. In Georgia, the manufactures are indigo, ſilk, and ſago. In Louiſiana, are manufactured cotton, wool, cordage, ſhot, and hair-powder.

But the moſt extraordinary, and perhaps the moſt important manufacture in the United States, is that of ſteam-boats; the firſt application, if not invention, of which is aſcribed to Mr. Fulton. It was in the year 1807 that the firſt ſteam-boat plied between the cities of New York and Albany; but ſince that time this mode of navigation has been ſucceſsfully uſed in many other rivers of the United States beſides the Hudſon; ſo that ſteam-boats now aſcend the Miſſiſſippi and Ohio rivers, hitherto nearly unnavigable, except in the direction of their currents. The following table ſhews the cheapneſs, as well as expedition, of travelling ſince food as well as conveyance is included.

	Expence.	Hours.	Miles.
From Philadelphia to New York, by ſteam-boats and ſtages -	$10	13	96
New York to Albany, by ſteam-boats	7	24	160
Albany to Whitehall, by ſtages -	8	12	70
Whitehall to St. John's, by ſteam-boats	9	26	150
St. John's to Montreal - - -	3	4	37
Montreal to Quebec, by ſteam-boats	10	24	186
	47	103	699

In the ſpring of 1817, a ſteam-boat reached Louiſville, in Kentucky, from Pittſburg, in Pennſylvania, dropping down the Ohio. She diſplayed her power by different tacks in the ſtrongeſt current on the falls, and returned over the falls, ſtemming the current with eaſe. About the ſame time, a large ſteam-boat reached Louiſville from New Orleans, laden with ſugar, coffee, wines, queen's-ware, raiſins, fur, ſteel, lead, &c.; her freight equalling 25,000 dollars.

As for the *revenue* of the United States we can only collect a few particulars. We obſerve in general, that the national debt at preſent does not amount to 120 millions of dollars. Its ſinking fund conſiſts of an annual appropriation of $8,000,000, ariſing from the intereſt of the debt redeemed, amounting in 1813 to $1,932,107; for the ſales of public land, equal in that year to $830,671; and from the duties on imports and tonnage. The revenue of the United States, previous to the late war againſt England, were derived from duties and taxes on imports, tonnage of ſhips and veſſels, ſpirits diſtilled within the United States, and ſtocks, poſtage of letters, taxes on patents, dividends on bank-ſtock, ſnuff manufactured in the United States, ſugar refined here, ſales at auction, licences to retail wines and diſtilled ſpirits, carriages for the conveyance of perſons, ſtamped paper, direct taxes, and ſales of public lands. The revenues have been chiefly derived from duties on imports and tonnages. Internal taxes have been laid at different periods by the Waſhington adminiſtration, but were all diſcontinued by an act paſſed April 1802, under the auſpices of Mr. Jefferſon. The following ſtatement exhibits the eſtimated receipts and expenditures of the United States at different periods.

Years.	Receipts.	Expenditures.
1791	$4,418,913	$1,718,129
1795	5,954,534	4,350,596
1800	10,777,709	7,411,369
1808	17,068,661	6,504,338
1809	17,773,473	7,414,672
1818	19,550,000	18,850,000
1819	22,950,000	22,880,000
1820	22,320,000	22,910,000

The net amount of revenue received in 1815 was $50,906,106, being from cuſtoms $37,656,486; internal duties, $5,963,225; direct tax, $5,723,152; public lands $1,287,959; poſtage, &c. $275,282. The report of the ſecretary of the treaſury for the year 1816 ſtates, that on the 12th of February 1816, the whole of the public debt, funded and floating, was $123,630,692; but on the 1ſt of January 1817 did not exceed $109,748,272, reducing the debt from Feb. 12th, 1816, to Jan. 1ſt, 1817, $13,882,420. The ſecretary, in his Report of the 5th of December 1817, eſtimates the expenditure of the year 1818 at $21,946,331, and leaves a balance in the treaſury of $8,578,648 on Jan. 1ſt, 1819.

The American capital, conſiſting of perſonal property $2,200,000,000, and of real property $5,000,000,000, amounts to $7,200,000,000; the income, $300,000,000; expenditure, $45,000,000; national debt, $100,000,000.

The ſalaries of the principal officers of the federal government are as follow:

	Dollars.
Preſident, *per annum* - -	25,000 = 5625*l.*
Vice-preſident, ditto - - -	5000 = 1125*l.*
Secretary of ſtate, ditto - - -	5000
———— Treaſury, ditto - -	5000
———— War, ditto - -	4500
———— Navy, ditto - -	4500
Miniſters plenipotentiary, ditto -	9000 = 1822*l.* 10*s.*
Members of Congreſs, *per* day -	8

For further particulars we refer to general Hamilton's "Report on the Subject of Manufactures;" alſo his "Reports on Public Credit," and "On a National Bank;" Tench Coxe's "View of the United States;" Gallatin's "Sketches of the Finances of the United States;" "Treaſury Reports from 1790 to 1817;" Bludget's "Economica;" Pitkin's "Statiſtics of the United States;" and Briſted's "America and her Reſources," Lond. 1818.

Col. 12, Population in 1817, ſtated by Briſted in his "America and her Reſources."

States and Territories.	Population.
Maine	318,647
Maſſachuſetts	504,392
New Hampſhire	302,733
Vermont	296,450
Rhode iſland	88,321
Connecticut	349,568
New York	1,486,739
New Jerſey	345,822
Pennſylvania	986,494
Delaware	108,334
Maryland	502,710
Virginia	1,347,496
Ohio	394,752
Kentucky	683,752
Tenneſſee	489,624
North Carolina	701,224
South Carolina	564,785
Georgia	408,567
Louiſiana	108,923
Indiana	86,734
Diſtrict of Columbia	37,892
Miſſiſſippi Territory	104,550
Illinois Territory	39,000
Michigan Territory	9,743
North-weſt Territory	
Miſſouri Territory	68,794

Briſted obſerves, that the population of the whole United States has hitherto doubled itſelf in leſs than twenty-five years. The New England ſtates, he ſays, of courſe do not retain their proportion of this increaſe, becauſe large bodies of theſe people migrate annually to the weſtern country, which has therefore increaſed much faſter than the ſtates to the ſouthward. Kentucky, *e. gr.* has increaſed 80 *per cent.* in ten years; Tenneſſee, 95; Ohio, 180; Louiſiana, 150; Indiana, 800; Miſſiſſippi territory, 160; Illinois territory, 700; Miſſouri territory, 600; Michigan territory, 600; while of all the Atlantic ſtates, the greateſt increaſe is only 44 *per cent.*, the population growth of New York; and the leaſt is, that of Virginia, only 20 *per cent.*; ſo that in a few years the ſtates will range, if the future be like the paſt, as to their aggregate population in the following order, *viz.* New York, Pennſylvania, Virginia, Kentucky, Ohio, North Carolina, Maſſachuſetts, South Carolina, Tenneſſee, Maryland, Georgia, New Jerſey, Connecticut, Vermont, Louiſiana, New Hampſhire, Indiana, Miſſouri, Miſſiſſippi, Illinois, Delaware, and Rhode iſland.

VOLTAISM, l. 13.—The general concluſion deduced by Galvani from his experiments was, that the animal body poſſeſſes an inherent electricity of a ſpecific kind, which is connected with the nervous ſyſtem, and conveyed by means of the metals into the muſcles, ſo as to throw them into convulſions. From his diſcoveries he formed, with a precipitance that led him into error, a theory of muſcular motion, according to which the body contains an apparatus analogous to the Leyden phial, its different parts being in different ſtates of electricity, and the metals forming a connection between them, by which the electricity is equalized. Fowler, in his "Eſſay on Animal Electricity," publiſhed in 1793, concludes, that the galvanic influence is not referable to electricity, becauſe, for the production of the former, the preſence of two different metals appears to be neceſſary, while electricity, as proceeding from the electrical machine, is excited by the action of an electric upon a conductor. He alſo endeavours to ſhew, ſays Dr. Boſtock, the ingenious hiſtorian of galvaniſm, that electricity and galvaniſm are not, in all caſes, conducted by the ſame ſubſtances; and he alſo made ſome curious obſervations upon the effect of galvaniſm on animals not furniſhed with diſtinct limbs, ſuch as worms of various kinds. In the ſame year, 1793, profeſſor Volta's communications appeared in the Philoſophical Tranſactions of London, who adds to his luminous account of Galvani's diſcovery many curious experiments and obſervations of his own. He attempted, and with complete ſucceſs, ſays Dr. Boſtock, to overthrow Galvani's opinion, that the animal body bears an analogy to the Leyden phial, its different parts being in oppoſite ſtates of electricity. He ſuggeſted, that for the production of the effect it was eſſential to have two different metals; and hence he was led to conclude, that the muſcular contractions are produced by ſmall portions of electricity that are liberated by the action of the metals upon each other. This action of the metals upon each other is deſcribed as deſtroying their electrical equilibrium; and by eſtabliſhing a communication between them, their equilibrium is reſtored. This deſtruction of equilibrium he conſiders as a new law of electricity diſcovered by himſelf; and the animal is ſuppoſed to have no further concern in it, than as being a peculiarly ſenſible electrometer, and affording a very delicate teſt of the preſence of this diſengaged electricity in its paſſage from one metal to the other. He alſo eſtabliſhed another point, *viz.* that the nerve is the organ on which the galvanic influence immediately acts; but he found that if a part of a muſcle be laid upon two different metals, and theſe be made to communicate, a contraction is produced. He alſo confirmed the fact, previouſly noticed by Fowler, but by independent experiments, that ſnails and worms could not be made to contract; but that many of the inſects, as butterflies and beetles, were ſubject to the influence of the metals. For an account of Dr. Wells's experiments and obſervations, we refer to his paper in the Phil. Tranſ. for 1795. Profeſſor Volta, proſecuting his inquiry into the nature of galvaniſm, was led to introduce a new principle into his theory. Having before ſtated that two metals were eſſential to the extrication of the electric influence, he informs us, that their metallic nature may be diſpenſed with, provided that the ſubſtances differ in their power of conducting electricity. Accordingly he divides conductors into the two claſſes of dry and moiſt; the firſt including metals and charcoal; the latter, eſſentially conſiſting of water, holding various ſubſtances in ſolution. In order to form a galvanic circuit, it is neceſſary that a body from one of theſe claſſes be placed between two bodies from the other claſs: and thus the equilibrium is deſtroyed, which is again reſtored when the two are united by a conductor. (See GALVANISM.) For further particulars we are under a neceſſity of referring to Dr. Boſtock's very valuable "Account of the Hiſtory and preſent ſtate of galvaniſm," 8vo. London, 1819.

At the cloſe, add—It is natural to conclude, that galvanic electricity would be applicable to medical purpoſes, Accordingly we find, that about the year 1804, it was extenſively employed, more eſpecially in thoſe diſeaſes in which common electricity had been found uſeful. But the expectations that were formed concerning the efficacy of this powerful agent were generally diſappointed. Flattering accounts, however, ſays Dr. Boſtock, (*ubi ſupra*) of its ſucceſs in different nervous diſorders, in paralytic affections, in deafneſs, in ſome kinds of blindneſs, in the recovery of perſons apparently drowned or ſuffocated, and even in hydrophobia and inſanity, were publiſhed. But the credit of the propoſed remedy was not permanent; and it therefore ſunk into diſuſe. Of late it has again been brought into notice by Dr. Philip of Worceſter, who has made trial of it, with beneficial effect, in ſpaſmodic aſthma. Boſtock's Hiſt.

UPPER, in *Geography*, a townſhip of Scioto county, in Ohio, having 496 inhabitants.

URFE', HONORE' D', count of Chateaunef, and marquis of Vilromery, in *Biography*, was the fifth ſon of James D'Urfé, a noble family of Forez, originating from Swabia, and born in 1567 at Marſeilles, in which city he was educated, and alſo in the Jeſuits' college at Tournon. Although he was firſt deſtined to be a knight of Malta, he was diverted from this purpoſe by his objection to celibacy; and he afterwards obtained a diſpenſation to marry the wife of his brother Anne, who was ſeparated from her on account of impotence, and became an eccleſiaſtic. His view in this marriage was to ſecure the property of his wife, who was a rich heireſs, to his own family; but as he had no children by her he was diſappointed in his mercenary purpoſe, and the connection was unhappy. Thus fruſtrated in his ſelfiſh views, he retired to Piedmont, and devoted himſelf to letters. He was the author of ſeveral publications; but his name has been celebrated as a romance writer, on account of his "Aſtrée," which was publiſhed in five ſeparate volumes, at ſucceſſive periods, and continued as a performance of general peruſal for fifty years. This romance exhibits a picture of human life in its various conditions, and diſplays ample invention and acquaintance with men and characters under the diſguiſe of paſtoral fiction, from which, however, the author often deviates; he furniſhes a hiſtory of his courtſhip of Diana de Chateau-Morant, his brother's wife, whom he married, and of the gallantries of the court of Henry IV. Although it was at a former period much read, it is too trifling for inſtruction and too tedious for amuſement. It was often republiſhed, but the beſt edition is ſaid to be that of Paris in 1753, in 10 vols. 12mo. by the abbé Souchai. D'Urfé died at Villafranche in 1625. His brother Anne was alſo a writer, and publiſhed ſome poems. Moreri. Gen. Biog.

VRIHASPATI, l. 8 from bottom, for SULTEE *r.* SUTTEE.

W.

WALLINGFORD, in Vermont, &c.; l. 5, *r.* 1325.

WALPOLE, l. 2, *r.* 1894.

WALTON, in Derbyſhire. This townſhip is in the pariſh of Cheſterfield; and in 1811 it contained 133 houſes, and 720 perſons; *viz.* 375 males, and 345 females.

WALTON-*le-Dale.* This townſhip, in 1811, contained 827 houſes, and 4776 perſons; *viz.* 2263 males, and 2513 females: 175 families being employed in agriculture, and 616 in trade, manufactures, or handicraft.

WALTON-*on-the-Wolds.* In 1811, this pariſh contained 47 houſes, and 222 perſons; *viz.* 111 males, and 111 females.

WALTON-*upon-Thames.* In 1811, the town contained 104 houſes, and 606 perſons; *viz.* 315 males, and 291 females.

WANDSWORTH. In 1811, the pariſh contained 905 houſes, and 5644 perſons; *viz.* 2728 males, and 2916 females.

WARLEY. In 1811, this townſhip contained 764 houſes, and 3958 perſons; *viz.* 1941 males, and 2017 females: 27 families being employed in agriculture, and 758 in trade, manufactures, and handicraft.

WARPING. See WEAVING.

WARREN, in *Geography*, a county of Ohio, containing five townſhips, and 9925 inhabitants.

WARTERBURG, a town of Chittenden county, in Vermont, having 864 perſons.

WASHINGTON, l. 14 from bottom, add—including 315 ſlaves.

WASHINGTON, a townſhip of Pennſylvania, in the county of Fayette, having 2160 inhabitants.

WASH-WHEELS, in *Bleaching*. See BLEACHING.

WATCH, in *Horology*. Col. 11, l. 4 from bottom, for 2 C R 1 *r.* 2, 6, 1, R; l. 11 from bottom, and col. 12, l. 9, *dele* while the quarters are ſtruck, and ſubſtitute words to this effect—While the crémaillère is puſhed down for the purpoſe of ſtriking the hours. The fact ſeems to be, ſays an ingenious correſpondent, that while the quarters are ſtriking, the tail-piece 3, 4, is behind the teeth of the rack G; and the contrivance here deſcribed is merely to take 3, 4, out of the way of theſe teeth, when, by puſhing in the pendant, they are carried back preparatory to ſtriking the hour. Col. 25, l. 22 from bottom, for p. 66, &c. *r.* p. 166, &c. —*Warning-Watch by Berrollas*, col. 2, l. 7 from the bottom, for hours-wheel *u*, *r.* hours-wheel *n.*—*Muſical-Watch*, col. 1, l. 28, for balance-wheel I *r.* balance-wheel L.

VOL. XXXVIII.

WATER, p. 21, col. 2, add—*Llanarthna ſpring*, at a village in the vale of Towy, ſeven miles above Caermarthen; a ſtrong chalybeate, in one gallon of which the gaſeous contents are, carbonic acid $16\frac{1}{2}$ cubic inches, atmoſpheric air $4\frac{1}{2}$ ditto, and ſolid contents,

	Grs.
Carbonate of lime - -	$4\frac{1}{2}$
——— of iron - -	$5\frac{1}{4}$
Muriate of ſoda - -	6
——— of lime - -	$5\frac{3}{4}$
Sulphate of lime - -	2

WATER, in *Gardening*, col. 2, l. 40, *r.* Loudon. Col. 5, l. 23, ditto. Col. 7, l. 36, ditto. Col. 10, l. 30, ditto.

WATER-*Organ*. See HYDRAULICON.

WATER, *Vaſes and Glaſſes tuned by*. See ARMONICA, LASUS, and HYPPASUS.

WATER *Whimſey*. See WHIMSEY.

WATSON, THOMAS, in *Biography*, was born in 1590, and was editor of the ſecond collection of Italian madrigals that appeared in England under the following title: "The Firſt Part of Italian Madrigals Engliſhed, not to the Senſe of the original *Dittie*, but after the Affection of the Noate." This collection, as we are told in the title-page, includes "Two excellent Madrigalls of Maſter William Byrd's, compoſed after the Italian Vaine, at the Requeſt of the ſaid Thomas Watſon." The poet is as much diſtreſſed for double rhymes to ſuit the original ſtanza and muſic of theſe madrigals, as his predeceſſor, N. Yonge, in a former publication. That madrigal, indeed, which Byrd ſet, firſt in four parts, and then in ſix, ſeems original Engliſh, and is the beſt of the collection.

This ſweet and merry month of May,
While Nature wantons in her prime,
And birds do ſing, and beaſts do play,
For pleaſure of the joyful time;

I choſe, the firſt for holly daie,
And greet Eliza with a ryme:
O beauteous Queene of ſecond Troy,
Take well in worth a ſingle toy.

The editor ſeems to have been a man of ſome learning, as well as knowledge in muſic, as he dedicates the work, in a Latin copy of verſes, to the earl of Eſſex, then at the ſummit of favour with queen Elizabeth; and addreſſes Luca Marenzio, from whom moſt of the madrigals were taken, in another.

WEARE, l. 2, *r.* Hillſborough.

WEBB, ſenior, in *Biography*, a favourite author of Engliſh catches and glees, and one of the moſt ſucceſsful candidates for prizes at the catch-club during the moſt brilliant period of its inſtitution in 1762. See CATCH, and CATCH-CLUB.

WEBB, DANIEL, eſq. author of an elegant and ingenious tract, intitled "Obſervations on the Correſpondence between Poetry and Muſic," 1769, 12mo. This author had acquired conſiderable reputation by two former diſſertations in dialogue; the firſt, "An Inquiry into the Beauties of Painting;" the ſecond, "Remarks on the Beauties of Poetry;" which had rendered the public willing to receive favourably a third work from the ſame pen. Much learning, extenſive reading, and a claſſical taſte, were manifeſted in this production, "On the Correſpondence between Poetry and Muſic." It is, however, more metaphyſical and leſs intelligible than his former tracts. The author ſeems to have conceptions difficult to bring forth, and out of the reach of common language to expreſs. He ſeems to concur with Rouſſeau, that "muſic cannot narrate, nor preciſely expreſs or paint any particular paſſion;" but it can awaken ſenſation and ſentiments near the truth, and, with the aſſiſtance of poetry, can be pointed to a determined affection or paſſion. It can ſooth affliction, it can ſupplicate, it can animate and rouſe our courage, excite hilarity, and generate ideas of grace, innocence, and content, without the interpretation of poetry; but having nothing to imitate in nature, like poetry and painting, imagination muſt aſſiſt in finding ſimilitudes.

The ſpeculations of Mr. Webb are not always free from obſcurity, though his language (when not deformed by his fondneſs for *hath*) is accurate and elegant. He ſays, that "muſic cannot give pain, like poetry and painting;" but extreme harſh diſcords allowed to be occaſionally uſed in counterpoint, give pain to the ear, as intenſe as painting and poetry to the eye and the mind. The author's chief illuſtrations are from Milton; and the work ſeems more intended to ſhew the *beauties of Milton*, than the analogies between poetry and muſic. The expreſſion of muſic ariſes more immediately from rhythm than from the arrangement or combination of ſound, and many of its imitative beauties, perhaps all, are ideal. Mr. Webb's ideas in general are delicate, refined, and beautifully expreſſed. But he never ventures to inſtance a muſical compoſition or ſingle paſſage which reminds us of practical muſic; and it does not clearly appear what kind of muſic he moſt approves, or indeed what it is that he honours with the name of *muſic*.

Mr. Webb was one of the firſt in our country who ventured to ſay, that counterpoint and complication of parts in diſſimilar motion was an enemy to melody and expreſſion; he quotes Algarotti's "Saggio ſopra l'Opera in Muſica," in confirmation of his opinions; but Rouſſeau preceded both, in his "Lettre ſur la Muſ. Fran." publiſhed in 1751, when he firſt developed his idea of "Unité de Mélodie." Mr. Webb's obſervations, indeed, abound with deep reflections and *belle parole*; but we have not yet diſcovered what benefit lyric poetry or vocal muſic can derive from ſuch diſcuſſions.

WEIDEMAN, ——, came to England about 1726. He was long the principal ſolo player, and compoſer, and maſter for the German flute. He was a good muſician, and played ſo well on the organ, that we remember Handel, at a rehearſal of an oratorio in Covent Garden theatre, deſiring him to touch a new organ juſt finiſhed by the elder Byfield, that he might judge of its effects in different parts of the theatre, in which he was obeyed by Weideman with conſiderable abilities. But in his productions for the German flute, he never broke through the bounds of that mediocrity to which his inſtrument ſeemed confined.

WEIGEL, ——, an excellent performer on the violoncello, whom we heard in 1772, at Vienna, in a grand concert given to all the firſt people of that imperial city, and by the beſt performers that could be ſelected. Gluck and his niece, a pupil of Millicco, and an enchanting ſinger, were there, and ſhe ſung, ſometimes to her uncle's accompaniment on the harpſichord only, and ſometimes with more inſtruments, in ſo exquiſite a manner, that we could not conceive it poſſible for any vocal performance to be more perfect.

Between the vocal parts of this delightful concert, ſome admirable quartets, by Haydn, were executed in the utmoſt perfection: the firſt violin by Startzler, who played the *adagios* with uncommon feeling and expreſſion; the ſecond violin by Ordonitz, a good performer in the emperor's band; the tenor by count Brühl, one of the four ſons of the great Saxon miniſter, an admirable dilettante, and fine performer on ſeveral inſtruments; and the violoncello by Weigel, the ſubject of the preſent article. All the performers in this concert, finding the company attentive, and in a diſpoſition to be pleaſed, were animated to that true pitch of enthuſiaſm, with which, when muſicians are themſelves inflamed, they have a power of communicating to others their own order, and of ſetting all around in a blaze; ſo that the contention between the performers and hearers on this occaſion was only who ſhould pleaſe, and who applaud the moſt.

WEISS, Sylvius Leopold, a famous performer on the lute, born in Sileſia, travelled into Italy in 1708, in the ſuite of prince Alexander Sobieſky, who dying at Rome, he was obliged to make his lute bear his expences back into Germany, going firſt to Breſlau and afterwards to Dreſden, where he was engaged in the ſervice of the king of Poland, and became the moſt celebrated luteniſt at that time in Europe. Germany has produced many eminent muſicians of the name of Weiſs; as John Adolphus Fauſtinus, ſon of Sylvius Leopold, a luteniſt likewiſe; C. Weiſs, a performer on the German flute, who viſited London in 1783, an ingenious and curious man, who had improved his inſtrument, and had many curious peculiarities in his performance.

WELDON, John, an eminent muſician, was born at Chicheſter, learned the rudiments of muſic of Mr. John Porter, organiſt of Eton college, and afterwards received inſtructions from Henry Purcell. He was for ſome time organiſt of New college, Oxon. But in 1701 he was appointed a gentleman extraordinary of the Chapel royal; and in 1708 ſucceeded Dr. Blow as one of his majeſty's organiſts. In 1715, upon the eſtabliſhment of a ſecond compoſer's place in the king's chapel, Weldon was the firſt who filled that ſtation, of which he ſeemed conſcientiouſly determined to fulfil all the duties; for before he had long been in poſſeſſion of this office, he gave proofs of his abilities and diligence in the compoſition of the communion ſervice, as well as the ſeveral anthems required by the conditions of his appointment.

He was likewiſe organiſt of St. Bride's church in Fleet-ſtreet, and of St. Martin's-in-the-Fields.

Beſides many favourite ſongs and ſolo anthems of the time, Weldon compoſed two full anthems, which are inſerted in Dr. Boyce's ſecond volume; the firſt is rather too familiar and common; but the ſecond, "Hear my crying, O God," in ſix parts, is a very pleaſing and maſterly compoſition; particularly the firſt movement. In the ſecond movement, the words *up upon* are unfortunately expreſſed by notes that ſucceed each other too rapidly for their eaſy utterance. The paſſages of the third and fourth movements ſeem much worn by forty or fifty years uſe; however, the pauſes at the end of the laſt ſtrain have a fine effect.

Six of his ſolo anthems were publiſhed about the year 1730; we ſay *about* that period, as muſical chronology is become a very difficult ſtudy. The late Mr. Walſh, finding that *old* muſic-books were like old almanacs, ceaſed very early in this century to aſcertain the time of their birth by dates, which have ever ſince been as carefully concealed as the age of antiquated virgins.

Weldon's powers of invention and of harmonical combination ſeem very much limited. His anthems had the advantage of being ſung in the Chapel royal by a celebrated ſinger, Mr. Richard Elford; but now, let who will execute them, they muſt appear feeble and old-faſhioned, unleſs the embelliſhments of George I.'s time are changed for thoſe in preſent uſe. The truth is, that the fund of original conception or ſcience, which alone can render old muſic valuable to the curious, long after the ſtyle in which it was written is become antiquated and forgotten, was never very conſiderable in Weldon's productions. His firſt anthem, "O Lord rebuke me not," remained long in favour, when well ſung in our cathedrals, from its reſemblance to the ſtyle of Purcell; and the natural and eaſy ſlow minuet air to "Turn thee, O Lord, and deliver my Soul," which has ſo much of a ſecular ſong and rondeau in it, that it is remembered with pleaſure by the muſical part of a congregation, who are more likely to bear it in mind than more ſerious parts of the ſervice.

The productions of Weldon appear flimſy after thoſe of Crofts; and Dr. Green's after Handel's: yet Green compared with Weldon is a giant; that is, a Handel.

There is a vice of which compoſers of ſmall reſources are often inadvertently guilty, for want of a ſincere and judicious friend to tell them of it; and that is, eternal repetition of the ſame paſſage, a note higher or a note lower, which the Italians call *roſalia*. This certainly originates in the want of ideas, and yet it may be avoided by attention, though the ſheet would not fill ſo faſt. Weldon has indulged himſelf in theſe repetitions to a tireſome degree in ſeveral of his anthems; but in the ritornel to "Have Mercy upon me, O God," he has iterated the ſame poor paſſage a note lower ſeven times ſucceſſively!

His ſong for two voices, "As I ſaw fair Clora walk alone," was in great favour ſome years ago; and his air in the Judgment of Paris, "Let Ambition fire thy Mind," is a melody ſo natural and pleaſing, that, like an ever-green in vegetation, it will always be freſh and in ſeaſon. And there is no air in greater favour than this at preſent, in the Engliſh opera of "Love in a Village," to the words, "Hope the Nurſe of young Deſire."

This compoſer died in 1736, and was ſucceeded in the King's chapel by the late Dr. Boyce.

WELLS, l. 1, *r.* L. and E.

Wells, in *Geography*, a townſhip of Rutland county, in Vermont, having 1040 inhabitants.

WELSH Music. If incredulity could be vanquiſhed with reſpect to the account which Giraldus Cambrenſis gives of the ſtate of muſic in Wales during the 12th century, (ſee Giraldus Cambrensis,) it would be by a Welſh MS. formerly in the poſſeſſion of Richard Morris, eſq. of the Tower, which contains pieces for the harp that are in full *harmony* or *counterpoint*: they are written in a peculiar notation, and ſuppoſed to be as old as the year 1100; at leaſt, ſuch is the known antiquity of many of the ſongs mentioned in the collection. But whether the tunes and their notation are coeval with the words, cannot eaſily be proved; nor is the counterpoint, though far from correct or elegant, of ſo rude a kind as to fortify ſuch an opinion.

Some part of "this MS.," according to a memorandum which we found in it, "was tranſcribed in the time of Charles I., by Robert ap Huw, of Bodwigen, in the iſle of Angleſea, from William Penllyn's Book." The name of William Penllyn is recorded among the ſucceſsful candidates on the harp, at the *eiſteddfod*, or ſeſſion of the bards and minſtrels, appointed in the ninth year of queen Elizabeth, at Caerwys in North Wales, where he was elected one of the "chief bards and teachers of inſtrumental ſong." The title given to theſe pieces is "Muſica neu Beroriaeth;" and a note in Engliſh informs us, that the manuſcript contains "the muſic of the Britons, as ſettled by a congreſs, or meeting of maſters of muſic, by order of Gryffydd ap Cynan, prince of Wales, about the year 1100, with ſome of the moſt ancient pieces of the Britons, ſuppoſed to have been handed down to us from the Britiſh bards."

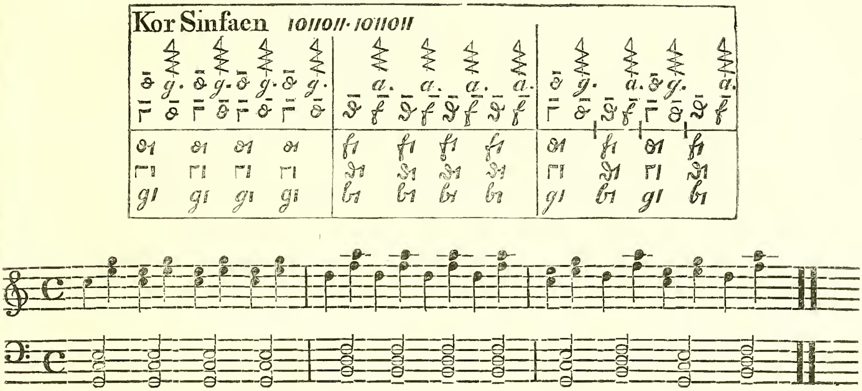
This muſic is written in a notation by letters of the alphabet, ſomewhat reſembling the tablature for the lute;

but without lines, except a ſingle line to ſeparate the treble from the baſe.

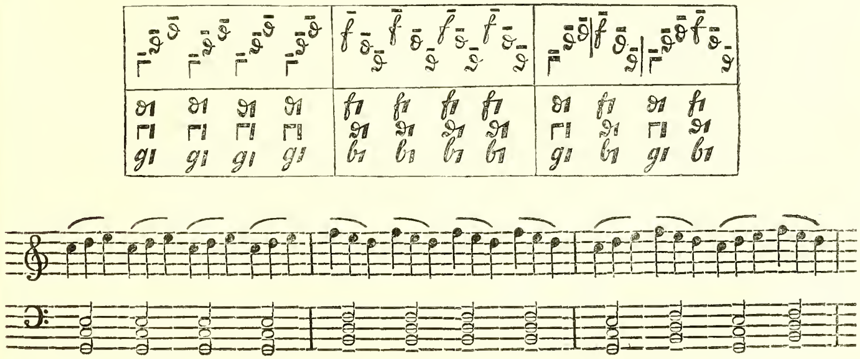
In the notation, double *ff* ſeems the loweſt note; then the firſt ſeven letters of the alphabet are written thus, *g*ι, *a*ι, *b*ι, ʗι, ϑι, ϑι, *f*ι; and the next ſeptenary thus, with a daſh over each letter, *f̄*, *ḡ*, *ā*, *b̄*, *c̄*, *d̄*, *ē*. If theſe letters repreſent the ſame ſounds as at preſent, we find ſome ſuch chords as are admitted in modern harmony; but others frequently occur that are mere jargon.

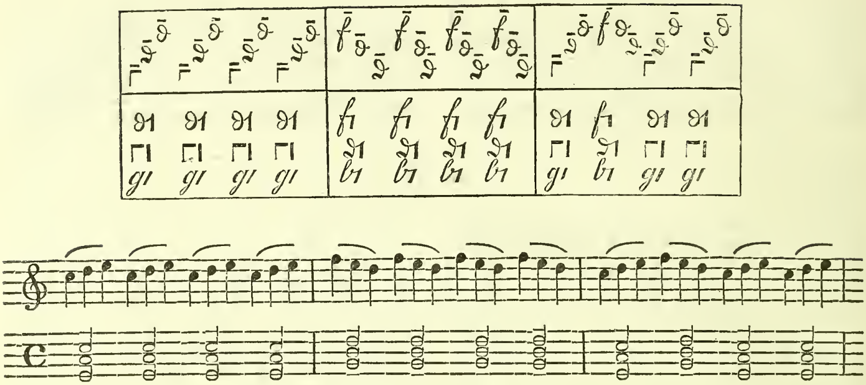
Many of the baſes, or accompaniments to the melodies, begin with the chord of C inverted, ϑι ʗι *g*ι. Theſe chords and melodies are leſſons for young practitioners on the harp, and are ſaid to be the exerciſes and trial-pieces which were required to be performed by the candidates for muſical degrees, and for the ſilver harp. Among the firſt twenty-four leſſons of this kind, ſome few are eaſy to decypher, as N° XI. and XVII., which we ſhall give here as ſpecimens of this notation, explained in modern muſical characters.

No. XI.

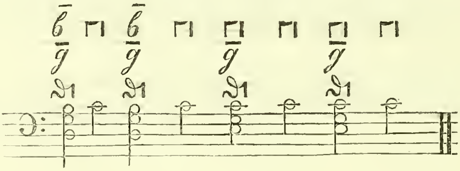


No. XVII.





After twenty-four leſſons, or meaſures, as they are called, of this kind, there follow twelve variations on a ground baſe.



This counterpoint, however artleſs it may ſeem, is too modern for ſuch remote antiquity as is given to it. The falſe 5th, from B to F, in the firſt example, has not been long allowed in harmony; and the unprepared 7th, from B to A, in the ſecond example, is a crudity that has been but very lately tolerated.

That the ancient inhabitants of Wales were great encouragers of poetry and muſic, cannot be diſputed, as many ſpecimens of Cambro-Britiſh verſification of undoubted antiquity ſtill ſubſiſt; and that theſe poems, as well as thoſe of ancient Greece and Rome, were originally *ſung* and accompanied with inſtruments, is very natural and reaſonable to believe; but that a rude and uncivilized people, driven into a mountainous and barren country, without commerce or communication with the reſt of Europe, ſhould *invent counterpoint*, and cultivate harmony, at a period when it was unknown to the moſt poliſhed and refined inhabitants of the earth, ſtill remains a problem of difficult ſolution.

Dr. Burney gives a farther account of this curious MS. in ſpeaking of *national muſic*, and the eſtabliſhment of muſical games or conteſts in Wales, before any other muſic ſeems to have been much cultivated in the reſt of the iſland, except the eccleſiaſtical or Gregorian chant, which the Britons, driven into the mountains of Wales by the Saxons, ſeem to have been very unwilling to receive from the Roman miſſionaries that were ſent over to convert their conquerors. The Britiſh annals and ſongs aſcribe with great reſentment the ſlaughter of the monks at Bangor, by Ethelbert, king of Kent, to the inſtigation of Auſtin the monk, on account of their having refuſed to ſubmit to the juriſdiction of pope Gregory, and the regulations he propoſed.

WELWIN, or Welwyn. In 1811, the pariſh contained 192 houſes, and 1130 perſons; *viz.* 567 males, and 563 females.

WEMYSS. In 1811, the pariſh contained 565 houſes, and 3691 perſons; *viz.* 1657 males, and 2034 females. This pariſh includes Buckhaven, E. and W. Coallowns, Kirkland, Methil, E. and W. Wemyſs, and the reſt of the pariſh, containing 116 males, and 117 females.

WENDLING, J. Baptist, in *Biography*, an eminent performer on the German flute, in the ſervice of the elector palatine at Manheim in 1772.

Francis and Charles, brothers, performers on the violin, and Mademoiſelle Wendling, a ſinger, of the ſame family, were all muſical profeſſors of great merit in the ſame ſervice at the ſame period.

WENLOCK, Little. In 1811, the pariſh contained 178 houſes, and 941 inhabitants.

WENTWORTH. In 1811, this townſhip contained 226 houſes, and 1086 perſons; *viz.* 542 males, and 544 females.

WEREMOUTH, Monk's. In 1811, this pariſh, conſiſting of five townſhips, *viz.* Felwell, Hylton, Monk-Weremouth, Monk-Weremouth Shore, and Southwick, contained 832 houſes, and 6504 perſons; *viz.* 2837 males, and 3667 females. The townſhip of Monk-Weremouth contained 210 houſes, and 1091 perſons; *viz.* 457 males, and 634 females: and that of Monk-Weremouth Shore contained 458 houſes, and 4264 perſons; *viz.* 1815 males, and 2449 females.

WESTBURY, in the county of Salop. In 1811, the townſhip contained 112 houſes, and 665 perſons; *viz.* 348 males, and 317 females: and the pariſh, comprehending the chapelry of Minſterley, and the three townſhips of Weſtbury, Weſtley, and Yockleton, contained 417 houſes, and 2195 perſons; *viz.* 1124 males, and 1071 females.

WESTERLEY. Add—in Waſhington county, containing 1921 inhabitants.

WESTHAVEN, a town of Rutland county, in Vermont, having 679 inhabitants.

WESTMINSTER Abbey. Its happy conſtruction for muſic at the commemoration of Handel in 1784, appeared to be ſuch as not only to overſet all the predictions of ignorance and ſarcaſm, but the conjectures of theory and experience. By ſome it was predicted that an orcheſtra ſo numerous could never be *in tune;* but even tuning to ſo noble an organ was for once grand, and productive of pleaſing ſenſations. By ſome it was thought that, from their number and diſtance, they would never play *in time;* which, however, they did moſt accurately, and without the meaſure being beaten in the uſual clumſy manner. By others it was propheſied that the band would be ſo *loud*, that whoever heard this performance would never hear again; however the ſound of theſe multiplied tones arrived as mild and benign at the ears of the audience as they could from the feeble efforts of a few violins in a common concert-room. And, laſtly, that from the immenſe ſize of the building, no *ſingle voice* had the leaſt chance of being heard by thoſe who had places remote from the orcheſtra; but luckily this was ſo far from being true, that not a vocal breathing, however feeble by nature, or ſoftened by art, was inaudible in any part of the wide-extended ſpace, through which it diffuſed itſelf in all directions.

There was, doubtleſs, great propriety in ſaluting their majeſties at their entrance with the Coronation Anthem, yet we could not help wiſhing that this performance, ſo different from all others, had opened with ſome piece in which every voice and every inſtrument might have been heard at the ſame inſtant; as ſuch an effect might then have been produced as can never be obtained by gradation. Indeed the moſt ſudden and *ſurpriſing* effect of this ſtupendous band was, perhaps, produced by ſimultaneous tuning; as all the ſtringed-inſtruments performed this taſk *à double corde*, and theſe ſtrings being all open, their force was more than equal to that of two ſtopt-ſtrings upon two different inſtruments.

It is but juſtice to Madame Mara, in ſpeaking of the effects of a ſingle voice in this immenſe building, to record that ſhe had not only the power of conveying to the remoteſt corner of this expanded ſtructure, the ſofteſt and moſt artificial inflexions of her ſweet and brilliant voice, but of articulating every ſyllable of the words with ſuch neatneſs, preciſion, and purity, that it was rendered as audible and intelligible as it could poſſibly have been in a ſmall theatre by mere declamation.

The happy conſtruction of Weſtminſter Abbey for cheriſhing and preſerving muſical tones, by a gentle augmentation without echo or repetition, was demonſtrated by no part of the commemoration performance more clearly than in that of Miſs Abrams, whoſe voice, though ſweet, of perfect intonation, and good quality, was not regarded as theatrical, but ſuch as the Italians denominate *bella voce de camera*, yet in the ſolo air, which ſhe ſung with her uſual taſte and expreſſion, her voice was rendered more audible in every part of that immenſe building, than it had ever been in any concert-room in London.

Giardini, envious of the powerful tone of Fiſcher's hautbois, which could even rival that of his own violin with all its force and ſweetneſs, uſed to ſay that Fiſcher had an *impudence of tone*, but it never produced a more full, rich, and ſweet effect than in the ſolo parts of Handel's fourth hautbois concerto, which he performed with ſuch taſte and propriety, as muſt have convinced all thoſe who heard him that his excellence was not confined to his own very original and ingenious productions. Indeed, one of the Commemoration wonders ſeems to have been the perfect manner with which the ſweet and grateful tone of his *ſingle* inſtrument filled the ſtupendous temple of our holy religion, in the performance of this concerto.

WEST PENN, in *Geography*, a townſhip of Northampton county, in Pennſylvania, having 947 inhabitants.

WESTPHAL, in *Biography*, an eminent muſic merchant of Hamburg, one of the greateſt publiſhers in Germany during the middle of the laſt century.

WHERWELL, in *Geography*. In 1811, Wherwell with Weſtover pariſh, in the hundred of Wherwell, contained 113 houſes, and 543 perſons; *viz.* 277 males, and 266 females.

WHIFF. Add—See Pleuronectes *Punctatus*.

WHITE, John, in *Biography*, a Quaker, at whoſe ſhop in Newgate-ſtreet ladies were furniſhed with ſtraw hats. This worthy man was a great collector of ancient rarities, as well as natural productions of the moſt curious and extraordinary kind; no one of which, however, was more remarkable than the obliging manner with which he allowed them to be viewed by his friends and examined by ſtrangers. Among his old books and MSS. he was in poſſeſſion of a very ſcarce and valuable muſic-book, which once appertained to Dr. Robert Fayrfax, an eminent Engliſh compoſer during the reigns of Henry VII. and Henry VIII.; it was afterwards in the poſſeſſion of general Fayrfax, and upon his demiſe became a part of the Thoreſby collection, at the ſale of which it was purchaſed by honeſt John White.

WHITSTABLE, in *Geography*. In 1811, the pariſh contained 235 houſes, and 1249 perſons; *viz.* 616 males, and 633 females.

WILLIAMSBOROUGH, a townſhip of Burlington county, in New Jerſey, having 619 inhabitants.

WILTSHIRE. In 1811, this county contained 37,478 houſes, and 193,828 perſons; *viz.* 91,560 males (including the local militia 1662), and 102,268 females: 22,657 families being employed in agriculture, and 14,857 in trade, manufactures, or handicraft.

WIMBLEDON. In 1811, the pariſh contained 293 houſes, and 1914 perſons; *viz.* 891 males, and 1023 females.

WINDHAM, a town of Maine, in the county of Cumberland, containing 1613 inhabitants.

WINTERTON, in Lincolnſhire. In 1811, the pariſh contained 179 houſes, and 821 perſons; *viz.* 379 males, and 442 females.

Winterton, in Norfolk. In 1811, the pariſh contained 112 houſes, and 494 perſons; *viz.* 254 males, and 240 females.

WITCHCRAFT. Add—Dr. Henry More publiſhed a curious tract, entitled "Antidotes againſt Atheiſm," in which he undertakes to prove the being of a God from the exiſtence of witches, and the power which they poſſeſs. See his biographical article.

WITHERITE, col. 2, l. 9, add—The known repoſitories of this ſubſtance are very limited; but it has been obſerved by Mr. Aikin, in great abundance, in the lower part of a lead-mine in Shropſhire, where it occurs in irregular maſſes, which weigh from forty to two or three hundred pounds, imbedded in heavy ſpar. The miners call this ſubſtance "yellow ſpar;" not that this is its real colour by day-light, but its tranſparency is ſo conſiderable, that if a lighted candle be placed behind a maſs of it, the whole will glow with a yellowiſh light, by which circumſtance the miners diſtinguiſh it from "heavy ſpar." This latter from the looſeneſs of its texture, being in large maſſes quite opaque. The colour of the witherite is white, with the ſlighteſt poſſible, if any, tinge of yellow; its fracture is hard, ſtriated, approaching to ſtraight foliated; it is for the moſt part maſſive. Mr. Aikin obſerved only one ſpecimen that preſented any indications of a regular cryſtalline form. In other particulars it agrees with the uſual deſcription of this ſubſtance. 100 parts of this witherite yields,

Carbonate of barytes	96.3
——— of ſtrontites	1.1
Sulphate of barytes	0.9
Silex	0.5
Alumine and oxyd of iron	0.25
	99.05
Loſs	0.95
	100

Tranſ. of Geolog. Soc. vol. iv. pt. 2.

WITTENA-GEMOTE, l. 14 from the bottom, *r.* concionatores.

WODANIUM, in *Chemiſtry*, the name of a metal recently diſcovered by Lampadius. This metal was obtained from a ſpecies of pyrites, named by Breithaupt *Wodan-kies*, or wodan pyrites, formed at Topſchau, in Hungary, and which had hitherto been conſidered as an ore of cobalt. The ſpecific gravity of this mineral is 5.192. Its luſtre is metallic. Its colour dark tin-white, paſſing into grey or brown. Hitherto it has only occurred maſſive, and in that ſtate it is full of cavities. Its fracture is uneven. It is brittle and eaſily frangible, and in hardneſs ſurpaſſes fluor ſpar, but is inferior to apatite. This mineral contains about 20 *per cent.* of the new metal united with ſulphur, arſenic, iron, and nickel.

Wodanium has a bronze-yellow colour ſimilar to that of cobalt glance, and its ſpecific gravity is 11.470. It is malleable. Its fracture is hackly; it has the hardneſs of fluor ſpar, and is ſtrongly attracted by the magnet. It is not tarniſhed by expoſure to the atmoſphere at common temperatures, but when heated it is converted into a black oxyd.

The ſolution of this metal in acids is colourleſs; or at leaſt has only a ſlight wine-yellow tinge. Its hydrated carbonate is likewiſe white. The hydrate of it precipitated by cauſtic ammonia is indigo blue.

Neither the alkaline phoſphates nor arſeniates occaſion any precipitate when dropped into a ſaturated ſolution of this metal in an acid, neither is any precipitate produced by the infuſion of nut-galls. A plate of zinc throws down a black metallic powder from the ſolution of this metal in muriatic acid. Pruſſiate of potaſh throws down a pearl-grey precipitate, &c.

Nitric acid diſſolves with facility both the metal and its oxyd, and the ſolution yields colourleſs needle-form cryſtals, which readily diſſolve in water.

Such at preſent is all we know of this metal, and the ore containing it. The name *wodanium* has been given from the old Saxon divinity, *Wodan*.

WOODFORD, in *Geography*, a village in a pariſh of the ſame name, in the hundred of Becontree, and county of Eſſex. In 1811, the pariſh was returned as containing 310 houſes, and 2056 inhabitants; *viz.* 1051 males, and 1005 females. It is ſituated on Epping Foreſt, in the vicinity of Walthamſtow, Wanſtead, Layton, &c. which contain a conſiderable number of well-built houſes, admirably adapted for the country-reſidence of the citizens of London.

WOODVILLE, in *Biography*. Add—Dr. Woodville, always anxious for the promotion of ſcience, and no leſs diſpoſed to ſerve the friends whom he eſteemed, favoured the editor with ſeveral botanical articles for the Cyclopædia.

WOOLCOTT, in *Geography*, a townſhip of Orleans county, in Vermont, having 124 inhabitants.

WOOLLETT, William, in *Biography*, a very eminent engraver, was born at Maidſtone, in Kent, Aug. 27, 1735, and educated in his native town. In early life he exhibited ſpecimens of his graphic talents, which being ſeen by Mr. Tinney, an engraver, occaſioned his being taken by him as an apprentice. His advancement in his profeſſion was very rapid, and ſo diſtinguiſhed, that he contributed in a very high degree to the perfection of landſcape-engraving. He was alſo ſingularly ſucceſsful in the exerciſe of his art on hiſtorical ſubjects and portraits. So eſtabliſhed and ſo permanent has been his fame, that the beſt impreſſions of his prints, particularly thoſe of "Niobe" and "Phaeton," "Cebadon and Amelia," "Cnyx and Alcyone," "The Fiſhery," "Vandyke's Portrait of Rubens," "The Death of General Wolfe," and "The Battle of the Boyne," whenever they occur in collections, are very highly appreciated.

The world was deprived of this eminent artiſt at the age of 50. His death, which occurred at his houſe in Upper Charlotte-ſtreet, Rathbone-place, May 23, 1783, was announced to the public with the following tribute of reſpect to his memory. "To ſay he was the firſt artiſt in his profeſſion would be giving him his leaſt praiſe, for he was a good man. Naturally modeſt and amiable in his diſpoſition, he never cenſured the works of others, or omitted pointing out their merits: his patience under the continual torments of a moſt dreadful diſorder upwards of nine months was truly exemplary; and he died, as he had lived, in peace with all the world, in which he never had an enemy. He has left his family inconſolable for his death, and the public to lament the loſs of a man whoſe works (of which his unaſſuming temper never boaſted) are an honour to his country." An elegant monument was erected to his memory in the cloiſters of Weſtminſter-abbey. Chalmers's Gen. Biog. Dict.

WOOLWICH, col. 3, l. 11.—The cadets, who are inſtructed at the royal military academy, were ſent for ſome years to the military college, then at Marlow, now at Sandhurſt, as a preparatory ſchool; but that plan, being found attended with diſadvantages, was abandoned. The inſtitutions at Woolwich and Sandhurſt are now therefore entirely independent; and we may add, that they are different in their nature, and are intended for very different purpoſes. The inſtitution at Woolwich is confined ſolely to the inſtruction of young gentlemen intended for the artillery and engineer ſervice; that at Sandhurſt is ſupplementary, and deſigned for the inſtruction of ſuch as are deſtined to any other branch of the military ſervice of Great Britain. The education at Woolwich is free of expence, except the little that is incurred by the purchaſe of the firſt uniform. The cadets at Sandhurſt pay a certain ſum annually, bearing an aſſigned proportion to the rank of their parents, and being only free, as we conceive, in caſes where the cadets are orphans, or their fathers ſubalterns.

WOORARA. See Ticunas, and *Vegetable Poiſons*, under the article Poison.

WOULFE's Apparatus. See Distillation and Laboratory.

WRESTLING. See Pale.

WROXETER, in *Geography*. In 1811, the pariſh contained 109 houſes, and 575 perſons; *viz.* 305 males, and 270 females.

WYMONDHAM, in Norfolk. In 1811 the pariſh contained 747 houſes, and 3923 perſons; *viz.* 1896 males, and 2027 females.

X.

Vol. XXXIX.

XANTHOSIA, in *Botany*, from ξανθος, *yellow*, that colour being ſtrongly communicated by the dried plant, to boiling water.—Rudge Tr. of Linn. Soc. v. 10. 301.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Eſſ. Ch. Petals five, ovate. Fruit ovate, ſtriated, ſeparable into two parts. Involucrum of two leaves, ſingle-flowered.

1. X. *piloſa*. Hairy Xanthoſia. Rudge as above, t. 22. f. 1.—Native of Port Jackſon, New South Wales. *Stem* ſhrubby, branched, hairy. *Leaves* alternate, ſtalked, oblong, obtuſe, ſinuated; hairy beneath. *Flowers* axillary, ſolitary, on ſhort ſtalks. *Bracteas* two, awl-ſhaped, briſtly, at the baſe of each flower-ſtalk. *Involucrum* of two obovate ribbed leaves, half way up the ſtalk. This plant certainly belongs to the order of *Umbellatæ*, however different in inflorescence.

Y.

YELLOW Fever, l. *penult. dele* for the details of which, ſee that article in the *Addenda*, and inſert—See Quarantine, *Addenda*.

YORK, col. 12, l. 1, for death *r.* reſignation.

York, *New*. See United States.

York, *New*, city, col. 2, l. 24, add—as ſome ſay, 120,000.

Z.

ZINJAN, in *Geography*, a town of Perſia, in the province of Irak, diſtant 21 miles, and bearing about N.W. by W. of Sultanee. This is a large and proſperous town, capital of the extenſive diſtrict of Khumſeh, under the government of one of the king's ſons. From hence to the banks of the Kizilozian, or golden ſtream, the diſtance is 71 miles over an uneven country, full of deep ravines.

ZOLLIKOFER, George Joachim, in *Biography*, an eminent German divine and popular preacher, was born at St. Gall in Switzerland, Auguſt the 5th, 1730. His father, who was a practitioner in the law, much eſteemed for his integrity and piety, took great care of his education, and by his own counſel and example directed the courſe of his moral conduct; nor were any of his efforts for the proficiency of his ſon in knowledge and virtue unavailing. As he was intended for the clerical profeſſion, he was removed, at an early age, from the gymnaſium of his native town, firſt to Bremen, and afterwards to the univerſity of Utrecht, where the theological profeſſors were held in high eſtimation. Our young ſtudent, however, ſoon diſcovered that a college education was ill adapted to his aſpiring mind; as, in his opinion, it was very unfavourable to all exertions of genius and originality of thought, by levelling the diſtinctions of nature, by reſtraining the intellectual capacities to a blind veneration for authorities, and prepoſterouſly miſleading the judgment ſo as to take the means of inſtruction for its end. Poſſeſſing a native vigour of mind, which diſtinguiſhed him through the whole courſe of his life, he reſolved, whilſt he attended the public lectures with the reſt of the ſcholars, to cultivate his talents and to purſue his inquiries in his own way. Inſtead of paying implicit deference to ſyſtems and ſummaries of theology, drawn up in technical and ſcholaſtic phraſeology, he made ſcripture and reaſon his guide, and, as he ſays in a letter to a friend, "I privately applied myſelf to the Bible, together with a cloſe inveſtigation of eccleſiaſtical hiſtory; for I found it impoſſible for me to ſubmit to the trammels of the ſchools, where derivative doctrines are uniformly tranſmitted, without examination, by the ſucceſſive tutors from generation to generation, &c." In the other ſciences, as well as in theology, he expreſſes his diſſatisfaction with the means of inſtruction that were then adopted and invariably practiſed in the public ſchools. "The little which I know," as this modeſt man was heard to ſay, "I was obliged to teach myſelf, chiefly after I arrived at years of maturity; for indeed I had but a miſerable education." This is not the language of pride and pedantry; as his attention was directed to a variety of reſearches, which, in his youth, the ſtate of education in Germany would furniſh him with no extraordinary advantages; and as he is known to have excelled in various departments of general literature and ſcience, beſides theology. His attainments in natural hiſtory and natural philoſophy were very conſiderable; with the hiſtories, ancient and modern, of the ſeveral nations of the world he had cultivated an extenſive acquaintance, and in the ancient and modern languages, particularly the Latin, French, and Engliſh, he was no ordinary proficient; having made the works of the beſt poets, orators, and philoſophers, the ſubjects of his particular ſtudy. Of Cicero he is ſaid to have been a great admirer; and his eloquence was formed upon the model of that of this celebrated Roman orator. "Oh, my beloved Zollikofer!" ſays Zimmermann (on Solitude), "what delightful experiences I am conſtantly feeling of the truth of thoſe leſſons you delivered at Leipſic; thoſe truly uſeful doctrines, which, diſregarding a cold and barren theology, inculcate wiſe and virtuous precepts, that warm and amend the heart. On quitting your auditory, the man of buſineſs forgets his vexations, pours his anxieties into the boſom of friendſhip, ſurrenders his feelings to the charms of conſolation, until his heart is dilated with new hopes and his inquietudes are ſo far ſuſpended as to enable him to ſuſtain their return with fortitude, or to diſpel them with courage. The ſtudious man abandons his recondite and laborious reſearches, eſcapes from the labyrinth, and finds in the innocent and ſimple ſatisfactions of his family and dependants more real content and happineſs than even art and ſcience could afford him."—"Men, in ſhort, of every caſt and character, here find by degrees the mind's bleſt calm, and learn to put on the pure ſpirit of the goſpel of Chriſt."

Soon after he had finiſhed his academical courſe, he ſettled, as a preacher, at Murten in the Pays de Vaud; and in a little while removed to a more conſiderable place at Monſtein in the Griſons, and afterwards to Iſenburg. But neither of theſe places afforded ſufficient range for his talents and zeal; and therefore in the year 1758, at the age of twenty-eight, he accepted an invitation to be one of the German preachers at the church of the evangelically reformed at Leipſic. In this connection he availed himſelf of the opportunity which his moderate labours afforded him, of giving that perfection to his diſcourſes which was the object of his wiſhes. Accordingly, the univerſal approbation which he received on the part of his numerous congregation from his firſt ſettlement conſtantly augmented from day to day, and adhered to him to the very laſt hour of his addreſſing them. A conſiderable number of young members of the univerſity eagerly preſſed to hear his diſcourſes, learning from him, by example, how a ſubject ſhould be ſtudied and diſcuſſed, in order to contribute, in any remarkable degree, to the advancement of wiſdom and virtue among mankind by the oratory of the pulpit.

It is therefore natural to hope, that Zollikofer's genius will continue to operate not only throughout his native country, but likewiſe over many provinces of Germany, by means of theſe his diſciples, who are thus prepared for diſſeminating truth, and virtue, and happineſs among their fellow-creatures to the lateſt poſterity.

Several volumes of his excellent diſcourſes have for ſome years been in the hands of the public, and are in high and deſerved repute wherever the German language is underſtood, by all perſons to whom religion and virtue are objects of ſerious concern; to which the number of editions through which they have paſſed, and which are continually publiſhed, bear ample teſtimony, as well as to the taſte and judgment of the times with regard to compoſitions of this nature. A German writer ſays, that " Zollikofer was one of the firſt pulpit orators of his time. His ſermons were diſtinguiſhed by clearneſs of ideas and warmth of feeling. In regard to form, they were the moſt complete productions of the kind which had appeared, at that time, in Germany. The diction is copious and varied; the periods harmonious, and the whole acquires great animation from the connection of the ideas and the tranſitions." Of his theological creed we can form no decided opinion. His diſcourſes are practical, and not controverſial; and it muſt be allowed that whatever were his ſentiments on diſputed topics, they are adapted to inform the underſtanding, to impreſs the heart, and to regulate the temper and conduct. Some have ſuſpected that he belonged to the modern German ſchool of theologians. Profeſſor Eichorn pronounces his eulogy in the following ſtrain: " Zollikofer, on account of the philoſophical colouring combined with popularity, which he knew how to give to his diſcourſes, was an orator for the higheſt ranks. He unfolded the doctrines and principles of Chriſtianity with philoſophical accuracy; exhibited them in a conciſe and impreſſive manner, clothed in pure and ſimple language, without artificial ornament; and endeavoured to affect the heart by convincing the judgment."

Zollikofer, conſidering that pſalmody and prayer form an eſſential part of public worſhip, undertook to make a collection of ſpiritual ſongs for the uſe of his congregation, on a plan more ſuitable to the purpoſe, and more edifying than the old one. In doing this he availed himſelf of the advice and aſſiſtance of his judicious friends, both in regard to the improvement of the forms, and to the proper ſelection of hymns from the modern poets, particularly Gellert, Cramer, and Kloppſtock. This performance appeared in the year 1766. His diſcourſes and prayers for the uſe of public and family worſhip were publiſhed in 1777, and were followed in 1785 by his exerciſes of devotion and prayers for the private uſe of reflecting and ſincere Chriſtians. The Rev. W. Tooke, F.R.S. has done great ſervice to the cauſe of rational religion, by the tranſlation of 10 vols. 8vo. of Zollikofer's Sermons, and of his Devotional Exerciſes in 1 vol. 8vo.

Having ſaid ſo much concerning the profeſſional character and performances of Zollikofer, we cannot forbear adding a few particulars from the account that lies before us, with regard to his private and ſocial diſpoſition and conduct. " In humility and retirement, he purſued his path of life; never wiſhing to ſhine, his only aim was to be uſeful; becauſe in the exerciſe of that ſtern virtue which he taught he found his ſupreme delight. The poor and deſtitute, eſpecially thoſe of his congregation, beheld in him a father and a friend; though his bounty was by no means confined to them, it alſo extended to thoſe of other communions, relieving them either by his own donations or through application to others."—" His advice, his judgment, his interceſſion with others, his admonitions, his conſolation in misfortune, were at the ſervice of all who applied for them, and he even went before their requeſts. Young men deſirous of knowledge, eagerly ſought his acquaintance, and all thoſe who enjoyed that benefit have honeſtly confeſſed, that they derived from it material improvement both in heart and mind. Whatever he ſaid was true; every word he uttered might be relied on as conveying the real ſentiments of his heart; arrayed in the ſimple majeſty of truth, he ſought no other covering: and never did he commend or approve from complaiſance any thing that was contrary to the conviction of his own mind, or that he ſaw could not be approved upon the ſtricteſt rules of morality. His gravity was attractive and engaging, charity itſelf was in its ſmiles, his converſation entertaining, often animated, his equal cheerfulneſs amiable and inoffenſive, and his raillery, in which he very rarely indulged, the mildeſt poſſible. To a very conſiderable compaſs of literary attainments and great brilliancy of imagination, were added in the character of Zollikofer, the moſt undeviating rectitude, the moſt amiable diſpoſition, and the moſt prepoſſeſſing manners. The whole tenor of his life was one pure, uninterrupted, captivating harmony of virtue, and the ſweet enjoyment of the felicities ariſing from it. Among his other ſatisfactions he had that of being univerſally eſteemed, as of neceſſity it could not be otherwiſe. That happy mixture of ſerioufneſs and dignity with gentleneſs and affability; his own ſtrict courſe of virtue combined with ſo much indulgence and candour towards the failings of others; his heartfelt and firm conviction of the great truths he taught, which manifeſted itſelf in all his actions, in the whole tenor of his converſation as well as in his diſcourſes from the pulpit, without entertaining the ſlighteſt intolerance towards ſuch as differed from him in opinion, or arrogating the ſmalleſt ſuperiority over thoſe who poſſeſſed not the faculty of thinking for themſelves, or of fully comprehending every truth; his unwearied zeal to lead his auditors to the rigorous exerciſe of virtue, in his demands however never diſregarding the rights of humanity concerning what they could or could not do in theſe or the other circumſtances; his impartial eſtimation of mankind, juſtly diſcriminating the opinions and principles upon which they acted, carefully tracing out their good qualities, and heartily rejoicing in every advantageous diſcovery of that nature — let the reader contemplate all this as combined in the character of Zollikofer, and then pronounce, whether real undiſſembled veneration, the general eſteem of all ranks and claſſes of perſons muſt not as inſeparably have attended his wiſdom and virtue as the ſhadow follows the ſubſtance. Even the wanton wit of thoſe who, in the judgments they paſs on the miniſters of religion, are not aſhamed to ſet aſide the reſpect that is due from man to man, was awed into ſilence at the name of Zollikofer."

He was twice married, and in both connections he was truly happy, though both proved childleſs. For about a year before his death his faculties began to decline, and he wiſhed to reſign his office of preacher, and to retire to the place of his nativity in Switzerland; but at the requeſt of his congregation, who for the ſake of retaining him expreſſed their willingneſs to be ſatisfied with one diſcourſe in a fortnight, he was induced to remain in his ſtation. At length within a few weeks before his death he was obliged to devolve the charge of preaching on another perſon. His laſt illneſs was very painful; but he bore it with the patience of a philoſopher, and the reſignation of a Chriſtian, looking by a ſteady eye of faith and hope beyond the grave to a world of retribution. He obtained a releaſe on the 22d of January 1788, and was buried on the 25th. The whole of his numerous congregation, together with ſome hundreds of young ſtudents of the univerſity, and numbers of his auditors of the Lutheran communion, attended his remains to the grave, with every token of unfeigned ſorrow.

THE END.

Printed by A. Strahan,
New-Street-Square, London.

CATALOGUE AND ANALYSIS
OF THE
PLATES TO REES'S CYCLOPÆDIA;

COMPREHENDING

THE GENERAL TITLES, THE ORDER AND NUMBER OF THE PLATES AND FIGURES, AND THE PARTICULAR SUBJECTS,

TOGETHER WITH

OCCASIONAL EXPLANATIONS, AND CORRECTIONS OF ERRONEOUS REFERENCES.

PORTRAIT of Dr. REES — FRONTISPIECE to Vol. I. of the Cyclopædia.

PLATES. VOL. I.

AGRICULTURE—ASTRONOMICAL INSTRUMENTS.

AGRICULTURE.

PLATE		
I.	Fig. 1.	Common Barn
	2.	Double Barn
	3.	Improved Barn
	4.	Open Barn
	5.	Dutch moveable Barn
II.	Fig. 1.	Barn and Threſhing Machine, Front Elevation
	2.	Ground Plan
	3.	End Elevation
	4.	On a larger Scale, Front Elevation
	5.	Ground Plan
	6.	End Elevation
	7.	With moveable Floor and Racks for feeding Cattle
III.	Fig. 1.	Blaſting Stones, Inſtrument for
	2.	Cart, Cloſe
	3.	Coup
	4.	Corn
	5, 6.	Drag
	7, 8.	Single Horſe
	9.	Quarry
IV.	Fig. 1.	Calf Pen, Ground Plan
	2.	Section
	3, 4.	Cattle Shed, Single
	5, 6.	Double
	7.	Curd cutter

PLATE		
V.	Fig. 1.	Cattle Shed, Elevation
	2.	Latch holder
	3.	Cattle Shed, Stall Diviſions
	4.	Stalls, Ground Plan
	5.	Elevation of the rear
	6.	Section
	7.	Stone Troughs. (*Inſert* A *at the upper end, and* B *at the lower end of the dotted line.*)
	8.	Stall, Section
VI.	Fig. 1.	Cottage, Farm, Double, Elevation
	2.	Ground Plan
	3.	Circular, Elevation
	4.	Upper Floor
	5.	Ground Plan
	6.	Circular Elevation
	7.	Upper Floor
	8.	Ground Plan
	9.	Small
	10.	Ditto, two Rooms
	11.	Ditto, three Rooms
	12.	Double, Elevation
	13.	Ditto, Ground Plan
	14.	Ditto, by Wyatt

(*Plate* VI. *is referred to as Plate* VIII.)

VII.	Fig. 1.	Ornamental Cottage, Elevation
	2.	Ground Plan

PLATE
VII. Fig. 3. Ornamental Cottage, Upper Floor
4. Ditto, another kind, Elevation
5. Ground Plan
6. Upper Floor
7. Ditto, another kind, Elevation
8. Ground Plan
9. Upper Floor
VII. Fig. 1, 2. Chaff-cutter, Salmon's, by Rowntree
3. Ditto, by M'Dougal
VIII. Fig. 1. Cheeſe-preſs, common
2. Improved
3. Churn, by Hartland
4. Improved, with vertical motion
5. by Rowntree
6. Beaters to
7. Upright, improved by Rowntree
(*For Plate* VIII. *Farm Cottages, See Plate* VI.)
IX. Fig. 1, 2. Cottage Fire-place
3, 4. Staircaſe
5. Bed Room
6, 7. Couch graſs Drag, by Amos
8. Coulter
9. Rake by Do. Side View
10. Plan
X. Fig. 1. Cultivator
2. Corn, uſed in Eſſex
3. Bean, by Rogers
4. Weſtern's double
5. Improved
X. Fig. 1. Embankment, common form
2. Improved form
3. Eaſy ſloping
4. Upright rocky
5. Improved
6. Walled
7—9. Improved
10. With Bruſh-wood
11. With projecting Point
XI. Fig. 1. Embankment againſt the Sea
2—5. Rivers
6—9. Dikes
10, 11. Scale of the Mould
XI. Fig. 1. Cyder Mill
2. Hand
3. Preſs, large
4. Windlaſs
5. Small
XII. Fig. 1. Dairy Houſe, Plan
2. Window End
3. Ground Plan
4. Latticed Window
5. Inſide View
6, 7. at Woburn Park
XIII. Fig. 1, 2. Dairy at Woburn
XIII. Graſs and Dairy Farm Buildings.
Fig. 1. Graſs and Dairy Farm Houſe, Elevation
2. Ditto, Houſe, Ground Plan
3. Outbuildings
4. Dairy Farm Houſe, Elevation
5. Houſe, Ground Plan
6. Outbuildings
(*Plates* XIII. *and* XIV. *have been wrongly numbered. The Plate numbered* XIII. *is referred to as Plate* XIV.; *and the Plate numbered* XIV. *is referred to as Plate* XIII.)

PLATE
XIV. Corn and mixed Farm Buildings.
Fig. 1. Farm Houſe, Elevation
2. Ditto, Houſe, Ground Plan
3. Outbuildings
4. Mixed Farm Houſe, Elevation
5. Houſe, Ground Plan
6. Outbuildings
XV. Fig. 1. Farm Houſe, ſmall, Elevation
2. Ground Floor
3. Chamber Floor
4. Larger, Elevation
5. Ground Floor
6. Ditto
XVI. Fig. 1. Farm Yard, Plan of Square Farm Yard, at Broom Fields
2. Ditto, at Eſkmount
XVII. Plans of Angular and Circular Farm Yards.
Fig. 1. Farm Yard, Angular
2. Circular
XVIII. Fig. 1—16. Fences
XIX. Fig. 1—12. Ditto
XX. Fig. 1—12. Ditto
XXI. Fig. 1—12. Ditto, Chain Fences, &c.
XXII. Fig. 1—12. Ditto, Wall Fences, &c.
(*This Plate is wrongly numbered* XXI.)
XXIII. Fig. 1. Flax Brake
2. Teeth
3, 4. Foot Brake, Elevation
5. Ground Plan
6, 7. Heckle
8. Rippling Comb
9, 10. Stock, End View
11. Scutcher
XXIV. Fig. 1. Granary, Section
2. Front Elevation
3, 4. Spouts
(*Fig.* 4. *is marked on the Plate* " Fig. 5. Plan.")
5. Hoppers
XXV. Fig. 1—5. Drill Machine, Salmon's
XXVI. Fig. 1—3. Machine, Charles's, for levelling Land
4. For lifting Stones
5. For raiſing Water
6. Sergeant's, for raiſing Water
7. Ditto, Section of the Bucket
(*This Plate is marked* " Plate Machines, No. 2.")
XXVII. Grazing, and Harrows
Fig. 1. Harrow, common
2. Improved
3. Double-jointed
4. Ditto, with top bar
5. Iron
6. Graſs
7. Graſs Sod-cutting Plough
8. Crib
XXVIII. } XXIX. } Mole catching.
(XXVIII.) Fig. 1. Detached Mole-hill
2. Two Mole-hills
3. Three ditto
4. Six ditto
5. Imperfect hills
6. Dry ditto
7. Freſh ditto
8. Wooden trap
9. Bottom of ditto

PLATE

(XXVIII) Fig. 10. Fall of Wooden Trap

11. Mole Pot

12. Mole Trap

(XXIX.) Fig. 1. Mole Plough, by Scott

2. Mole Plough, by Lambert

3. Machine for drawing

XXX. Fig. 1. Swing Ploughs, Rotheram

2. Small's Chain Plough

3. Lord Somerville's

4. Suffolk Iron Plough

5. Ducket's Skim Coulter

6. Lord Somerville's Double Furrow

XXXI. Fig. 1. Wheel Ploughs, Beverſtone Plough

2. Hampſhire Iron Plough

3. Norfolk Plough

4. Kentiſh Turnwriſt Plough

5. Single Horſe Plough

XXXII. Paring Ploughs and Tools.

Fig. 1. Cheſhire Paring Plough, Furrow ſide View

2. Ditto, Land ſide View

3. Breaſt Plough

4. Common Paring Plough

5. Paring Shovel

6. Mattock

7. Twobill for Paring

8. Paring Adze

9. Sock

XXXIII. Fig. 1—17. Piſè ; Implements for Piſè or Rammed Earth Buildings

XXXIV. Fig. 1—32. Gates, Hangings and Faſtenings

XXXV. Fig. 1. Graſſes, Sweet-ſcented Vernal

2. Meadow Foxtail

3. Smooth-ſtalked Meadow

1ª Rough-ſtalked Meadow

2ª Meadow Feſcue

3ª Creſted Dog-tail

1ᵇ Sheep Feſcue

2ᵇ Hard Feſcue

3ᵇ Flat Meadow

1ᶜ Marſh Meadow

2ᶜ Knot Graſs

3ᶜ Common Ray

1ᵈ Red Clover

2ᵈ Saintfoin

3ᵈ Lucern

1ᵉ Trefoil

2ᵉ Rough Cocksfoot.

3ᵉ Dutch Clover

XXXVI. Fig. 1. Kiln, Count Rumford's Lime Kiln

2. Rawſon's

3. For General Uſe

4. Pepper's Malt Kiln, Ground Plan

5. Ditto, Section

6. Plan of the Floor

7. Section of the Chimney

XXXVII. Fig. 1. Berne Machine, No. 1—3.

2. Borers, No. 1—4.

3. Fan Machine

4. Halter Caſt, Spring Staple for Haltering

5. Hay Sweep

6. Lactometer

7. Lime-ſtone Pounding Machine

8. Ox Shoeing Machine

PLATE

XXXVIII. Quarries, Pits, Mines, &c. draining them.

Fig. 1. Section of Drains

2. View of the Side of a Hill, with Water Courſe, &c.

3. Quarries, Surface View

4, 5. Section

6, 7. Quendon Water Barrow

XXXIX. Potatoe Harrow, Set Scoops, &c.

Fig. 1. Conſtruction of Ponds

2, 3. Potatoe Harrow

4. Scoop, Dublin

5. Slark's

6. Machine for diſcharging Overplus Water of Ponds

7. Fixed Pig or Swine Caſe

8. Moveable Ditto

XL. Fig. 1. Piggery at Woburn, Ground Plan

2. End Elevation

3. Side Elevation

4. Feeder

ALGEBRA.

Palpable Arithmetic and Writing.

I. Fig. 1. Digits or Figures

2—8. Arithmetical Tables, &c. &c.

II. Fig. 7—9. Neper's Bones. *See* MISCELLANY, *Plate* I.

ANALYSIS.

Aſymptote

(*The reference under this article to* ANALYSIS, *fig.* 1. *ſhould be Plate* I. *fig.* 2.)

I. Fig. 1. Ciſſoid.

2—9. Conchoid

10—20. Conſtruction

(*The figure numbered* 20 *is not the proper one. The figure referred to is inſerted in* GEOMETRY, *Plate* IX. *fig.* 2. CONSTRUCTION.)

II. Fig. 21, 22. Coteſian Theorem

23. Crown

24. Curve, Cauſtic

25. Diacauſtic

26. Characteriſtic, Triangle of a

Fig. 18. Element

3, 4. Cylinder. (*Theſe figures are referred to as in* GEOMETRY, *Plate* IV.)

III. Fig. 1—13. Curvature

IV. Fig. 1—16. Curve

(*This Plate is numbered* VI. *and referred to as Plate* VI. *under the article* CURVE.)

V. Fig. 1—8. Cycloid

(*Fig.* 1—8. *have alſo been engraved by miſtake on a ſeparate Plate, under the head* CYCLOID.)

9—11. Epicycloid

VI. Fig. 1—10. Evolute

(*This Plate is numbered* V. *and referred to as Plate* VI. *The reference in the article* EVOLUTE, *to fig.* 35. *in this Plate, ſhould be to fig.* 2.)

VII. Fig. 1—4. Fluxion

5. Analytic Function

(*This is a wrong figure inſerted by miſtake. The proper figure is in* GEOMETRY, *Plate* IX. *fig.* 3. HYPERBOLIC LOGARITHMS.)

6—8. Analytic Function

ANATOMY.

PLATE
VIII. Fig. 1—10. Analytic Geometry
(*This is numbered Plate* VII.)
IX. Fig. 1—4. No. 1. Gyration
4. No. 2—8. Harmonic Curve
IX. & X. (IX.) } Fig. 1—17. Iſoperimetry
(*Theſe figures are referred to as* GEOMETRY, *Plate* IX.)
(X.) Fig. 1. Helicoid
2—7. Inflection
XI. Fig. 1. Lemniſcate
2. Logarithmic, Atmoſpherical
3. Curve
4. Logiſtic Curve
5. Spiral
6. Magic Square of Squares
7. Circle of Circles
XII. Fig. 1—23. Locus
XIII. Fig. 1. Variation. *See* NAVIGATION, *Plates* I. & II. *fig.* 8. *Plate* II.
2. Ditto *fig.* 9. *Ditto.*)
XIII. Fig. 1, 2. Maxima and Minima
3. Parabolic Cuneus
4. Analytic Parallelogram
5. Progreſſion
6. Quadratic Equation.
7—9. Quadratrix
(*For* Ratio, *referred to fig.* 9, *ſee fig.* 21.)
10—20. Quadrature
21. Ratio. (*Referred to as fig.* 9.)
(*For* Rectification, *referred to Plate* XIII. *fig.* 10—14, *ſee Plate* XIV. *fig.* 1—5.)
XIV. Fig. 1—5. Rectification
(*Referred to as Plate* XIII. *fig.* 10—14. *The reference under* SOLIDITY, *to fig.* 1—4, *of this Plate, ſhould be to fig.* 7—10.)
6. Sections following
7—10. Solidity
(*Referred to as fig.* 1—4.)
11. Sub-tangent
12—15. Superficies
(*Theſe figures are referred to as fig.* 6—9 *reſpectively.*)
16—22 Tangent
XV. Fig. 1—6. Tangent
(*See* GEOMETRY, *Plate* IX. *fig.* 14—19, *where theſe figures are inſerted.*)
For Analytic Parallelogram, *referred to as on* ANALYSIS, *Plate* XVII. *ſee Plate* XIII. *fig.* 4.

ANATOMY.

I. Organs of Senſe
EYE. Plate I. Fig. 1—5.
(*Plate* I.* *fig.* 1—5. *The ſame in Outline*)
II. EYE. Plate II. Fig. 1—11.
(*Plate* II.* *fig.* 1—11. *The ſame in Outline*)
III. EYE. Plate III. Fig. 1—15.
(*Plate* III.* *fig.* 1—15. *The ſame in Outline*)
IV. EYE. Plate IV. Fig. 1—5.
(*Plate* IV.* *fig.* 1—5. *The ſame in Outline*)
[IV.] EYE. Plate IV. Fig. 4.
(*This is fig.* 4. *of the preceding Plate, on a larger ſcale, and therefore not numbered as a ſeparate Plate.*)

ARCHITECTURE.

PLATE
V. EAR. Plate I. Fig. 1—13.
(*Plate* I.* *fig.* 1—13. *The ſame in Outline*)
VI. EAR. Plate II. Fig. 1—13.
(*Plate* II.* *fig.* 1—13. *The ſame in Outline*)
VII. EAR. Plate III.
VIII—XVI. } Myology.
XVII. Oſteology, Skeleton
(*Numbered on the Plate* XVI.)
XVIII. Oſteology, Skeleton
XIX. Cranium, Plate I.
XX. Plate II.
XXI. Viſcera, Plate I. Fig. 1, 2.
XXII. (*Front*) Plate II. Fig. 1, 2.
XXIII. (*Back*) Plate III. Fig. 1, 2.
(*Numbered alſo* Viſcera, Plate II.)
XXIV. Viſcera, Plate IV. Fig. 1—4.

ANATOMY, COMPARATIVE.

I. & II. Fig. 1—3. Anatomy of Birds
III. Fig. 1, 2. Skeleton
(*Numbered Plate* IX.)
I—III. Anatomy of the Horſe
IV. Stomach
Inteſtines

The other Plates referred to in the ſeveral articles on Comparative Anatomy, compriſed in the former part of the Cyclopædia, including the articles FEATHERS, FISHES, HAIR, HORNS, INCUBATION, MAMMALIA, &c. are unavoidably omitted. Dr. Macartney, by whom theſe articles were furniſhed, has ſtated, that " he has found it impoſſible to procure, within any reaſonable time, the drawings required for thoſe Plates, in conſequence of his removal from London, and of the indiſpenſable occupations attending the laborious duties of his preſent profeſſorſhip in the Univerſity of Dublin ;" the editor has deemed it preferable, upon the whole, in this dilemma, to omit theſe Plates altogether, rather than to give them in an imperfect and unconnected manner ; eſpecially as he could not have given them, even in this defective ſtate, without charging the work with a heavy additional expenſe, and further delaying its completion to a diſtant and indefinite period. He has had the leſs difficulty in coming to this determination, in conſequence of no reference to Plates having been made in any of the articles on Comparative Anatomy, ſince Dr. Macartney's removal to Ireland deprived the editor of his aſſiſtance in this department.

ARCHITECTURE.

I. Fig. 1. Attic Baſe, Temple of Jupiter Olympius at Athens
2. Temple of Minerva Polias at Athens
3. Doric Baſe, according to Vignola
4. Ionic Baſe, Ditto
5. Doric Capital, from the Portico of Philip in the Iſland of Delos
6. Ditto, from the Temple at Corinth
7. Ionic Capital, from the Temple of Minerva
I. & III. Baths of Caracalla. (*See Plate* XXXVI. XXXVII.)
II. Titus. (*See Plate* XXV.)

Plate		
II.		Roman Baſilica, from Vitruvius Plan and Elevation
II.—V.		Amphitheatre
		(*Theſe Plates compriſe Eight Plans and Sections from the Amphitheatres of Verona and the Coliſeum, which are referred to in the article* AMPHITHEATRE *as* ARCHITECTURE, *Plates* II. *to* IX. *reſpectively.*)
III.		Baſilica at Pæſtum
		(*This edifice being of doubtful authority, the Plate has been omitted. It is repreſented in Wilkins's Antiquities of Magna Græcia, where it is called a "Pſeudo-dipteral Temple."*)
IV.—V.		Baſilica of St. Peter's. See Plate XXXV.
VI.		Arch Fig. 1—7.
VII.		Dome Fig. 1—7.
		(*This is marked* DOME, *Plate* I.)
VIII.		Chimney and Dome.
		Dome. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1—4.
(VIII.A)		Fig. 1. No. 1—4. Fig. 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5. No. 1, 2.
		(*Plate* XLI. CHIMNEY, *is joined with this.*)
IX.	Fig. 1.	Arch of Adrian at Athens
	2.	Septimius Severus at Rome
X.	Fig. 1.	Arch of Conſtantine
	2.	Titus
	3.	Section
XI.		Baſilic
XII.		Circus of Caracalla
		(XI. *and* XII. *are on the ſame Plate.*)
XIII.		Doric Order from the Parthenon
XIV.		Tuſcan Order from the Church in Covent Garden
XV.	Fig. 1.	Doric Order, Temple at Delos
	2.	of Philip at Delos
	3.	of Ægeſta
	4.	of Jupiter at Selinus
	5.	at Selinus
XVI.		according to Sir W. Chambers
XVII.	Fig. 1.	Pſeudo-dipteral Temple at Pæſtum
	2.	Temple of Theſeus at Athens
	3.	Temple of Concord at Agrigentum
	4.	Temple of Jupiter Panellenius in Ægina
	5.	Temple of Minerva at Athens
XVIII.	Fig. 1.	Theatre of Marcellus at Rome
	2.	Hexaſtyle Temple at Pæſtum
	3.	Temple of Jupiter Nemæus, between Argos and Corinth
	4.	Temple of Juno Lucina at Agrigentum
	5.	The Agora at Athens
XVIII a.	Fig. 1—14.	Doric Order
XIX.		Temple of Pandroſus, at Athens
XX.		Interior of a Hindoo Temple, at Deo, in Bahar
XXI.		Mouldings, &c. Grecian and Roman
XXI.		Mouldings, Fillet, Liſtel, Annulet, or Square
		Aſtragal or Bead
		Cyma, Cyma Recta, or Cymatium
		Liſtel and Faſcia
		Echinus Ovolo, or Quarter Round
		Enriched Sections of
		Inverted Cyma, Talon, or Ogee
		Talon enriched
		Aſtragal, or Bead enriched
		Doric Annulets
		Cavetto or Hollow
		Torus
		Scotia or Trochilos
		Cantaliver
		Corinthian Modillion
		Soffit of a Modillion
		Pannel between the Corinthian Modillions in the ſoffit of the Corona
		Flower in the Corinthian Abacus
XXII.		Joinery. Fig. 1—7, No. 1. Fig. 7, No. 2—5. Fig. 8, No. 1—5.
XXIII.		Doors. Fig. 1—11
XXIV.		Doors. Fig. 1—5, No. 1, 2.
		(*Marked* DOOR *Plate* A B.)
XXV.		Painting from the Baths of Titus
		(*Referred to as Plate* II.)
XXVI.		Egyptian Capitals. Fig. 1—8
XXVII.	Fig. 1—4.	Corinthian and Compoſite Capitals
XXVIII.		Ionic Order, from the Temple of Minerva Polias, at Priene
XXIX.		Corinthian Order, from the Temple of Jupiter Stator, in Rome
XXX.		Plan and Elevation of a Portico at Latopolis
XXXI.		Eaſtern Portico of the Parthenon on the Acropolis of Athens
		(*Marked* ARCHITECTURE, *Plate* A.)
XXXII.		Bridges. Fig. 1, 2.
XXXIII.		Bridges. Fig. 1—6.
XXXIV.		Wooden Bridge, at Walton in Surry
XXXV.		Baſilica. Incorporated Plans of the Baſilica of St. Peter's, and of the modern St. Peter's of the Vatican. The Plan, with the parts more deeply ſhaded, is that of the Old Baſilica. The parts which are more lightly ſhaded, indicate the larger modern edifice, the Church of St. Peter's
		(*The two Plans here exhibited together in one view are referred to as* ARCHITECTURE, *Plates* IV. *&* V. *in the article,* BASILICA. *But, inſtead of giving the two Plans ſeparately, it was deemed preferable, upon the whole, to give Coſtaguti's own incorporated Plans of the two Edifices.*)
XXXVI.		Baths of Caracalla. Plan
		(*Referred to as Architecture, Plate* I.)
XXXVII.		Ditto. Section
		(*Referred to as Architecture, Plate* III. XXXVI. *and* XXXVII. *are on the ſame Plate.*)

Plate	
XXXVIII.	Bridge. Fig. 1—6.
XXXIX.	Bridge, Oblique Arch. Fig. 1—10.
XL.	Weſt Door of the Cathedral of Carrara (*The figures on the capital, on the right of the door, are repreſented on a larger ſcale in* Basso Relievo, *Plate* IV. *fig.* 1.)
XLI.	Chimney. Fig. 1—6. (*This Plate forms a part of* Architecture, *Plate* VIII. *There are ſome omiſſions in the ſmall letters of reference on fig.* 5. *which the reader will eaſily ſupply.*)
XLII.	Carpentry, Roofs. Fig. 1—10.
XLIII.	Roofs. Fig. 1—6.
XLIV.	Roofs. Fig. 1—10.
XLV.	Fig. 1. No. 1—4. Fig. 2, 3.
XLVI.	Fig. 1. No. 1, 2. Fig. 2. No. 1—6.
XLVII.	Fig. 1—3.
XLVIII. to LVII.	(*There are no Plates of theſe Numbers. Plate* XLVIII. *was, by miſtake, numbered* LVIII. *and the following numbers were continued accordingly.*)
LVIII.	Roofs. Fig. 1, 2. Fig. 3. No. 1, 2. Fig. 4, 5. No. 1—4.
LIX.	Roofs. Fig. 1. No. 1—3. Fig. 2. Fig. 3. No. 1, 2.
LX.	Carpentry. Fig. 1—8. Fig. 9. No. 1—6.
LXI.	Carpentry. Fig. 1. No. 1, 2. Fig. 2, 3. Fig. 4. No. 1, 2. Fig. 5. No. 1, 2. Fig. 6. No. 1, 2. Fig. 7, Fig 8. No. 1, 2. Fig. 9. No. 1—3. Fig. 10. No. 1, 2.
LXII.	Carpentry. Fig. 1. Fig. 2. No. 1—3. Fig. 3—6. Fig. 7. No. 1, 2. Fig. 8. No. 1, 2.
LXIII.	Carpentry. Fig. 1—3. Fig. 4. No. 1—4. Fig. 5—8. Fig. 9. No. 1, 2. Fig. 10. No. 1, 2. Fig. 11.
LXIV.	Carpentry. Fig. 1. Fig 2. No. 1—7. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2.
LXV.	Bridges. Fig. 1—4.
LXVI.	Centres. Fig. 1—3.
LXVII.	Fig. 1—3.
LXVIII.	Fig. 1—3.
LXIX.	Geometrical Principles of Carpentry. Fig. 1—3. Fig. 4. No. 1, 2. Fig. 5, 6.
LXX.	Ditto. Fig. 1, 2. Fig. 3. No. 1—3. Fig. 4. No. 1, 2. Fig. 5.
LXXI.	Ditto. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—8.
LXXII.	Ditto. Fig. 1—7. Fig. 8. No. 1, 2. Fig. 9. No. 1, 2.
LXXIII.	Ditto. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3, 4.
LXXIV.	Ditto. Fig. 1. No. 1—6. Fig. 2. No. 1, 2. Fig. 3.
LXXIV.*	Groin. Fig. 1—5.
LXXV.	Geometrical Principles of Carpentry
LXXVI.	Ditto. Fig. 1. No. 1—7.
LXXVII.	Ditto. Fig. 1—6.
LXXVIII.	Ditto. Fig. 1. No. 1—6. Fig. 2. No. 1—6.

Plate

ARMOUR.

I. Ancient Bronzes
  A. In the Collection of P. Knight, Eſq.
  B, C. In the Britiſh Muſeum
  D. In the Collection of P. Knight, Eſq.
II. Armour. Fig. 1, 2. From Denon
  3, 4. the Tuſcan Gallery
  5. a Gem
  6. From Sir W. Hamilton's Vaſes
  7. the Tuſcan Gallery
  8. a Bronze in the Britiſh Muſeum
  9a. From the Tuſcan Gallery
III. 9, 10. From Sir W. Hamilton's Vaſes
  11. From the Britiſh Muſeum
  12. Bartoli's Triumphal Arches
  13, 14. From the Britiſh Muſeum
  15. From Bartoli's Triumphal Arches
  16—19. From the Britiſh Muſeum
  20. From Bartoli's Triumphal Arches
IV. Ancient Armour
  Fig. 1, 2. Saxon
  3, 4. Daniſh
  5. Norman
  6. Plate Armour from the Monument of Thomas Beauchamp, Earl of Warwick
V. Fig. 1. Henry VIII.'s Armour
  2. Croupiere or Buttock Armour
  3. Robert Dudley, Earl of Leiceſter, in Tilting Armour
  4. Half-tilting Habit of Prince Henry

(IV. *and* V. *are on the ſame Plate.*)

ARTILLERY.

I. and II. Fig. 1. Aries, or Battering Ram
  2—4. Catapulta, uſed by Lord Heathfield at the Siege of Gibraltar
I. Fig. 1—13. Carriages
II. Fig. 14—20. Carriages
III. Fig. 21—33. Carriages
IV. Fig. 34—44. Carriages
V. Fig. 45—61. Carriages
  Artillery Encampment

(*The Plate which has this title, is* Camp, *Plate* III.)

ASTRONOMY.

I. Fig. 1, 2. Aberration
  3, 4. Culmination
  5, 6. Altitude
  7. Refraction of Altitude
  8. Parallax of Altitude
  9*, 10*. Anomaly
  11*. Arc
  12. Area
  13. Argument

ASTRONOMY.

PLATE
II. Fig. 9. General View of the Solar Syſtem
10. Proportional Magnitudes of the Primary Planets
11. Proportional Magnitudes of the Sun, as ſeen from the Primary Planets
III. 14. Armillary Sphere
15—17. Aſcenſion
18, 19. Axis
20, 21. Azimuth
22. Chronology
(*This Plate is numbered Plate* II.)
IV. Fig. 23—36. Comet
V. Fig. 37. Commutation
38—42. Crepuſculum
43. Culmination
43. Day
44, 45. Declination
46. Demi Croſs
VI. Fig. 47—52. Degree
53. Degree meaſured in 1736.
54. Meaſured in 1803
VII. Fig. 55—67. Degree
VIII. Degree
IX. Fig. 60. Denſity
61, 62. Depreſſion
63. Deviation
64—66. Diameter
67. Double Star
67*. Dichotomy
68—70. Earth.
(*Inſert* Q *above p on the right-hand Globe, at the end of the line* C Q, *and inſert* S *on the middle of the line p,p.*)
X. Fig. 71—73. Earth.
(*Fig.* 71. *x. ſhould be over the Globe on the* left *of the figure, and* T under *the Globe on the ſame ſide, and t ſhould be* under *the Globe on the* right. *Fig.* 73. *Inſtead of d read b, at the bottom of the line* B C
74. Ferguſon's Eclipſareon.
(*Inſert* C *on the braſs arch below e*)
75. Eclipſe.
(*For* C *read c, and for c read* C)
76. Eclipſe
(*Inſert b at the end of the line* A *c*)
77. Eclipſe
(*Inſert* A *at the upper end of the line* L *t, and dele* C)
XI. Fig. 78. Eclipſe
79. Eclipſe
(*This figure is, by an error of the preſs, referred to as fig.* 97.)
80, 81. Eclipſe
(*Theſe figures are not referred to, but the theorems to which they pertain, follow immediately after the theorems belonging to fig.* 79.)
82—89. Eclipſe
XI. No. 2. Fig. 90—98. Eclipſe
XII. Fig. 99. Eclipſe, Hindû Computation
100. Mr. Pond's Machine to illuſtrate the Phenomena of Eclipſes
(*The letters of reference have been omitted in this Plate; but the Machine will eaſily be underſtood from inſpection.*)
101. Ecliptic

ASTRONOMY.

PLATE
XII. Fig. 102. Elevation
103. Elliptic
104. Elongation
105. Epicycle
106. Equal Altitude
107—109. Evection
(*The letter* A *is wanting at the top of the line* TBC. *In the theorem* (*twice*) *for* " *the ſmall circle* ACB," *read* " AGB.")
109.* Equator
XII. Fig. 100. Ecliptic.
(*The reference to* N V, *fig.* 100, *ſhould be to* N V, *fig.* 102.)
102. Poles of the Ecliptic, Equator, and Orbs of Venus
103.* Obliquity of the Ecliptic
(*Referred to as fig.* 103.)
107.* Equation of the Centre
108. No. 1, 2. Time
109.** Time
110. Equinox
XIII. Fig. 110—113. Excentric
114, 115. Galaxy
(*The reference to fig.* 114. *ſhould be to fig.* 115; *and the reference to fig.* 115. *ſhould be to fig.* 114.)
116. Geocentric
XIV. } XV. } Fig. 117. Globe, method of exhibiting Stars, Circles, &c. upon
118, 119. Conſtruction of a Celeſtial Globe
120. Quadrant of Altitude
121. Conſtruction of a Celeſtial Globe
122. Ferguſon's Celeſtial Globe
123. Planetary Globe
XV. Fig. 124—138. Gravitation
XVI. Fig. 138. Heat
139. Heliocentric Latitude
140. Hemiſphere, Horizon, Tropics
141. Horizon
142. Hour
143—146. Jupiter
147. Latitude
148. Reduction
XVII. Fig. 1. Longitude
2. Mars
3, 4. Meridian Line
5—16. Moon
XVIII Fig. 1, 2. Nodes
3. Paracentric
(*The reference to fig.* 2. *under this article, ſhould be to fig.* 3. *The figure wants a curved line drawn from* A to B *over q.*)
4—7. Parallax
8—14. Moon's Parallax
15. Venus's Parallax
16. Particula Exſors
17, 18. Penumbra
(*Figures* 16, 17, 18, *are omitted in this Plate, and form Plate* XIX. *fig.* 1, 2, 3, *reſpectively.*)
XIX. Fig. 1. Particula Exſors
(*Referred to as Plate* XVIII. *fig.* 16.)
2. Penumbra
(*Referred to as Plate* XVIII. *fig.* 17.)
3. Penumbra
(*Referred to as Plate* XVIII. *fig.* 18.)
3*—6. Planet

Plate
XIX. Fig. 7. Preceſſion of the Equinoxes
7.* Proſthaphæreſis
8. Quadrant, Horodictical
9. of Altitude
10. Reduction to the Ecliptic
11. Refraction, Aſtronomical
12. Retrogradation of Planets
13. of the Sun
14—16. Ring of Saturn
XX. Fig. 1—3. Satellites of Jupiter
4. Configuration
5. Sphere, Armillary
(*For this figure, ſee Aſtronomy, Plate* III. *fig.* 14.)
6. Sphere, Ptolemaic
7. Copernican
8—13. Stars
14. Syſtem, Ptolemaic
15. Pythagorean and Copernican
16. Egyptian
17. Tychonic
XXI. Fig. 1. Syſtem, Solar
2. Times of the Planets
3. Velocities of Planets
4. Aſcending Nodes
XXI. Fig. 5—7. Trigon
8—11. Venus
12. Year
13—22. Whirling Table
XXII. Fig. Projection on the Plane of the Ecliptic of the Parabolic Orbits of 72 Comets
(*This Plate is publiſhed without any number.*)
I. Northern Hemiſphere
II. Southern Hemiſphere
Conſtellations, *Plate* I. Orion
Plate II. Urſa Major
Urſa Minor

ASTRONOMICAL INSTRUMENTS.

I. Fig. 1. Aſtrolabe
2. Davis's Quadrant, or Back Staff
3. Croſs Staff, or Fore Staff
4. Quadrant
6. Nocturnal or Star Dial
7. Newton's Quadrant
8. Elton's Quadrant
II. Fig. 1—3. Mayer's Circle
4—9. Borda's Circle
III. Fig. 1, 2. Engliſh Reflecting Circle, by Troughton
IV. Fig. 1. Graduated Circle, with two Verniers
2—4. three Verniers
5. Mendoza's Circle
V. Ramſden's Aſtronomical Circle
VI. Borda's Repeating Circle, without reflection
VII. Troughton's Repeating Circle,
Fig. 1. General View of the Inſtrument.
2. View, with the Circle, Index, &c. detached
VIII. Circle, by the Rev. F. Wollaſton
IX. Portable Circle, by Troughton
X. Troughton's Mural Circle
XI. Fig. 1. Short's Portable Equatorial Inſtrument
2. Ramſden's Ditto
3. Dollond's Ditto

Plate
XI. Fig. 4. Fayrer's Equatorial Inſtrument
XII. Fig. 1. Nairne's Portable Equatorial Inſtrument
2. Ramſden's Refraction Apparatus
4. Dollond's Ditto
3, 4. Object Glaſs Micrometer
XIII. Fig. 1. Graham's Equatorial Sector
2. Refraction
3. Smeaton's Micrometer
4. Refraction
5. Equatorial Stand of a Teleſcope, by Smeaton
XIV. Troughton's Univerſal Equatorial Inſtrument
XV. Shuckburgh's Equatorial Inſtrument
XVI. Troughton's Equatorial Inſtrument at Armagh
XVII. Fig. 1, 2. Siſſon's Equatorial Sector
3. Cote's Equal Altitude Inſtrument
4, 5. Earl of Ilay's Equal Altitude Inſtrument
XVIII. Fig. 1. Diviſion of Graham's Quadrant
2. Bird's Ditto
3. Duc de Chaulne's Dividing
4. Mr. Cavendiſh's Ditto
5. Quinqueſections by Mr. Cavendiſh
XIX. Fig. 1—3. Troughton's Method of graduating a Circle
XX. Fig. 4—6. Troughton's Method of graduating a Circle
XXI. Fig. 1. Graduation
2. by Clavius
3, 4. by Maſcheroni
5. Biſection of an Arc
XXII. Fig. 1—4. Smeaton's Rotative Roof
5, 6. Pearſon's Rotative Roof
XXIII. Fig. 1. Hadley's Octant
2. Cole's Quadrant
3. Gunter's Ditto
4. Graham's Mural Ditto
5. Ramſden's Portable Ditto
6. Troughton's Portable Ditto
XXIV. Fig. 1—7. Teleſcope, Dollond's Experiments on Achromatic Object Glaſſes
(*Theſe figures are on Plate* XXVIII. *to which the references ought to have been made.*)
XXIV. Fig. 1—11. Theory of the Refracting Teleſcope and Compound Microſcope
XXV. Fig. 1—8. Theory of Refracting Teleſcopes, &c.
XXVI. Fig. 1—11. Theory of the Teleſcope with reſpect to Aberrations, &c.
XXVII. Fig. 1—5. Theory of Reflecting Teleſcopes
XXVIII. Fig. 1—15. Principles of Achromatic Teleſcopes
XXIX. Fig. 1—5. Refracting Teleſcope
6—8. Five-feet Achromatic Refractor
9. Pearl Dynameter
10, 11. Jones's Ditto
12—15. Dollond's Dynameter
XXX. Fig. 1—3. Reflecting Teleſcopes
4. Brewſter's Patent Teleſcope
5—7. Scale of Minutes
8. Smeaton's Support
XXXI. Dr. Herſchel's Forty-feet Reflecting Teleſcope

BOATS.

PLATE
XXXII. Fig. 1—5. Tranſit Inſtrument
6, 7. Portable
8—12. Jones's Stand, Teleſcope, and Level
XXXIII. Zenith Sector

CANALS.

PLATE
XXXIII. Fig. 1. Graham's Zenith Sector
2. Ramſden's Zenith Sector
3—6. Dollond's Zenith Micrometer

PLATES. VOL. II.

BASSO RELIEVO—HOROLOGY.

PLATE
Bark-Beds, and Pits. See Gardening, *Plate* I.

BASSO RELIEVO.

I. Fig. 1. An Egyptian Hieroglyphical Sphinx
2. A Hindû Baſ-relief
3. A Perſian Ditto
4. Jupiter with a Thunder and Trident
II. Fig. 1. Hercules and Apollo contending for the Tripod
2. Minerva ſubduing Hercules
III. The Tomb-ſtone of Xanthippus
IV. Fig. 1. Capital of a Column in the Weſt-door of the Cathedral of Carrara
(*This part of the Plate, fig.* 1, *is alſo in Architecture, Plate* XL.)
2. Zethus and Amphion comforting Antiope, their Mother
Altars, Pagan. No. 1—5
(*Theſe Altars are referred to as* Miscellany, *Plate* I. *No.* 1—5.

BLEACHING.

I. Fig. 1, 2. Bucking
3, 4. Oxy-muriatic Acid
II. Fig. 1—7. Waſhing and Clearing
III. Fig. 1—4. Drying
IV. Fig. 1—7. Boiling Pan, &c.

BLOCK MACHINERY.

I. Fig. 1—4. Sawing Machine,
II. Fig. 1—3. Crown Saw
4—9. Coaking Engine
III. Fig. 1, 2. Rivetting Hammer
3—7. Face-turning Lathe
IV. Fig. 1—4. Boring Machine
5—9. Cornering Saw
V. Fig. 1—6. Mortiſing Machine
VI. Fig. 1—5. Shaping Engine
VII. Fig. 1—5. Scoring Engine
6, 7. Machine for making Dead Eyes

BOATS.

I. Pahie, &c.
II. Life Boat
(*See* Ships, *Plate* VII.)
Boats, Conſtruction of
(*This article has been ſuperſeded by the article* Whole Moulding, *in Ship Building, to which the reader is referred.*)

PLATE

CAMP.

I. Plan of a Roman Conſular Camp, according to Polybius
II. Plan of the Camp of a Roman Army, according to the Hyginian Syſtem of Caſtrametation
(*This is referred to under* Castrametation, *as Plate of Caſtrametation, fig.* 1—3.)
III. Plan of the Encampment of a Park of Artillery
(*This Plate is headed* Artillery, *Encampment; and referred to under* Castrametation *as Caſtrametation, fig.* 4.)
IV. Profiles of Lines of Circumvallation, according to Vauban
Lines of Circumvallation, with Camp
Plan of a Part of the Line of Circumvallation at Phillipſburg, in 1734
Plan of a Part of the Line of Circumvallation at Arras, in 1654
(*This Plate is headed* Circumvallation, *Camp,* V. *It is referred to under* Camp, *as* Military, *Plate* V. *and under* Circumvallation, *without a name.*)
V.—XII. Situations proper for the Encampment of Armies, and for Engagements
(*The laſt four Plates, there being two ſubjects on each Plate, are referred to under* Castrametation, *as Caſtrametation, fig.* 4, 5, *&c.*)

CANALS.

I. Fig. 1. Level Cutting
2, 3. Side-lying Ground
4, 5. Embanking
6—13. Deep Cutting
14. Puddling
15. Lining
16—18. Reſervoirs
II. Fig. 19. Aqueduct Bridge at Kelvin, on the Forth and Clyde Canal. Plan
20. Tranſverſe Section
21. Elevation
III. Caſt Iron Aqueducts
Fig. 22. Mr. Telford's, on the Shrewſbury Canal at Long
23, 24. Mr. Fulton's
IV. Fig. 25. Embankment
26. Safety Gate
27. Weir
28, 29. Circular Weir
30. Pile Planks
31—35. Iron Railways

PLATE
IV. Fig. 40—42. Canal Bridges
(*See Plate* VI. *to which the reference ought to have been made.*)
V. Fig. 36, 37. Locks
38, 39. Gates
VI. Fig. 40—42. Canal Bridges
VII. Fig. 43. Swing Bridge
44—47. Rollers, &c. for Ditto
48—52. Navigators' Tools
Map of the Canals, Navigations, and Railways of Great Britain
(*Given in the* ATLAS, *Vol.* VI. *of the Plates*)

CANDLE MAKING.

Fig. 1. Apparatus for Dipping
2. Wick Broach
3. Machine for cutting Cotton
4. Tallow Ciſtern for Mould Candles
5. Mould Frame
6. Mould
7—12. Candle Sticks

CANNON.

I. Fig. 1. Whole-length Cannon
2. Caſcable
3. Muzzle
4. Mortar
5, 6. Sea Ditto
7. Howitzer
8. Land Mortar
9. Sea Mortar
10. Howitzer
11. Mortar
12. Stone Mortar
II. Fig. 13—16. Cannon Boring
III. Fig. 17—21. Cannon Boring, &c.

CANTEENS.

I. Fig. 1. Canteen
2, 3. Croſs-cutting Saw
4, 5. Tenanting or Rebating Saws
6. Bung Stave
7. Boring Machine
8. Center Bit
9. Slider
II. Fig. 10. Frame
11. Screw Hoop
12. Truſs Hoop
13. Screw Hoop applied to a Canteen
14. Turning the Chime
15. Turning the Head
16, 17. Shears
18. Punching the Hoops
19. Rounding the Ends of the Hoops

CASTING.

I. Fig. 1, 2. Open Sand Caſting
3. Trowel
4. Ramming Tool
5. Lifting Screw
6. Sand Caſting between Flaſks

PLATE
I. Fig. 7—10. Method of Caſting Cog Wheels
11—13. Moulds, &c. for Loam Caſting

CASTRAMETATION. *See* CAMP.

CHEMISTRY.

I. Fig. 1, 2. Cupalo Furnace
I. Fig. 1—5. Still
II. Fig. 1. Blaſt Furnace (*For fig.* 1. *read fig.* 6.)
6—9. Iron Smelting Furnace
III. Fig. 10. Alcohol
10*—13. Alembic
14. Aludel
IV. Fig. 15—26. Furnaces for the Reduction of Antimony
V. Fig. 27, 28. Woulfe's Apparatus
VI. Ditto
VII. Fig. 1—4. Diſtillation
VII. Fig. 1—4. Blaſt Furnace
VIII. Fig. 1—4. Ditto
IX. Fig. 1—6. Ditto
(*The reference to Plate* IX. *fig.* 4. *under this article as* "the Ground-plan of arch, pillars, hearth, &c. of a Blaſt Furnace," *ſhould be to Plate* X. *fig.* 4.)
X. Fig. 1—10. Blaſt Furnace
X. Fig. 1—3. Blowpipe (*See Plate* XIV. *fig.* 5—7.)
X. Fig. 1. Hope's Eudiometer
(*See Plate* XXI. *fig.* 1.)
2. Pepys's Eudiometer
(*See Plate* XXI. *fig.* 2.)
XI. Fig. 1—7. Blow-pipe
XI. Ancient Chemical Characters.
XI. XII. Blaſt Furnace Works, Plan and Section
XIII. XIV. Blaſt Furnace Works
Fig. 1. Section of the Building
2. Dam Stone
3. Dam Plate
4. Tymp Plate
1, 2. Water Regulator
XIV. Blaſt Furnace Works
XIV. Gaſometer and Blow-pipe
Fig. 1. Hydraulic Bellows
2. Air Holder
3. Bell
4. Gas Holder
5. Glaſs Blower's Lamp
6. Shoe Lamp
7. Double Blow-pipe
(*Fig.* 5, 6, 7, *are referred to as Plate* X. *fig.* 1, 2, 3.)
XV. Fig. 1, 2. Air Vault
XVI. Laboratory
Fig. 1. Stand with the Apparatus
2. Retort
3. Acid Holder
4, 5. Receiver
6. Bended Tube
7. Adopter
8. Receiver
10. Nooth's Apparatus
11. Dr. Hamilton's Apparatus

COMPOSITION.

PLATE
XVI. Fig. 12. Part of Nooth's Ditto enlarged
16. Pneumatic Trough
17. Supporter
18. Eudiometer Tubes
19. Mercurial Trough
20. Glaſs Jar
21. Iron Ring Supporter
22. Volta's Eudiometer
23. Evaporating Veſſel
24. Mattraſs
25. Proof Glaſs
26. Precipitating Glaſs
27. Gas Bottle
28. Muffel
29, 30. Crucible
31, 32. Crucible Stands
33. Cupel
34. Separatory Funnel
35. Iron Retort
XVII. Laboratory
Fig. 9. Apparatus for the Abſorption of Gaſes
13, 14. Simplified Gaſometer
15. Pepys's Gaſometer
XVIII. XIX. (*No Plates of theſe Numbers*)
XX. Fig. 1—3. Apparatus for the Diſtillation of Pyroligneous Acid
XXI. Fig. 1. Hope's Eudiometer
(*Referred to as Plate* X. *fig.* 1.)
2. Pepys's (or Davy's) Improvement of Volta's Eudiometer
(*Referred to as Plate* X. *fig.* 2.)
3. Gay Luſſac and Thenard's Apparatus
4. Berzelius's Apparatus for the Analyſis of Organic Subſtances
5. Dr. Wollaſton's Scale of Chemical Equivalents.

CHIARO-SCURO.

(*See* COMPOSITION, *Plate* II.)

CHIMNEY-SWEEPING.

(*See* MISCELLANY, *Plate* II.)

CLOUDS.

I. No. 1. Cirrus in different Forms
2. Cirro Stratus ſubſiding on Cumuli beneath
3. Cirrus as ſeen before Thunder
4. Cirro Cumulus as ſeen before Thunder
5. A Nimbus flanked by Cirro Stratus, and giving an electrical Diſcharge
6. A Range of Cumuli paſſing to Cumulo Strati before Thunder
II. No. 1, 2. Cirro Stratus
3. Cirrus paſſing to Cirro Cumulus
4. Cirro Stratus, Cumulus, and Cumulo Stratus, grouped

COMPOSITION.

I. Fig. 1. The "Battle of the Standard," by Lionardo da Vinci

COTTON MANUFACTURE.

PLATE
I. Fig. 3. The "Creation of Man," the "Tranſgreſſion at the Tree of Knowledge," and "the Expulſion from Paradiſe," — Freſcoes of Michelangelo in the Seſtine Chapel
4. "Groups of the Laſt Judgment," by the ſame Maſter in the ſame Chapel
II. 2. "The Cartoon of Piſa," (or, according to Vaſari, its chief Group,) by Michelangelo
5. "Paul preaching at Athens," from the Cartoon of Raffaele at Hampton Court
6. "The Group from the Aſſumption of the Madonna," in the Cupola of the Duomo at Parma, Correggio

CHIARO-SCURO.

1. The ſimple Principles of Chiaro-Scuro illuſtrated
2. The Conduct of Correggio in the Diſtribution of his Maſſes of Light and Shade exemplified in one of his Compoſitions in the Duomo at Parma
3. An Example from Rubens
4. Rembrandt

CONICS.

I. Fig. 1. Ambigenal
2, 3. Aſymptote
4—10. Cone
(*The reference to* truncated cone, *fig.* 8. *ſhould be to fig.* 9.)
12. No. 2. (*See fig.* 3.)
20. Abſciſſe (*See fig.* 2.)
31, 32. Axis (*See Geometry, Plate* IX. *fig.* 5, 6.)
33. Aſymptote (*The figure thus referred to is in Geometry, Plate* IX. *fig.* 4.)
II. Fig. 1—9. Conic Sections; lines harmonically divided
10—14. Conic Surfaces
III. Fig. 15—23. Sections
IV. Fig. 24—31. Ditto
V. Fig. 31, 32. Axis (*See Geometry, Plate* IX. *fig.* 5, 6.)
32—43. Conic Sections
VI. Fig. 44—55. Sections
VII. VIII. Fig. 1—13. Ellipſe
VIII. IX. Fig. 14—26. Ditto
X. Fig. 1—12. Hyperbola
XI. Fig. 13—21. Ditto
XII. Fig. 1—16. Parabola

COTTON MANUFACTURE.

I. Fig. 1—6. Calico Printing
II. Fig. 1—5. Batting Machine
III. Fig. 1—5. Deviling
IV. Fig. 1—4. Carding Machine
V. Fig. 1—4. Drawing Frame
VI. Fig. 1, 2. Roving Can Frame
3, 4. Winding Block
(*The number has been omitted on this plate.*)
VII. Roving Frame
Horizontal Plan of the Machine called the Double Speeder

PLATE
VIII. Roving Frame, Double Speeder
Fig. 1—3. Elevation in Front
(*This, like the preceding, is numbered Plate* VII.)
IX. Fig. 1—6. Water Spinning Frame
X. Fig. 1—3. Throſtle Spinning Frame
XI. Fig. 1—5. Mule Spinning
XII. Fig. 1, 2. Reeling
3—5. Machine for winding ſewing Cotton into Balls
XIII. Fig. 1, 2. Doubling Machine
3, 4. Twiſting Machine
XIV. Sections of Meſſrs. Strutt's Cotton Mills at Belper
Fig. 1. Longitudinal Section
2. Croſs Section
3. Section of the Wing

CRYSTALLOGRAPHY.

(*See Plates,* Vol. V. NATURAL HISTORY)

CUTLERY.

I. Fig. 1. Two Troughs of a Grinding Mill
2, 2.* Tongs for preſſing Knife-Handles
3. Preſſing Vice
3. Spring Drill
(*This is the only Plate of Cutlery*)

CYCLOID.

Fig. 1—8. (*By miſtake theſe figures have been twice engraved. See* ANALYSIS, *Plate* V. *fig.* 1—8. *to which the reference is made in the letter-preſs*)

DIALLING.

I. Fig. 1. Declinator
1.* Ruler of the Declinator
2, 3. Declinator
4. Equinoctial Dial
5. Univerſal Equinoctial Dial
6, 7. Univerſal Dial
8—12. Horizontal Dial
13. Vertical South Dial
II. Fig. 14. Vertical North Dial
15. South Dial
16. Eaſt Dial
17, 18. Polar Dial
19. Dial on three Planes
20. Dials (primary)
21, 22. Vertical declining Dial
23. Inclined Dial
24. Univerſal Mechanical Dial
(*For fig.* 25, 26, *ſee Plate* IV.)
III. Fig. 27, 28. Cylindrical Dial
29, 30. Portable Dial
31—33. Univerſal Dial on a Croſs
IV. Fig. 25, 26. (*of Plate* II.) Moon Dial
34, 35. Ring Dial
36. Tide Dial (*See* MISCELLANY, *Plate* XXV. *fig.* 10.)
36, 37. Dials conſtructed by a Globe
38—41. Dialling Cylinder
42. Dialling Scales

PLATE

DOCKS.

Docks at Liverpool, 1808
Docks at London, 1808

DRAWING.

I. II. III. Fig. 1, 2. Outlines of the Human Face
3. Shading, Hatching
4, 5. Outlines of the Human Face
6. Shading, Hatching
IV. Iſis Magna Mater
V.—VII. (*No Plates of theſe Numbers*)
VIII. From an original Drawing by G. Pouſſin
IX. Ditto
X. Landſcape from an original Drawing of Claude Lorraine

DRAWING INSTRUMENTS.

I. Fig. 1—11. Compaſſes
(*For fig.* 5, *ſee Plate* TURNING, *fig.* 29.)
I. Fig. 1. Peacock's Delineator
2, 3. Miſs Edgeworth's Ditto
4, 5. Ramſden's Optigraph, by Jones
6, 7. Wollaſton's Camera Lucida
II. Fig. 1, 2. Oval
3—6. Farey's Elliptograph
7. Douglas's reflecting Protractor

ELECTRICITY.

I. Prieſtley's Battery
I.* Fig. 2. Teyler's Battery
(*This Plate is referred to as Plate* I. *fig.* 2.)
3. The Frame ſeparate
(*See Plate* XV. *fig.* 7.)
4. The Whole Battery
(*As this ſo nearly reſembles the Battery repreſented in Plate* I.* *it has been deemed unneceſſary to give it on a ſeparate Plate.*)
Bell (*See Plate* V. *fig.* 38.)
II. Fig. 4—9. Condenſers
III. Fig. 10—20. Diſchargers
21—25. Cavallo's doubler
IV. Fig. 26—37. Electrical Experiments
V. Fig. 38—50. Ditto
VI. Electrical Configurations
(*This Plate is not numbered*)
VII. & XIV. (*One Plate*) Fig. 51, 52. Electrical Experiments. Electrical Flyers
53, 54. Inflammable Air-Piſtol
55. Volta's Inflammable Air-Lamp
Fig. 1, 2. (XIV.) Electrophorus
VII. Fig. 1, 2. Hawkſbee's Electrical Machine
3. Abbe Nollet's Machine
4. Dr. Watſon's Ditto
5. Mr. Wilſon's Ditto
VIII. Fig. 6—9. Electrical Machines
IX. Fig. 10. Mr. Beccaria's Machine
11. Common Machine
12. Nairne's Ditto
18. Van Marum's Ditto
(*Referred to as on Plate* XI.)

PLATE
X. Fig. 13. Nairne's Machine, with a Perſon electrifying his Shoulders
14. Ditto, his Leg
15, 16. Pearſon's Machine
18. (*See Plate* IX.)
XI. Fig. 22. Cuthbertſon's Electrical Machine
(*This is numbered Plate* X.)
XII. & XIII. Fig. 1—12. Electrometers
13—15. (*Plate* XIII.) Ditto
XIII. Fig. 16—23. Electrometers
XIV. Fig. 1, 2. Electrophorus
(*On Plate* VII. & XIV.)
XV. Fig. 1. Medical Electricity. Machine for electrifying the Teeth
2, 3. Thunder-Houſe
4, 5. Torpedo
6. Bruſh
7. No. 1, 2. Inſide Connecting Frame of Teyler's Battery
(*Referred to as Plate* I. *fig.* 3.)

ENGINE.

I. Fig. 1—7. Salmon's Weighing Machine
(*This is numbered Plate* II.)
II. Fig. 1—3. Cutting Engine, by Hindley
III. Fig. 1—5. Ditto
6—12. Roſe Engine, by Holtzapffell and Deyerlien
IV. Cutting Engine, by Rehe
V. Fig. 1. Ditto, for Worm Wheels
2. Annular Wheels
3. Short Arbor
4. Engine for Racks
5. Cutter Arbor
VI. Fig. 1—6. Cutting Engine, by Rehe, for ſharpening Cutters
VII. Ramſden's dividing Engine, Perſpective View
VIII. Fig. 2—4. Ramſden's dividing Engine
IX. Fig. 5—14. Ditto
X. Engine for cutting the Screw of Ramſden's Circular dividing Engine
Fig. 1. Elevation
2. Plan
XI. Engine for cutting the Screw of Ramſden's ſtraight Line dividing Engine
Fig. 1. Plan
2. Elevation
XII. Fig. 1—3. Ramſden's Engine for dividing ſtraight Lines

ENGRAVINGS, EARLY BRITISH.

Fig. 1. From the front of King Alfred's Jewel
From the back of King Alfred's Jewel
2. Impreſſion from the engraved Seal of Anſelm, the Primate
3. Engraved Braſs on the Tomb of William de Fulbourn, in Fulbourn Church, Cambridgeſhire

FLAGS.

(*See* HERALDRY, *Plate* VII.)

PLATE

FARRIERY—Horſe-Shoeing.

I. Concave Fore-ſhoe, or S. Bell's Shoes
Racing Hind-ſhoe
Fore-ſhoe
Seated Fore-ſhoes
Froſt-ſhoe
Shoe to prevent cutting
Hind-ſhoe
Fore-ſhoe with a Joint in the Toe
(*This is the only Plate of Farriery.*)

FEATHERS.

(*See above, under* ANATOMY, COMPARATIVE.)

FENCES.

XIX. (*The Plate ſo entitled and numbered is* AGRICULTURE, *Plate* XIX.)

FORTIFICATION AND TACTICS.

I. II. & IV. Fig. 1. Angle at the Centre
1. Baſtion, &c.
2, 3. Cavalier
4, 5. Expense Magazine
(*Theſe figures have been omitted, as unneceſſary in a Work of this nature.*)
6—14. Field Fortification
(*See Plate* III.)
(II.) Fig. 1, 2. Flank of an Army
(*The writer of this article in the Cyclopædia died without furniſhing the figures. They are not, however, eſſential to the underſtanding of the deſcription.*)
1, 2. Battery
(*Fig.* 1. *on Plate* II. *is the figure referred to in the article Battery, as fig.* 21. *No.* 2. *Fig.* 2. *is the figure referred to as* 23. *No.* 2.)
3. Battery en Barbe, or Barbet
(*Fig.* 3. *is the figure referred to as Plate* III. *fig.* 25.)
III. Fig. 1—4. Eçhellon.
5. Enfilade
6—14. Field Fortifications
(*Referred to as on Plate* I.)
(IV. *on Plate* I.) Fig. 1—3. Breaſtwork.
(*Theſe figures have been omitted, as the nature of Breaſtwork will be ſufficiently underſtood by the view of the figures of Battery, on Plate* II.)
4—10. Fort
V. Fig. 1—6. Conſtruction
VI. & VII. Fig. 7—14. Ditto
VIII. Fig. 15. Belidor's Method
(*This figure is on the Plate marked* FORTIFICATION, *Plates* VI. VII. VIII.)
16—19. Crown-work, &c.
(*The articles in which theſe figures are referred to, were written by Mr. Glennie, and the deſcriptions were taken from an unpubliſhed work of his own. He died without furniſhing the figures.*)
V. Fig. 1, 2. Irregular Fortification
3. Profile of a Fortification
4. Fortified Place

Plate
V.* Fig. 5. Regular Fortification beſieged
6. Glacis
7. Gallery
8. Gabion
VI. Fig. 1. Horn Work
2. Double Horn Work
3—6. Line
7. (*The ſame as fig.* 4.)
8. Lunette
VI. VII. VIII. 9. Mantelet
10—15. Mine
(VII.) Fig. 38. Battery (*See Plate* II.)
2, 3. Parallel of Arms (*See Plate* V.* *fig.* 5.)
4. Ravelin
5. Redoubt
6—8. Tenaille
9. Tenaillon
(VIII.) Fig. 15. Belidor's firſt Method.
(*Plates* VI. VII. *and* VIII. *are on one Plate.*)

FURNACE.

I. Fig. 1—3. Air Furnace
II. Fig. 1. Dr. Black's Air Furnace
2. Common Air Furnace
3. Mr. Knight's Ditto
4. Muſhet's Ditto
5. Knight's Portable Ditto
6—11. Dr. Black's Ditto
III. Fig. 1, 2. Furnaces uſed by Mr. Muſhet for his Experiments on Iron and Steel
3—5. Tobacco Pipe Maker's Furnace
III. & IV. (*This Plate is* Iron Manufacture, *Plate* III. IV., *and is placed among the Plates belonging to that article.*
Fig. 3, 4, 5, *referred to under the article* Furnace, *Aikin's Improvement of Lewis's Furnace, are on that Plate.*)
V. Fig. 1—9. Furnace for enamelling Watch Dial Plates
10, 11. Mr. Bone's Enamelling Furnace

GARDENING.

I. Bark-Beds and Pits for ſucceſſion of Pine-apple Plants; and other tender Exotics
Fig. 1, 2. Plan
3. Bark-Beds
4. Plan and Section of Bark-Bed and Bark-Shed
5. Section of Fig. 1, 2.
(*This Plate is marked* Bark-Beds and Pits.)
II. Conſervatory and Green-Houſe.
Fig. 1—4. Green-Houſe
5, 6. Conſervatory
III. Fig. 1, 2. Improved Hothouſe
3. Loudon's Hothouſe for Pines
4, 5. Nurſery Houſe for Ditto

GEOGRAPHY.

I. Fig. 1. Diſtance
2, 3. Horizon
4—8. Map

Plate
II. Fig. 9. Meridian
Pole (*See* Navigation, *Plate* I. *fig.* 1.)
10—14. Tide
(*See* Navigation *fig.* 4—8.

GEOLOGY.

I.—IV. (*The Plates of* Geology *are with the* Natural History *Plates in the fifth Volume.*)
II. Gun-Flints
(*See* Miscellany, *Plate* II.)

GEOMETRY.

Acute Angle
(*Referred to as* Geometry, *fig.* 1. *ſee* Geometry, *Plate* II. *fig.* 15, D A E.)
I. Fig. 1. Alternate Angles
2—13. Altitude, Method of meaſuring
14. Altitude and Diſtance, Method of meaſuring
14. Analyſis
(*See* Geometry, *Plate* IX. *fig.* 1.)
II. Fig. 15—26. Angle
27, 28. Antiparallel
29—34. Application
35, &c. Bevel
(*See the following Plate.*)
III. Fig. 12. Sector
(*See Plate* XIII. *fig.* 12.)
35—39. Bevel, &c.
(*Referred to as Plate* II. *fig.* 35, &c.
Fig. 38, Baſe, *ſhould be referred to fig.* 46*, *on the ſame Plate.*)
39. Baſe of a Cylinder
(*See* Geography, *Plate* IX. *fig.* 7.)
40—44.* Bevel
45—48. Chord
45.* Arch
46.* Baſe
48.* Cardioide
49.* Catenaria
50. Complement of a Parallelogram
(*See* Geometry, *Plate* IX. *fig.* 8.)
51. Angle of Contact
(*See* Geometry, *Plate* IX. *fig.* 9.)
52. Cube
(*See* Geometry, *Plate* IX. *fig.* 10.)
IV. (*Referred to as Plate* III.)
Fig. 1. Cyclograph
(*See* Geometry, *Plate* IX. *fig.* 11.)
Fig. 49—61. Circle
78. Diameter
(*See Plate* VI. *fig.* 78.)
3, 4. Cylinder
(*Theſe figures are inſerted on* Analysis, *Plate* II.)
V. Fig. 62—73. Circle
VI. Fig. 74. Decagon
75—77. Diagonal
78. Diameter
(*Referred to as on Plate* IV.)
79. Diameter, No. 1, 2, 3.
80. Dirigent
81. Diviſibility
82. Diviſion

Plate
VI. Fig. 83. Decagon
(*For* Dodecagon, *ſee* Hexagon, *Plate* VIII. *fig.* 97.)
84. Diophantine
85, 86. Diſtance
VII. Fig. 87. Extreme and Mean Proportion
88—95. Fruſtum
VIII. Fig. 96. Gnomon
97. Hexagon
98, 99. Honeycomb
100. Hypothenuſe
101. Inclination of Planes
102. Indiviſibles
103, 104. Internal Angle
105. Iſoſceles Triangle
IX. Iſoperimetry, Fig. 1—17.
(*See* Analysis, *Plate* IX. *fig.* 1—17.)
IX. Fig. 1. Analyſis
(*Referred to as* Geometry, *Plate* I. *fig.* 14.)
2. Conſtruction
(*Referred to as* Analysis, *fig.* 20.)
3. Hyperbolic Logarithms
(*Referred to under* Function, *as* Analysis, *Plate* VII. *fig.* 5.)
4. Aſymptote
(*Referred to as* Conics, *fig.* 33.)
5, 6. Axis of the Ellipſe and Hyperbola
(*Referred to as* Conics, *fig.* 31. 32.)
7. Cylinder, Baſe of
(*Referred to as* Geometry, *Plate* III. *fig.* 39.)
8. Complement of a Parallelogram
(*Referred to as* Geometry, *Plate* III. *fig.* 50.)
9. Angle of Contact
(*Referred to as* Geometry, *Plate* III. *fig.* 51.)
10. Cube
(*Referred to as* Geometry, *Plate* III. *fig.* 52.)
11. No. 1. and 2. Cyclograph
(*Referred to as* Geometry, *Plate* IV. *fig.* 1.)
12, 13. Pyramid
(*Referred to as* Geometry, *Plate* XI. *fig.* 18, 19.)
14—19. Tangent
(*Referred to as* Analysis, *Plate* XV. *fig.* 1—6.)
X. Fig. 1. Line
2—5. Lunes
6, 7. Multiplication
8, 9. Octagon
10. Parallel
11, 12. Parallel Rulers
(*The reference under the article* Rhombus, *to Plate* X. *fig.* 11, *ſhould be to Plate* XII. *fig.* 11.)
13. Parallelepiped
14, 15. Parallelogram
X. XI. Fig. 16. Pelecoides
17, 18. Pentagon
4, 5. Perpendicular
6. Polygon
7—11. Polygonometry
12, 13. Poriſm
(*For fig.* 12, Priſm, *ſee fig.* 15.)
14. Geometry of Poſition
15. Priſm
(*Referred to as fig.* 12.)
16, 17. Proportional
18, 19. Pyramid
(*See* Geometry, *Plate* IX. *fig.* 12, 13.)

Plate
XII. Fig. 1. Quality
(*The reference under the article* Rhomboides, *to fig.* 1. *ſhould be to fig.* 10.)
2. Reciprocal Figures
3, 4. Rectangle
5—8. Reduction
9. Regular Body
10. Rhomboides
(*Referred to as fig.* 1. *See above.*)
11. Rhombus
(*Referred to as* Geometry, *Plate* X. *fig.* 11.)
12. Ring
13. Similar Curves
(*Referred to as* Geometry, *Plate* XIII. *fig.* 14.)
Tetrahedron
Cube
Octahedron
Dodecahedron
Icoſahedron
XIII. Fig. 1—3. Scale
4. Secant
5—12. Sector
(*Fig.* 12. *is referred to as* Geometry, *Plate* III. *fig.* 12.)
13. Segment
14. Similar Curves
(*See Plate* XII. *fig.* 13.)
17, 18. Staff
(*See Plate* XIV. *fig.* 12, 13.)
XIV. Fig. 1. Solid Angle
2. Solidity
(*The reference under* Sphere, *ſhould be to fig.* 3.)
3. Sphere
(*The reference to fig.* 3, *under* Spheroid, *ſhould be to fig.* 4.)
4. Spheroid
5—9. Spiral
(*The reference to fig.* 4—8. *under* Spiral, *ſhould be to fig.* 5—9. *reſpectively.*)
10, 11. Square
(*For Stereographic Projection, ſee below, fig.* 14—16.)
12, 13. Staff
(*Referred to as* Geometry, *Plate* XIII. *fig.* 17, 18.)
14—16. Stereographic Projection
(*Referred to as fig.* 10—12.)
XV. Fig. 1. Sub-contrary
2. Subnormal
3. Tangent
4. Tetrahedron
5. Triangle, Equilateral
6. Scalene
7. Rectangular
8. Obtuſangular
9. Triangles, Similar
10. Menſuration of
11, 12. Properties of
13. Iſoſceles
14—17. Triangles
18. Vertex
19. Ungula
20, 21. Goldman's Volute

Plate

GLAZING CLOTH.

(*See* Miscellany, *Plate* II.)

GUNNERY.

Fig. 1. Gun Pointing
2. Nock's improved Breech
3. Gunnery. Theorem for determining the Velocity of a Ball
4. Petard
5. Quadrant
6. Bomb
7. Caliber Compaſs

HAIR.

(*See above*, Anatomy, Comparative)

HERALDRY.

I. Partition Lines
Eſcutcheons
Roundles
Metals and Colours
Furs
Abatements
II.—VI. Abatements
VII. Flags and Standards, Military and Naval
VIII. Orders of Knighthood, Stars, Collars, Badges, &c.
IX. Ditto
X. Crowns, Coronets, Mitres
X. B Ditto
XI. Achievements borne at the Interment of the Earl of Chatham, in Weſtminſter Abbey
XII. Funeral Achievements, Eſcutcheons, Hatchments
XIII. Heraldic Crowns, Coronets, and Helmets
XIV. Royal Diſtinctions
Diſtinctions of Houſes
Bar
(*See Plate* III.)
Barry, &c.
(*See Plate* III.)
Hatchments
(*See Plate* XII.)

HORNS.

(*See above*, Anatomy, Comparative)

HOROLOGY.

I. Fig. 1—3. Antient Clepſydræ
II. Fig. 1—6. Modern Clepſydræ
III. Fig. 1—5. Clock Movement
IV. Fig. 1—7. Clock Movement
V. Fig. 1—4. Chime Work in the Clock Room of St. Margaret's, Weſtminſter
VI. Ditto
VII. Fig. 1—4. Chimes, Pleyel's German Hymn
VIII. Fig. 1—5. Ancient Clock, by Henry De Wick, 1370

Plate
IX. Fig. 1—3. Thirty-hour Clock, with Alarum, and Count Wheel Striking Work
X. Fig. 1—3. Callipering
XI. Fig. 1—3. Portable Eight-day Clock
XII. Fig. 1—4. Dial Work, and Striking Part of an Eight-day Clock
XIII. Fig. 1—7. Mudge's Time Keeper
XIV. Fig. 1—7. Arnold's and Earnſhaw's Chronometers
XV. Fig. 1—8. Brockbank's Chronometer
XVI. Clock with Chimes
XVII. Ditto
XVIII. Fig. 1. Clock, by Dr. Franklin
2. Mr. Ferguſon
3—5. Second, by Ditto
XIX. Fig. 1—20. Clock Tools
Compenſation Balance
(*See Plate* XXIX.)
XX. Fig. 1—18. Clock Tools
XXI. Fig. 1—17. Ditto
XXII. Fig. 1—6. Aſtronomical Clock, by Reid
XXIII. Fig. 1—4. Aſtronomical Clock, by Brockbanks
XXIV. Fig. 1, 2. Equation Clock, by Enderlin
XXV. Clock Work
Fig. 1. Striking-part, with one Wheel and one Pinion
2. Strike, or Silent
3. Endleſs Cord of Huygens
4. Forcing Spring
5. French Forcing Spring
6. Bolt and Shutter
XXVI. Clock
Fig. 1. Maſſey's Striking-part
2, 3. Prior's Striking-part
XXVII. Fig. 1—9. Troughton's Pendulum
XXVIII. Fig. 1—7. Compenſation Curbs
XXIX. Fig. 1—11. Compenſation Balances
XXX. Compenſation Curbs and Balances
Fig. 1. Mr. Cumming's
2. Scott's
3—5. Hardy's Balance
6. Berthoud's
7, 8. Hardy's Iſochronal Compenſation
XXXI. Fig. 1, 2. Dial Work of a Clock, ſhewing the Moon's Age, Phaſes, &c.
XXXII. Fig. 1, 2. New Dial Work of a ſmall Spring Clock, ſhewing the Phenomena of the Moon
XXXIII. Fig. 1—3. Dial Work
XXXI. Eſcapements
Fig. 1—5. Atwood's Theory of Balance
6. Crown Wheel
7. Huygens's Ditto
8. Dr. Hooke's Ditto
XXXII. Eſcapements
Fig. 1. Sully's
2. Graham's Horizontal
3. Anchor Eſcapement
4, 5. Graham's Dead Beat
6. Grignon's Ditto
7. Bennet's Ditto
8. Thiout's Eſcapement
XXXIII. Eſcapements
Fig. 1. Berthoud's
2. Smeaton's

Plate		
XXXIII.	Fig. 3.	De Bethune's Eſcapement
	4.	Amant's
	5.	Harriſon's
	6.	Cummings's
	7.	Mudge's
	8.	Peter le Roy's
XXXIV.		French Eſcapements for Chronometers
	Fig. 1—3.	Peter le Roy's improved
	4.	Berthoud's detached
	5.	improved, No. 60
	6.	without a Spring
	7.	with a Spring and Detent in No. 9
	8.	Iſochronal
XXXV.		Eſcapements
	Fig. 1, 2.	Mudge's
	3.	Margett's
	4.	Robins's
	5.	Duplex
	6.	Eſcapement à Virgule
	7.	Tompion's
	8.	free, for a Pendulum
XXXVI.		Eſcapements, &c.
	Fig. 1.	Berthoud's Eſcapement
	2.	Nicholſon's
	3, 4.	Goodriche's
	5.	Maſſey's
	6, 7.	Theory of the Fuſee
XXXVII.	Fig. 1—3.	Fuſee Engine acting by an inclined Plane
	4—8.	Fuſee Engine, with a Screw and Lever
XXXVIII.		Fuſee Engines and Fuſee Frame
	Fig. 1.	Common Fuſee Engine
	2.	Old Fuſee Engine
	3.	Fuſee Frame
XXXIX.	Fig. 1—3.	Compenſating Pendulums
	4.	Graham's Mercurial
	5.	Regnauld's
	6, 7.	Deparcieux's
XXXIX.	Fig. 8.	J. le Roy's Compenſating Pendulum
XL.		Compenſating Pendulums
	Fig. 1.	Ellicott's
	2.	Troughton's Rhomboidal
	3.	Berthoud's
	4.	Troughton's Mercurial
	5.	Dr. Fordyce's
	6.	Ward's
	7.	Reid's
	8.	Doughty's
	9.	Ritchie's
	10.	Nicholſon's
XLI.		Remontoir Eſcapements
	Fig. 1—4.	Haley's
	5, 6.	Breguet's
	7.	Hardy's
XLII.		Remontoir Eſcapements
	Fig. 1, 2.	De Lafon's
	3.	Maſſey's
	4—6.	Mendham's
	7, 8.	Prior's
XLIII.	Fig. 1—3.	Recordon's Renovator
	4—9.	Watch, with Muſic
XLIV.	Fig. 1—8.	Common Watch
	9—14.	Alarum Watch
	15—18.	Rolling Watch
XLV.	Fig. 1, 2.	Repeating Watch
	3.	Wheel Work
	4—6.	Spring, &c.
XLVI.	Fig. 1—8.	Repeating and Alarum Watches
XLVII.		Repeating Watches
	Fig. 1—5.	Elliot's
	6.	Infallible Repeater, by Berrollas
	7.	Calliper
	8.	Detached Parts

HORSE.

(*See* MISCELLANY, *Plate* XX. *fig.* 7.)

PLATES. VOL. III.

HYDRAULICS—NAVAL ARCHITECTURE.

HYDRAULICS.

Plate		
I.	Fig. 1—4.	Contracted Vein, &c.
	5.	Counterpreſſure
	6—17.	Diſcharge of Fluids
II.	Fig. 18.	Dr. Halley's Diving Bell
	19.	Section of Triewald's Ditto
	20.	Spalding's Ditto
	21—27.	Klingert's Diving Machine
III.		Dredging Machine uſed to deepen the Channel of the Thames
	Fig. 1.	Elevation
	2.	Plan
III.*	Fig. 3.	Eddy
	4.	Fire Engine
III.*	Fig. 5—11.	Mr. Newſham's Fire Engine
IV.	Fig. 1—6.	Rowntree's Fire Engine
V.	Fig. 1—9.	Fluids
VI.	Fig. 1—6.	Fluids
	7—13.	Fountain
VII.	Fig. 1—8.	Fountains
VIII.	Fig. 1, 2.	Floating
	3, 4.	Hydromancy (*Referred to as fig.* 4, 5.)
	5.	Hiero's Crown
	6.	Tantalus's Cup (*Tantalus's Cup is referred to this Plate, but inſerted Plate* XIV. *fig.* 10.)
IX. & X.		Hydrometer
	Fig 1.	Common
	2, 3.	Clark's

Plate

IX. & X. Fig. 4. Deſaguliers's Hydrometer
5. De Luc's
6. Nicholſon's
(X.) Fig. 7, 8. Hydroſtatic Balance
9. Deſaguliers's
10. Martin's
11. Hydroſtatic Bellows
12—14. Ditto, by Ferguſon
(IX. *and* X. *form one Plate, which ſhould have been numbered Plate* IX. *&* X.)
15. No. 1—3. Hydroſtatic Inſtrument
(*See Plate* XII. *fig.* 14. *No.* 1—3.)
Fig. 15, 16. Hydroſtatical Paradox
(*Theſe figures are referred to as on Plate* XI. *There is no Plate of that number*)
XII. & XIII. Fig. 1—7. Hygrometer
8. Anderſon's
9, 10. Dr. Hooke's
11. Dr. Hales's
12, 13. Ferguſon's
14. No. 1—3. Bradford's Hydroſtatical Inſtrument
(*Referred to as Plate* X. *fig.* 15.)
(XIII.) Fig. 1—4. Smeaton's Hygrometer
(XII. *&* XIII. *fig.* 1—4. *are on one Plate*)
XIII. Hygrometer
Fig. 5, 6. De Luc's
7. Sauſſure's
8, 9. De Luc's Whale Bone
10. Hungarian Machine
(*Referred to as fig.* 1.)
11. Forſter's Oat Beard Hygrometer
12. Kater's Hygrometer
XIV. Fig. 1. Jet d'Eau
2. Moiſture
3. Perſian Wheel
4. Pump, Common Sucking
5. Forcing
6. Lifting
7. Cteſebe's
8. Chain
9. Parts of Ditto
10. Tantalus's Cup
(*Referred to as Plate* VIII. *fig.* 6.)
XIV. XV. Fig. 9, 10. Rope Machine
11—13. Archimedes' Screw
14, 15. Water Screw
(XV.) Fig. 1—5. Siphon
6. Papin's, or Wirtemberg
7. Springs
8—10. Syringe
11—14. Waves
XV. Pumps
Fig. 1—8. Captain Jekyl's Improved Ship Pump
9. Martin's Pump

HYDROSTATICS.

I. Fig. 1—17. Capillary Tubes, &c.

INCUBATION.

(*See above*, Anatomy, Comparative.)

Plate

IRON MANUFACTURE.

I. Iron Forge
Fig. 1. Plan
2. Elevation
II. Fig. 1. Section of the Finery. Front View
2. Another Section. Side View
3. Enlarged View of the Tuyere Iron
4. Tuyere Iron with the Ciſtern
5. Tongs for taking the Balls from the Furnace
6. Iron Fork
7. Iron Ladle
8. Face of the Stamping Iron
9. Face of a Hammer for drawing out Bars
10. Balling Furnace. Section
11. Elevation
III. IV. (*Lettered* Furnace, *Plate* III. IV.)
Fig. 1. Reverberatory Furnace for melting large Quantities of Metal. Section
2. Section of a Cupola
(IV.) 3—5. (*Theſe are the Figures referred to under the article* Furnace, "Aikin's Improvement of Lewis's Furnace," *as* Furnace, *Plate* IV. *fig.* 3—5.)
7. End Elevation of the Reverberatory Furnace
IV. Smeaton's Forge Hammer Machinery for Kilnhurſt Forge
Fig. 1. Elevation in Front
2. Elevation Sideways
(*The reference to Plate* IV. *under* Rolling Mill, *ſhould be to Plate* VI.)
V. Rollers for making Bar Iron
Fig. 1. End Elevation, Rollers for Square Bars
2. Side Elevation. Ditto
3. Plan. Rollers for flat Bars
4. Side Elevation. Ditto
5. Plate Rollers. End Elevation
6. Ditto. Side Elevation
VI. Rolling and Slitting Mill at Meſſrs. Walkers' Iron Works, Rotherham
Fig. 1. Plan
2, 3. Elevations
(*This is referred to as Plate* IV. *under the article,* Rolling Mill. *The number is omitted on the Plate*)
VII. Steel Converting Furnace
Fig. 1, 2. Sections
3. Plan
4—7. Mould for making Crucibles, &c.
(*This Plate is not numbered*)
VIII. Mill for tilting Steel, by Smeaton
Fig. 1. Plan
2. Elevation

LAMPS.

I. Fig. 1—3. Argand's
4. Lamp Cotton
5, 6. Kier's Lamp
7. Rolling Lamp
II. Fig. 1—4. King's Hydro-Pneumatic Lamp

PLATE
II. Fig 5, 6. Barton's Lamp
7, 8. Porter's Automaton Lamp

LATHE.

Fig. 1—10. Mr. H. Maudſlay's Lathe

LIGHT.

Fig. 1—19. Luminous Animals
(*See Plates*, Vol. V. NATURAL HISTORY)

LIGHT-HOUSE.

Fig. 1—8. Light-Houſe on the Eddyſtone Rock

MAGNETISM.

I. Fig. 1—12. Compaſs
II. Fig. 13—16. Ditto
III. Fig. 17—22. Variation Compaſs
IV. Fig. 22—29. Dipping
(*For fig.* 27. *ſee Plate* V.)
30. Dipping Needle, by Lorimer
(*Referred to as fig.* 3.)
V. Dipping Needle, by Nairne, on Mr. Mitchel's Plan
VI. VII. Fig. 1—12. Magnet
(VII.) Fig. 1. Ditto
(VI. & VII. *fig.* 1. *are on one Plate*)
VII. Fig. 2—16. Magnet

MAMMALIA.

(*See above*, ANATOMY, COMPARATIVE; *alſo*, *Plates*, Vol. V. NATURAL HISTORY)

MASONRY.

I. Fig. 1. Reticulated
2. Incertain
3. Iſodomum
4. Pſeudiſodomum
5. Roman Emplection
6. Greek Emplection
II. Arches
Fig. 1. No. 1. Plano Cylindroidic Arch
No. 2. Plano Cylindric Arch
2. No. 1. Cylindro-Cylindric Arch
No. 2. Cylindro-Cylindroidic

MAST, PLATE OF.

(*See* SHIPS, *Plate* VIII.)

MECHANICS.

I. Fig. 1, 2. Acceleration
3. Angular Motion
(*See Plate* II. *fig.* 1.)
3, 4. Angle of Elevation
5—7. Axis in Peritrochio

PLATE
II. Fig. 8—11. Balance
12. Bent Lever Balance
13. Aſſay Balance
14. Ballaſt
(*On this figure, the dotted line perpendicular to the line* 1—3. *ſhould have the letter n at the upper end and c at the bottom; and g ſhould be on the dot-line oppoſite to* G)
II. Fig. 1. Angular Motion
2—4. Boring Water Pipes
(*Referred to as fig.* 67—69.)
5. Crab for launching Ships
(*Referred to as Plate* XVIII. *fig.* 1.)
6, 7. Double Cylinder
(*Referred to as Plate* XXII. *fig.* 1, 2.)
8, 9. Jack for raiſing Timber
(*Referred to as Plate* XXX. *fig.* 1, 2.)
10. Smoke Jack
(*Referred to as Plate* XXX. *fig.* 3.)
11—13. Lever
(*Referred to as Plate* XXX. *fig.* 4—6.)
14—17. Projectiles
(*Referred to as Plate* XXXVI. *fig.* 7—10.)
III. Fig. 15. Capſtan, Common Moveable
16. Double
17. uſed at the London Docks
18. Main, or double
19. Jeer, or little
20. Mr. Plunket's
21. Caſt-iron Lifter for
IV. Fig. 21. Center of Friction
22—29. Center of Gravity
V. Fig. 30—40. Ditto
VI. Fig. 41—51. Ditto
VII. Fig. 52—54. Center of Gyration
55. Center of Motion
56—60. Center of Oſcillation
Chain (*See Plate* XII.)
VIII. Fig. 61—66. Center of Oſcillation
67—69. Percuſſion
IX. Fig. 70—73. Poſition
74, 75. Preſſure
76—80. Rotation
X. Fig. 81—84. Central and Centrifugal Forces
85—92. Centripetal Forces
XI. 93. Centrifugal Machine
94—99. Centrobaryc Method
XII. Fig. 1—9. Chains
10, 11. Clay Mill
XIII. Fig. 1. Fore Wheels of a Crane-necked Carriage
2. Jacob's Contrivance for the Fore-wheels of a Carriage
XIV. Fig. 1, 2. Coal Meaſuring
XIV.* Fig. 1—15. Water Cocks
XV. Fig. 1, 2. Compoſition of Motion
(*See Plate* XVI. *fig.* 1, 2.)
XV. Fig. 1—24. Colliſion
(*The reference to fig.* 22. *under theorem* VI. *of this article, ſhould be to fig.* 24. *The reference to fig.* 23. *ſhould be to fig.* 22. *In fig.* 23. *for* E *read* Z. *The reference to fig.* 24. *ſhould be to fig.* 23.)
XV. Fig. 1—7. Comb-making
6—8. Coupling Box

Plate	Fig.	Subject
XVI.	Fig. 1, 2.	Compoſition of Motion
		(*Referred to as on Plate* XV.)
	7.	Double Cone
	10, 11.	Prony's Condenſer of Forces
XVII.	Fig. 1—4.	Cork Screws
	5.	Corking Machine
XVIII.	Fig. 1.	Crab
		(*See Plate* II. *fig.* 5.)
	2, 3.	Cranes, by Ferguſon
XIX.	Fig. 1—3.	Mr. Smeaton's Deſign for a Crane, for the Wool Quay, Cuſtom Houſe, London
XX.		Cranes
	Fig. 1, 2.	White's Crane
	3, 4.	Braithwaite's
	5.	Dixon's
XXI.	Fig. 1—5.	Cranes, various
XXII.	Fig. 1, 2.	Cylinder, Rolling
		(*See* Double Cylinder, *Plate* II. *fig.* 6, 7.)
XXII. & XXIII.	Fig. 3.	Direction of Motion
	4—6.	Line of Direction
(XXIII.)	Fig. 1—4.	Hill's Machine for drawing Ships' Bolts
XXIII.	Fig. 1—7.	Mr. Dixon's Machine for Boring Cylinders, at the Falcon Iron Foundery
		(*For* Mill *referred to Plate* XXIII. *ſee Plate* XXXIII.)
XXIV.	Fig. 1—9.	Drills
	10, 11.	Drilling Machine
		(*This Plate is not numbered*)
XXV.	Fig. 1—7.	Dynamics
XXVI.		Dynanometers for meaſuring the Force of Draught
	Fig. 1.	Mr. M'Dougale's
	2.	Salmon's
	3.	Contrivance for determining the Force required to work a Mill
XXVI.		Expanding Riggers
	Fig. 5—7.	Mr. Flint's
	8—12.	Mr. Farey's
XXVII.	Fig. 1—9.	Fly Preſs
XXVII.	Fig. 1—4.	Mr. Salmon's Portable Threſhing Mill
XXVIII.	Fig. 1—20.	Force
XXIX.		Friction and Fulling Mill
	Fig. 1—3.	Friction
	4—6.	Fulling Mill
XXX.	Fig. 1, 2.	Jack for raiſing Timber
		(*See Plate* II. *fig.* 8, 9.)
	3.	Smoke Jack
		(*See Plate* II. *fig.* 10.)
	4—6.	Lever
		(*See Plate* II. *fig.* 11—13.)
XXX. & XXXVI.	Fig. 1—5.	Wedge
	6, 7.	Weight
	8—13.	Wheel
		(*Fig.* 1—13. *are referred to reſpectively as on Plate* XL.)
(XXXVI.)	Fig. 11—13.	Pulley
	14.	Refraction
	15.	Solid of the leaſt Reſiſtance
	16, 17.	Mechanical Powers
		(*Referred to as Plate* XXXII. *fig.* 18, 19.)
XXXI.	Fig. 1—5.	Logwood Mill
XXXII.	Fig. 1—17.	Mechanical Powers
XXXIII.		(*See for fig.* 18, 19. *Plate* XXX. *and* XXXVI. *fig.* 16, 17.)
	Fig. 1, 2.	Common Breaſt Mill
	3.	Dr. Barker's Mill
	4.	Portative or Hand Mill
XXXIV.	Fig. 1—8.	Flour Mill deſigned by Smeaton
XXXIV.	Fig. 1—10.	Motion
	11.	Perpetual Motion
	12—15.	Percuſſion
	16—21.	Inclined Plane
		(*Referred to as Plate* XXXV. *fig.* 1—6.)
XXXV.	Fig. 1—6.	Colour Mill
XXXV.	Fig. 1—9.	Pile-driving Machine
	10—12.	Bramah's Machine for drawing Piles out of the Ground
		(*For Inclined Plane, fig.* 1—6. *ſee Plate* XXXIV. *fig.* 16—21.)
XXXVI.	Fig. 7—10.	Projectiles
		(*See Plate* II. *fig.* 14—17.)
	11—13.	Pulley
	14.	Refraction
	15.	Reſiſtance, Solid of the leaſt
		(*For theſe figures,* 11—15. *ſee Plate* XXX. *and* XXXVI.)
XXXVII.	Fig. 1—10.	Rotation
XXXVIII.		Screws
	Fig. 1—3.	Principles of the Screw illuſtrated
	4.	Endleſs Screw
	5.	Machine to ſhew the Power of the Screw
	6—10.	Spring
	11.	Steelyard (*Referred to as fig.* 6.)
XXXIX.	Fig. 1—13.	Strength of Materials
XL.	Fig. 1—6.	Machines for caſting and drawing Lead Pipes
XL.	Fig. 1—5.	Wedge
	6, 7.	Weight
	8—13.	Wheel
		(*Theſe three ſubjects are given on the Plate which is numbered* XXX. & XXXVI. *The figures correſpond with the reference to Plate* XL.)

MICROSCOPIC OBJECTS.

(*See Plates*, Vol. V. Natural History, Animalcules.)

MIDWIFERY.

(*The Plates intended for the illuſtration of this article have been, for obvious reaſons, purpoſely withheld.*)

MILITARY MANŒUVRES.

Plate	Subject
I.	Firſt Manœuvre
	Second Ditto
	Third Ditto
	Fourth Ditto
II.	Fifth Manœuvre
	Sixth Ditto
	Seventh Ditto
	Eighth Ditto
	Ninth Ditto

Plate
III. Tenth Manœuvre
Eleventh Ditto
Twelfth Ditto
Thirteenth Ditto
IV. Fourteenth Manœuvre
Fifteenth Ditto
Sixteenth Ditto
V. Seventeenth Ditto
Eighteenth Ditto
Nineteenth Ditto
VI. Inſpection, or Review

MILL WORK.

I. Fig. 1—8.
II. Fig. 9—17.
III. Fig. 18, 19. No. 1, 2. Fig. 20—27.

MINERALOGY.

I. Fig. 1—10. Mining—Baſalt
II. (*See Plates*, Vol. V. Natural History)

MISCELLANY.

I. Fig. 1, 2. Altitude. Sea Gage
3. Altar of Incenſe
4. Burnt Offering
Altars, Pagan (*See* Basso Relievo, *Plate* IV.)
5. Ark of the Covenant
6. Neper's Bones
7. Ancient Arithmetical Characters
Chineſe Muſical Inſtruments
8. Ching
9. King
II. Button Making
Glazing Cloth
Tools for cutting Flints, fig. 1—7.
(*Referred to as* Geology, *Plate* II.)
Smart's Chimney Cleanſing Machine, Fig. 1—6
Cryſtallography, Fig. 21—23.
III. Fig. 1—4. Coinage
Copying
1, 2. Rolling Preſs
3. Screw Preſs
III.* Fig. 1, 2. Hawkins's Patent Polygraph.
IV. Deſigns for Weaving
Fig. 7. Similar Spots
8. Diſſimilar Ditto
9. Dornock
10. Dimity
11. Damaſk
(*Theſe figures are referred to as fig.* 1—5.)
V. Fig. 1—8. Diagonal Motion
(*Theſe figures are erroneouſly referred to as fig.* 12—17. *The reader will eaſily adjuſt the references in the letter-preſs to the figures on the Plate*)
VI. Fig. 18—20. Diagonal Motion, Dividing and Cutting Engine
VII. Fig. 1—6. Diagonal Motion
(*The figures on this Plate are referred to as fig.* 21—26.)

Plate
VIII. Fig. 1, 2. Diaper Loom
3, 4. Diſcharging Preſs
3. Draw Loom
8. Diaper
(*For this figure ſee Plate* XII. *fig.* 8.)
Dornock
(*See Plate* XII. *fig.* 6.)
IX. & X. Fig. 1—4. Dramatic Machinery
(X.) Fig. 1. Ditto
X & XI. Fig. 2. Ditto
(XI.) Fig. 1—6. No. 1, 2. Ditto
7, 8. No. 1, 2. Ditto
XII. Draught and Cording of Looms
Fig. 1. Five-leaf Tweel
2. Broken Tweel
3. Eight-leaf Tweel
4. Broken Tweel
5. Striped Dimity
6. Dornock
7. Fancy Dimity
8. Diaper
9. Similar Spot
10. Diſſimilar Spot
XII. Fig. 1—8. Mr. Marſhal's Secret Eſcutcheon for a Key-hole
(*Theſe figures are referred to as fig.* 2—9.)
9. Self-acting Extinguiſhers
10. Hawkins's Ditto
XII. Fig. 1, 2. Drapery
(*See Plate* XX. *fig.* 8, 9.)
1. Painter's Eaſel
12. Mr. Maſere's Fire Eſcape, ſimplified by Forſter
13. Mr. Maſere's Original Suſpenſion
1—3. Indigo Mills
XIII. Fig. 1—7. File Cutting, Tools for
8—10. Filters
11. Filtration
(*See Plate* XXV. *fig.* 3.)
XIV. Fire Place, by Dr. Franklin
Fig. 2. No. 1. Bottom Plate
2. Back Plate
3. Side Plate
3. Ledges
4. Air Box
5. Front Plate
6. No. 6. Top Plate
7. Shutter
8. Regiſter
7. Fire Place and Chimney
XIV. Fig. 1—6. Hawkins's Claviole, or Finger-keyed Viol
XV. Flood Gates
Fig. 2. Smeaton's Flood Gate, Elevation
5, 6. Ditto, Plan
7. Farey's Self-acting Flood Gate
8—11. Bramah's Hydroſtatic Sluice
XV. Fig. 1—5. Apparatus for reſtoring thoſe Drowning to Life
Fig. 1. Foundry of Bells
2, 3. Letters or Types
4. Fountain Pen
XVI. Fig. 1. Hooke's Sea Gage, or Bucket
2. Hale's Aqueo-Mercurial Gage
3. Marquetry
(*See another View in* Miscellany, *Plate* XXIII. *fig.* 3.)

PLATE
XVI. Fig. 4. Ellicott's Pyrometer
(*This is referred to as in* MISCELLANY, XXIII. *fig.* 4.)
5, 6. Smeaton's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 5, 6.)
7. 8. Ferguſon's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 7, 8.)
9. De Luc's Pyrometer
(*Referred to as* MISCELLANY, XXIII. *fig.* 9.)
10. Rain Gage
(*Referred to as* MISCELLANY, XXIV. *fig.* 2.)
11. Rain Gage of the Royal Society
(*Referred to as* MISCELLANY, XXIV. *fig.* 3.)
XVII. Gas Lights
Fig. 1—3. Mr. Clegg's Apparatus
4. Dr. Stancliffe's Ditto
5. Mr. B. Cooke's Ditto
XVIII. Fig. 1—18. Gem Engraving
XIX. Fig. 1. Glanders
2, 3. Dr. Wollaſton's Goniometer
XX. Fig. 1. Thorley's Bee-Hive
2—4. White's Ditto
5. Icehouſe
6. Supple's Mortar Mill
7. Horſe
8, 9. Drapery
(*Referred to as* MISCELLANY, *Plate* XII. *fig.* 1, 2.)
XXI. Fig. 1—4. Bramah's Patent Lock
5—8. Rowntree's Ditto
XXII. (*For Bramah's Lock, ſee the preceding Plate. No Plate numbered* XXII.)
XXIII. Fig. 1, 2. Marble Mill
3. Marquetry
(*See another View of this Machine,* MISCELLANY, XVI. *fig.* 3.)
XXIII. & XXIV. } Fig. 5, 6. Pentagraph
(XXIII.) 7, 8. Perch of a Coach
9. Parabolic Fruſtum
10, 11. Conoid
12. Pediment
(*See Plate* BASILIC, ARCHITECTURE, *Plate* XI. & XII.)
(XXIV.) Fig. 1—5. Perſpective Machines
6. Pot-aſh
7. Potaſſium
8. Water Spout
XXV. (*Referred to as Plate* XXIV.)
Fig. 1. Æolus's Harp
2. Crowth
Fig. 3. Filtration
(*Referred to as* MISCELLANY, *Plate* XIII. *fig.* 11.)
4. Marine Trumpet
4. Supple's Mortar Mill
(*See* MISCELLANY, *Plate* XX. *fig.* 6.)
5, 6. Hearing Trumpet
7, 8. Speaking Trumpet
9. Voice
10. Tide Dial
(*Referred to as* DIALLING, *Plate* IV. *fig.* 36.)

MONOGRAMS OF FRENCH ENGRAVERS.

Wendel Reich

PLATE
Jean Duvet or Davet
Noel Garnier
Michael Laſne
Leonard Gualtier
Pierre Woeiriot
Solomon Bernard
Rene Boivin
Jacques Periſin, or Perſinus
Francis Perrier
Pierre Brebiette
Jerome David
Pierre Daret
Stephan du Perac
Antoine Garner
François Cheveau
Jean Couvay
Dominique Bariere
Sebaſtien Vouillemont
Pierre Lombart
Jacques Stella
Nicolas de Larmiſſin

MONOGRAMS OF GERMAN ENGRAVERS.

I. Martin Schoen
Bartholomew Schoen
Sandrart
Hans Schaufflien Senior
Junior
Martin Zagel
Albert Glockenton
Albert Altdorfer
Albert Durer
Hans Holbein
Sigiſmond Holbein
Lucas Cranach
Lucas Kruger
Hans Sebald Beham
Burgkmair, Balding and Breſang
Bartholomew Beham
Gregory Penz
Henry Aldegrever
Hans Broſamer
Auguſtin Hirſhfogel
II. Jacob Binck
Henry Lautenſack
Hans Sebald Lautenſack
Theodore de Brie
Chriſtopher Stimmer
David or Daniel Hopfer
Jerome Hopfer
Tobias Stimmer
Melchior Lorich
Virgil Solis
Chriſtopher Maurer
Chriſtopher Jamnitzer
Joſt or Jodocus Amman
Matthew Greuter
J. F. Greuter
Domenic Cuſtos
Theodore Cruger
Matthias Cruger
Wolfgang Kilian
Lucas Kilian
Bartholomew Kilian
III. Matthew Merian
Chriſtopher Jegher
Wenceſlaus Hollar

PLATE
III. John William Baur
Geraud Laireſſe
John Ulric Kraus
Andrea Meyer
J. J. Thourneyſon
Derick Meyer
Rodolph Meyer
Adrian Van Oſtade

MONOGRAMS OF THE ENGRAVERS OF THE LOW-COUNTRIES.

I. John Collaert
Jerome Bos or Boſche
Jacob Boſius
Henry Goltzius
Peter Coeck
Walter Van Aſſen
Lucas Jacobs
Adrian Collaert
Cornelius Metenſis
Cornelius Bos
Martin Hemſkerck
Peter Breughel
Criſpin de Paſſe
Dietrich Van Staren
Henry Van Cleef
William de Paſſe
Dirk Volkart Coornhaert
Francis Babylone
Criſpin Vanden Broeck
Jerome Cock
Martin Van Cleeve
Magdalen de Paſſe
II. Simon Paſſe
Chriſtopher Van Sichem
Hanſer John Bol
Cornelius Van Sichem
John Sadeler
Philip Galle
Cornelius Cort
Nicholas de Bruyn
Aſſuerus Londerſel
Jerome Wierix
Abraham de Bruyn
Zachary Dolendo
Paul Moreelſe
Karl Van Sichem
James Matham
James de Ghein the elder
John or Hans Saenredam
Bartholomew Dolendo
William Saenredam
Henry Hondius
Abraham Bloemart
III. Joſt Hondius
Lucas Vorſterman
William Hondius
David Teniers
Cornelius Blecker
Michael Natalis
Sheltius à Bolſwert
Eſais Vandevelde
Albert Flamen
Adam à Bolſwert
Peter Molyn

PLATE
III. Chriſtian Louis Moyart
Nicholas Berghem
Peter Nolpe
Nicholas Viſſcher
Peter Quaſt
John George Van Vliet
Antonio Waterloo
Henry Vander Borcht
Peter Vander Borcht
IV. Theodore Van Keſſel
Abraham Genoels
Herman Van Swanevelt
John de Biſchop or Epiſcopius
Lewin Cruyl
Bartholomew Breembergh
John Van Somer
James Vanden Hayden
Robert Van Audenaerde
A. F. Bargas
John Van Hugtenbourg
Peter Van Bleeck
William Buteniveg
John Vanden Bruggen
William de Leeuw
John Von Londerſeil
Herman Muller
Peter Serwouters

MONOGRAMS OF ITALIAN ENGRAVERS.

I. J. Ant. de Breſſe
Andrea Mantegna
Nicolas da Modena
Agoſtino of Venice
Dominico Beccafumi
Jerome Mocetto
Leo Daris or Lion Davin
Marc Antonio
Marc of Ravenna
Julio Bonaſone
Dominic Barbiere
Nicholas Beatrice of Lorraine
Lucas Penni
Jean Baptiſti Ghiſi
George Ghiſi of Mantua
Adam Ghiſi
II. Boldrini
Martin Rota
Antonio Fantuzzi
J. J. Caraglio
Antonio Salamanca
Gaſpar ab Avibus
J. Baptiſta Cavaleris
Mario Kartaro
Jaques Palma
J. Baptiſti Pagi
Franceſchini
Cherubino Alberti
Andrea Andreani
Jean Louis Valeſio
Annibal Caracci
Antonio Tempeſta
Odoard Fialetti
Louis Civoli
Franciſco Villamena
Guido Reni

PLATE	
III.	Alexander Baldili
	Joſeph Ribera (l'Eſpagnolet)
	Raphael Sciaminoſi
	Lucas Ciamberlanus
	Horace Borgiani
	Alexander Algardi
	Pietro Teſta
	Gioſeffe Marie Metelli
	Salvator Roſa
	Antonio Franciſco Lucini
	Remigio Cantagalina
	Stefano Della Bella
	Jaques Callot
	Julio Ceſario Venenti
	Benedetto Caſtiglione
	Giacomo Balliſta Galeſtrucci
	Antonio Maria Zanetti
	Dominico Maria Bonavera
	Antonio Bateſtra

MUSIC.

PLATE	
I.*	Modern Time Table
	Characters for Time
II.*	Graces and Marks of Expreſſion
I.	Arpeggio
	Ancient Muſical Characters of the 14th and 15th Centuries
	Arrangement of the Set of Keys on Keyed Inſtruments
II.	Thorough Baſe, or Accompaniment
III.	Thorough Baſe
IV.	Thorough Baſe
	Diſallowances in Thorough Baſe
V.	Thorough Baſe
VI.—VIII.	Counterpoint
IX.—XI.	Fugues
XII.	Fundamental Baſes
XIII.	Regle de l'Octave, in four parts
XIV.—XVI.	Counterpoint, preparation and reſolution of Diſcords
XVII.	Double Counterpoint in the Octave
XVIII.—XX.	Contrappunto doppio in genere Cromatico
XXI. XXII.	Modulation
XXIII.	Modulation
	Rouſſeau's regular Modulation in the Key of C major
	Kirnberger's two eſſential Chords
	Examples of the firſt Uſe of Diſcords
XXIV.	Modulation
XXV. & XXVI.	Example of the pathetic Genus, in which are expreſſed its Succeſſions in the Chromatic Scale aſcending and deſcending
	Acciaccature (*One Plate, numbered* XXV.)
XXVII.	Fingering on Keyed Inſtruments
XXVIII.	Iteration in Fingering
XXIX.	Fingering of Semitonic or Chromatic Diviſions
XXX.	Shakes
XXXI. & XXXII.	Baſſoon
	Scale of the Baſſoon
	(*One Plate, numbered* XXXII.)
XXXIII.	Air upon Three Notes, by the late M. Rouſſeau
XXXIV.—XLIV.	(*It was originally intended that theſe Plates ſhould compriſe ſelections from the works of Haydn and Mozart, and ſpecimens of the national airs of ſeveral countries, viz. Italian, Engliſh, Scottiſh, Iriſh, Welſh, &c.; but as moſt or all of theſe ſubjects are eaſily acceſſible, it has been deemed unneceſſary to inſert them here at ſo heavy an additional expence*)
XLV.	Original Melodies to the Hymn of Oſſian in Temora
XLVI.	(*No Plate of this number*)
XLVII.	Euclidis Sectio Canonis
XLVIII.	Canon in Ogni Modo
	Canone Cancherizando
	Complete Set of Keys on the Piano Forte

MUSICAL INSTRUMENTS.

I.		Ancient Muſical Inſtruments
	Fig. 1.	Timbrel or Tambour de Baſque
	2.	Cithariſtria, or female Minſtrel
	3.	Double Lituus
	4.	Pan playing on the Syrinx
	5.	A Bacchanal playing on two Flutes of the ſame Pitch, *tibiæ pares*
	6, 7.	Antique Theatrical Maſques
	8.	A genuine ancient metalline Lituus
II.		Ancient Muſical Inſtruments and Maſks
	Fig. 1.	A Greek Barbiton or Harp
	2.	Maſk of the Hercules furens of Euripides
	3.	Maſk of Thais from Terence's Eunuch
	4.	A Figure from the Herculaneum Paintings
	5, 6.	Lyres from Sir W. Hamilton's Vaſes
III.		Ancient Muſical Inſtruments
	Fig. 1—3.	Group of Muſicians performing an Epithalamium, from a Piece of Ancient Sculpture in the Ghigi Palace at Rome
	4.	The *Tuba*, or Trumpet of the Jubilee
	5.	Cupid playing on a double Flute, or *tibiæ pares*
	6—10.	From Egyptian paintings in the Tombs of the kings of Thebes
IV.		Ancient Muſical Inſtruments
	Fig. 1, 2.	The Teſtudo, or Lyre of Amphion, front and profile
	3.	Lyre of Terpſichore, in the Picture of that Muſe, dug out of Herculaneum
	4.	Pſaltery from the Picture of Erato, dug out of Herculaneum
	5.	Trigonum, or Triangular Harp
	6.	Abyſſinian Teſtudo
	7.	Etruſcan Lyre with ſeven Strings
	8.	Lyre in an ancient Picture dug out of Herculaneum, on which Chiron is teaching young Achilles to play
	9.	An Egyptian Syſtrum
	10.	An ancient Lyre richly ornamented
V.		Indian Muſical Inſtruments
	Fig. 1.	From an original Indian Painting
	2.	The Been, an Indian Muſical Inſtrument
VI.		Pandean Minſtrels in performance at Vauxhall
VII.		Welſh Harps
		Single Harp

MUSICAL INSTRUMENTS.

PLATE
VII. Ancient Triple Harp
Modern Triple Harp
(*For Guitar, referred to this Plate, ſee Plates* IX. XIII. & XV.)
VIII. Fig. 1—5. Origin of the Bow
IX. Ruſſian Muſical Inſtruments
Goudok Rebec with three ſtrings
Gelaika
Double Flutes of the Ancients
Rok, or Hunting Horn of Siberia
Rojok
Batalaika, Guitar with two ſtrings
X. Harps
Fig. 1, 2. Harp of Brian Boromh
3. Silver Prize Harp
4. Bell Harp
XI. Fig. 1. Engliſh Common Flute
2. German Flute
3. Improved Ditto, with additional keys
4, 5. Hautboys
6. B Fife
7. C Fife
8. Engliſh Flageolet
9. Gong
10. Tabour
11. Pipe
XII. Fig. 1, 2. Hunting Horns
3. Serpent
4. French Horn
5. Bugle
6. Sacbut or Trombone
XIII. Fig. 1. Arch Lute
2. Mandoline
3. Mandola
XIV. Fig. 1. Violin
2. Bow
3. Sordine or Mute
4. Violoncello
5. Violino Piccola, or Kit
6. Viol de Gamba of the 16th Century

NAVAL ARCHITECTURE.

PLATE
XV. Fig. 1. Viol d'Amour
2. Mandore
3. Spaniſh Guitar
4. Lute
Chineſe Muſical Inſtruments
Ching
King
(*See* MISCELLANY, *Plate* I. *fig.* 8, 9.)

NAVAL ARCHITECTURE.

I. Draught of a Ship of 74 Guns
Sheer Plan
Half-breadth Plan
Body Plan
Perpendicular View of the Stern
II. Diſpoſition of the Frame of a Ship of 74 Guns
III. Frame
IV. Profile of a Ship of 74 Guns, inboard work
V. Plans of a Ship of 74 Guns
Plan of the Gun Deck
- Orlop
(*Numbered Plate* VI.)
VI. Plans of the Quarter Deck, Forecaſtle, and Upper Deck of a Ship of 74 Guns
VII. Fig. 1—10. A Ship of 74 Guns, laying off A
VIII. Fig. 1—12. A Ship of 76 Guns, laying off B
IX. Fig. 1—12. A Ship of 74 Guns, laying off C
X. Fig. 1—8. A Ship of 74 Guns, laying off D
XI. Frigate of 38 Guns
XII. An Eaſt Indiaman
XIII. Royal Sovereign Yacht
XIV. Fig. 1—3. Scale of Tons
4—8. Whole Moulding
3—6. Hill's Machine for drawing Ships' Bolts
(*See alſo* MECHANICS, *Plate* XXII. XXIII.)

PLATES. VOL. IV.

NAVIGATION—WRITING BY CIPHER.

PLATE

NAVAL TACTICS.

I. Fig. 1—3. Convoy
(*See* NAVIGATION, *Plate* III.)

NAVIGATION.

I. & II. Fig. 1. Aſtrolabe
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 1.)
2. Backſtaff
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 2. *There are ſome inaccuracies in the letters of reference, which the reader will eaſily correct on inſpection*)
Fig. 1. Meridian

PLATE
I & II. Fig. 2, 3. Meridional Parts
(*Referred to as Plate* II. *fig.* 8, 9.)
4—8. Tide
(*Referred to as* GEOGRAPHY, *Plate* I. *fig.* 10—14.)
7. Foreſtaff
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 3.)
(II.) Fig. 1—3. Hadley's Quadrant, theory of
4. Sinical Quadrant
5, 6. Rhumb Line
7. Variation
8, 9. Ditto
(*Referred to as* ANALYSIS, *Plate* XIII. *fig.* 1, 2.)
8, 9. Meridional Parts
(*See Plate* I. *fig.* 2, 3.)

PLATE
(II.) Fig. 10. Nocturnal
(*See* ASTRONOMICAL INSTRUMENTS, *Plate* I. *fig.* 6.)
II. & IV. Fig. 1—4. Rudder
5—18. Plain Sailing
II. Fig. 19. Plain Sailing
20—23. Parallel Sailing
24, 25. Mercator's Sailing
26—34. Great Circle Sailing
III. Fig. 1, 2. Traverſe Sailing
3—6. Current Sailing
1—3. Naval Tactics
(*Referred to as* NAVAL TACTICS, *Plate* I. *fig.* 1—3.)
1—5. Trigonometry
(*Referred to as* TRIGONOMETRY, *Plate* III. *fig.* 1—5.)

NOTATION.

Plate of Arithmetical Characters
(*See Miſcellany, Plate* I. *fig.* 7.)

OIL MILL.

Smeaton's Oil Mill
1. Plan
2. Elevation

OPTICS.

I. Fig. 1. Aberration
2—4. Angle
5. Burroughs's Machine, Perſpective View
(*Referred to as Plate* II. *fig.* 4, 5.)
13. Altitude
(*See Plate* IV. *fig.* 11.)
II. Fig. 1—3. Parker's Burning Lens
4, 5. Burroughs's Machine
(*See Plate* I. *fig.* 5.)
III. Fig. 1—7. Camera Obſcura
IV. Fig. 1, 2. Catoptric Ciſtula
2*—4. Dioptrics
5, 6. Diſperſion of Light
8. Focus
(*Referred to as Plate* V. *fig.* 2.)
9. Looking Glaſs
(*Referred to as Plate* IX. *fig.* 10.)
10—13. Shadow
14—16. Viſible
17. Viſion
V. & VI. Grinding, &c.
(V.) Fig. 1. Virtual Focus
2. Eye
2. Focus
(*See Plate* IV. *fig.* 8.)
3—7. Grinding Machine
(VI.) Fig. 5—11. Lens
VI. Fig. 1. Helioſtata
2. Bed of Hones
3. Horopter
4. Refraction
(*This figure is not numbered*)
VII. Fig. 1—12. Lens

PLATE
VIII. Fig. 1—12. Lens
IX. Fig. 1—9. Light
10. Looking Glaſs
(*See Plate* IV. *fig.* 9.)
X. Fig. 1—3. Magic Lantern
4. Apparent Magnitude
5—11. Micrometer
XI. Micrometer
Fig. 1. Dr. Maſkelyne's
2—4. Troughton's
5. Herſchel's Lamp Micrometer
6. Ditto, the arm enlarged
7, 8. Ditto, the lamp open with the weight W
9. Ditto, the lamp ſhut
(*Fig.* 7, 8, 9. *are not numbered on the Plate*)
10. Microſcope
(*The ſame as Plate* XII. *fig.* 1.)
XII. Fig. 1—12. Microſcope, Single
XIII. Microſcopes
Fig. 1. Marſhall's
2. Culpepper's
3, 4. Reflecting Microſcope
5. Dr. Smith's Ditto
6—8. Solar Microſcope
(*For* Mirror, *ſee Plate* XV.)
XIV. Compound Microſcope
1—4. Adams's
5—11. B. Martin's
XV. Fig. 1. Incidence, Inclination
2—18. Mirror
18. Muſcæ Volitantes
19, 20. Centering Object Glaſs
21. Opera Glaſs
22. Optical Inequality
23, 24. Parhelion
(*Referred to as Plate* XVII. *fig.* 8, 9.)
Microſcope, (*ſee Plate* XVI.)
XVI. Fig. 1—8. Improved Solar Microſcope
(*This is referred to under the article* MICROSCOPE *as* OPTICS, *Plate* XV.)
(*For* Opera Glaſs, *ſee Plate* XV. *fig.* 21.)
XVII. Fig. 1—8. Optometer, &c.
9. Optic Place
10. Pencil of Rays
(*The reference to fig.* 11. *under* PLACE, *in Optics, ſhould be to fig.* 9.)
11, 12. Polyhedron
(*Referred to as fig.* 12, 13)
12. Polemoſcope
13. Polyoptrum
(*Referred to as fig.* 14.)
14. Reflection
15. Reflexibility
(*For* Parhelion, *ſee Plate* XV. *fig.* 23, 24.)
XVIII. Rainbow, Refraction
Fig. 1—9. Rainbow
10—24. Refraction of Light
XIX. Fig. 1—15. Refrangibility of Light
XX. Fig. 1—4. Shadow
(*See* OPTICS, *Plate* IV. *fig.* 10—13.)
5—7. Viſible
(*See Plate* IV. *fig.* 14—16.)
8. Viſion, theory of
(*See Plate* IV. *fig.* 17.)

PLATE

ORGAN.

I. Fig. 1—13. Detached Parts
II. Interior Profile of an Engliſh Church Organ
III. Fig. 1—5. Organ made by Flight and Robſon for the Earl of Kirkwall
IV. Fig. 6—14. Flight and Robſon's Organ

PAINTING.

I. Fig. 1, 2. Apollo Belvidere
3, 4. Venus de Medicis
II. Fig. 1—8. Diverſities of the Human Face
III. Diverſities of the Human Face
American, Nootka Sound
European
Aſiatic, Paleſtine
Aſiatic, Chineſe
African, Hottentot

PANORAMA.

I. Fig. 1. Fig. 2. No. 1—7. Fig. 3.
II. Fig. 1—5.

PAPER MILL.

I. Fig. 1. Elevation
2. Plan
II. Fig. 1—8. Machinery.

PERSPECTIVE.

I. Fig. 1—8. Anamorphoſis
9. Diſtance of a Vaniſhing Line
10. Point of Ditto
11, 12. Horizontal Line
I. Fig. 1—6. Theory of Perſpective
II. Fig. 1—15. Ditto
III. Fig. 1—16. Ditto
IV. Fig. 1—15. Ditto
V. Fig. 1—6. Ditto
VI. Fig. 1. No. 1—3. Fig. 2. No. 1—4.
VII. Fig. 1. No. 1—3. Fig. 2. No. 1, 2. Fig. 3—6.
VIII. Fig. 1. No. 1—3. Fig. 2—5. Fig. 6. No. 1, 2.
IX. Fig. 1—10. Fig. 11. No. 1—4.
X. Fig. 1. No. 1—6. Fig. 2. No. 1—4. Fig. 3, 4.
XI. Fig. 1. No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—9. Fig. 10. No. 1, 2. Fig. 11—17.
XII. Fig. 1—6. Fig. 7. No. 1, 2. Fig. 8. No. 1. 2. Fig. 9, 10.

PISÉ BUILDINGS.

(*The Plate thus headed is* AGRICULTURE, *Plate* XXXIII.)

PLANETARY MACHINES.

I. Fig. 1, 2. Cometarium
II. Fig. 1—3. Cometarium, by W. Jones
III. Equation Mechaniſm of a Planet's Orbit
Fig. 1. By Huygens
PLATE
III. Fig. 2. By Mr. Joſeph Prieſtley
3—5. By Rev. W. Pearſon
IV. Fig. 1—6. Equation Mechaniſm of a Planet's Orbit by the Rev. W. Pearſon
V. Firſt Portion of the Orrery for Equated Motions
VI. Fig. 1—3. Janvier's Orrery
VII. Fig. 1—4. Section of the Improved Orrery for Mean Motions
VIII. Perſpective View of the Improved Orrery for Mean Motions, by the Rev. W. Pearſon
IX. Dials graduated for ſhewing different Planetary Phenomena
Fig. 1. Dial for the Equation of the Sun's Centre
2. Ditto, Sun's Declination
3. Ditto, Reduction of the Ecliptic to the Equator
4. Ditto, Moon's Mean Equation of the Centre
5. Ditto, Moon's Mean Heliocentric Latitude
6. Ditto, Moon's Horizontal Parallax only
7. Ditto, Moon's Mean Horizontal Diameter and Parallax
8. Ditto, Equation of the Mean High Tides
X. Fig. 1—5. Planetarium of the Royal Inſtitution, by Mr. Pearſon
XI. New Planetarium for Equated Motions by Dr. Pearſon
Fig. 1. Elevation
2. Plan of the Movement for the Arm of Saturn
XII. Fig. 1. Roemer's Satellitian
2—4. Pearſon's Ditto
5. Janviers Jovilabe
XIII. Fig. 1—3. Pearſon's Large Machine for Jupiter's Satellites

PLANING MACHINE.

I. Fig. 1—6. Mr. Bramah's Machine
II. Fig. 8—13. Ditto

PLATED MANUFACTURE.

Fig. 1, 2. Die Stamp
3. Bit Swage for Mountings
4. Common Swage
5—7. Parts of the Machine
8—10. Grooved Rollers for Beads, &c.
11. Emboſſing Punches
12. Furnace

PNEUMATICS.

I. Fig. 1—12. Aeroſtation
II. Fig. 5—8. Ditto
III. Fig. 14—23. Air Gun
IV. & V. (*Numbered Plate* VI.) Fig. 24, 25. Air Pump, and Experiments on Air
(V.) Fig. 26—32. Experiments on Air
V. Fig. 33—44. Ditto

Plate
VI. Fig. 45. Smeaton's Air Pump
46, 47. Nairne's Ditto
VII. Fig. 48—55. Air Pump, and Experiments on Air
VIII. Fig. 56, 57, & 68. Ditto
VIII. No. 2. Fig. 58—62. Ditto
63—66 Cuthbertſon's Air Pump
69. Anemometer
70, 71. Aræometer
72. Atmoſphere
73. Bacchus
(*Referred to as Plate* IX. *fig.* 73.)
IX. Barometer
Fig. 73. Bacchus
(*See the preceding Plate, fig.* 73.)
74, 75. Auzont's Experiment
76. Common Barometer
77. Des Cartes'
78. Huygens's
79. Dr. Hooke's
80. Horizontal
81. Diagonal
82. Wheel
83. Pendant
84. Chamber
85. Vernier
X. Fig. 86, 87. Marine Barometer
88. Caſwell's
89, 90. Rowning's
XI. Barometer
91. Machine for enlarging the Scale of the Barometer
92, 93. Keith's Barometer
94. De Luc's Ditto
95. Thermometer
96, 97. Hamilton's Barometer
98, 99. Phenomena of the Barometer
XII. Fig. 100—106. Jones's Portable Barometer
XIII. Fig. 107—117. Bellows
XIV. Fig. 1, 2. Condenſers
3. Condenſing Engine
4. Pear Gage
5—7. Gage of a Condenſer
4—7. Freezing
8. Freezing Apparatus
XV. Fig. 1—7. Pyrmont Water, Apparatus for preparing
8. Whiſpering Place
9, 10. Lind's Wind Gage
11. Martin's Ditto
12. Bouguer's Ditto
13. Leſlie's Thermometer
(*Referred to as Plate* XVI. *fig.* 17.)
14. Kewley's Thermometer
(*Referred to as Plate* XVI. *fig.* 18.)
XVI. Thermometer
Fig. 1. Drebbel's Air Thermometer
2. Bent Thermometer
3. Bernouilli's Ditto
4. Amonton's Ditto
5. Florentine Ditto
6—10. Apparatus for adjuſting the fixed Points of Thermometers
11—13. Cavendiſh's Thermometer
14, 15. Mr. Six's Ditto

Plate
XVI. Fig. 16. Rutherford's Ditto
17. Leſlie's Ditto
(*See Plate* XV. *fig.* 13.)
18. Kewley's Thermometer
(*See Plate* XV. *fig.* 14.)
XVII. Fig. 1—7. Ventilator

PORTER BREWERY.

Fig. 1—5. Section of the Building and Machinery

POTTERY.

Vertical Section of a Furnace
Horizontal Section

PRESS.

Fig. 1—7. Bramah's Hydroſtatic Preſs

PRESSURE.

Water Preſſure Engine
(*See* Engine, *Plate* I.)

PRINTING.

I. Fig. 1—6. Stanhope or Iron Preſs
II. Fig. 1—6. Bramah's Bank-Note Printing Machine
III. Fig. 1. Bacon and Donkin's Printing Machine
IV. Fig. 1. Perſpective View of a common Printing Preſs
2. Compoſing Stick

PROJECTION.

I. Fig. 1—13.
II. Fig. 1—7. Fig. 8. No. 1, 2. Fig. 9, 10.
(*The reference to fig.* 13. *ſhould be to fig.* 10.)
III. Fig. 1. No. 1—6. Fig. 2. No. 1—6.
IV. Fig. 1. No. 1—3. Fig. 2. Fig. 3. No. 1, 2. Fig. 4. No. 1—3. Fig. 5—11.
V. Fig. 1—4. Fig. 5. No. 1—3. Fig. 6—9.
VI. Fig. 1—5. Fig. 6. No. 1, 2. Fig. 7. No. 1, 2.
VII. Fig. 1—12.
VIII. Fig. 1. No. 1, 2. Fig. 2—9.
IX. Fig. 1—14.
X. Fig. 1. No. 1, 2. Fig. 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—13.
Fig. 14. No. 1, 2.
(*Theſe figures are at the bottom of the Plate, and are numbered fig.* 1. *No.* 1. *and fig.* 1. *No.* 2.)

PROPORTIONAL COMPASSES.

I. Fig. 1—10.
(*The reference to fig.* 10. *at the end of the* Scale of Tangents, *ſhould be to fig.* 11.)
11—14. Fig. 15. No. 1, 2. Fig. 16, 1 No. 1.
(*The laſt figure wants the letter* Z *in the centre, at the interſection of the lines* A E *and* C G)
17. No. 2.
(*This figure wants the letter* X *at the bottom*)

PLATE

PYROTECHNY.

Fig. 1—17. Fireworks.
(*The reference under* Rocket *to fig.* 18. *ſhould be to fig.* 17.)

RIGGING.

I. Fig. 1—49. (*See* Ships, *Plate* II.)
II. Fig. 1—23. (*See* Ships, *Plate* III.)
III. Fig. 1, 2. (*See* Ships, *Plate* IV.)
IV. Fig. 1, 2. (*See* Ships, *Plate* V.)

SCENOGRAPHY.

I. Fig. 1—10.

SCULPTURE—*Statues.*

I. Cupid and Pſyche, from an Antique Marble Group, in the Capitol
II. The ſame ſeen in different Views
I. Hercules of Dædalus
Cupid of Praxiteles
Minerva of Dipænus and Scyllis
Venus of Praxiteles
Jupiter Olympius
Minerva of the Acropolis, in Athens
II. Hercules Farneſe
Phocion
Dirce
III. Venus de Medicis
Apollo Belvidere
Laocoon
IV. Durga ſlaying Mahiſhaſura; a Hindû Group
An Etruſcan Patera, in the Britiſh Muſeum
A Coloſſal Statue, at Thebes
Perſian Sculpture, at Perſepolis
A Chineſe Statue
Perſian Sculpture, at Perſepolis

SHADOW.

I. Fig. 1. No. 1, 2. Fig. 2—6.
II. Fig. 1—5.

SHIP-BUILDING.

(*See* Naval Architecture.)
Conſtruction of Boats
(*See above, under the head* Boats)

SHIPS.

I. Fig. 1. Bolton's Machine for drawing Bolts
2, 3. Phillips's Tubes for driving Ditto
4. Ring Rope
5. Bits
5. Application of the Meſſenger
6, 7. Nippers

PLATE
II. Rigging, Plate I.
Fig. 1—15. Knotting
16—24. Hitches
25—32. Bends
33—42. Splices
43—49. Hawſer
III. Rigging, Plate II.
Fig. 1—23. Blocks, Pendants, Braces, Stays, &c.
IV. Rigging, Plate III.
Fig. 1. Standing Rigging
2. Running Rigging
V. Rigging, Plate IV.
Fig. 1, 2. Rigging, and bending the Sails, &c.
VI. Firſt Rate Man of War
Man of War's Barge
Seventy-four
Lugger
Fire Brig
Flat-bottomed Boat
Gun Veſſel (the Wolverine)
Man of War's Long Boat
VII. Boats
Pahie
Balza
Corracore
Life Boat
Spring Block, Fig. 1, 2.
(*Some of the preceding figures are referred to as on* Boats, *Plate* II.)
VIII. Maſts. The different Pieces which compoſe the Main Maſt of a 74 Gun Ship
IX. Anchors and Buoys
Nun Buoy
Anchor
Kedge Anchor
Floating Ditto
Fire Grapnel
Anchor Shoe
Grapnel
Can Buoy
Creeper
Jew's Harp
Swivel Ring
Road, or Mooring Anchor
Foul Hawſe
Flat Anchor in Uſe
Fig. 1, 2. Block, Spring
(*See Ships, Plate* VII.)

SHORT-HAND.

Letters
Words
Prepoſitions
Terminations
Miſcellaneous Examples
Common Contractions
Vowels' Places
Figures

SILK MANUFACTURE.

Fig. 1. Reeling
2. Winding

PLATE
Fig. 3. Throwſting
4, 5. Doubling
6. Warping

STEAM ENGINE.

I. Fig. 1. Savery's Steam Engine
2. Papin's Ditto
3. Blakey's Ditto
4, 5. Kier's Ditto
II. Fig. 1, 2. Beighton's Atmoſpheric Steam Engine
III. Steam Engine on Newcomen's Principle, as conſtructed by Mr. Smeaton
(This is wrongly numbered Plate I.)
III. & IV. Mr. Watt's Engine
Fig. 1—6. Single Acting Engine for Pumping, at Chelſea Water Works
V. Fig. 1, 2. Hornblower's Engine
3—7. Woolfe's Ditto
8. Cartwright's Ditto
VI. Boulton and Watt's Engine, on the original Conſtruction
(This is wrongly numbered Plate III.)
VII. Fig. 1—13. Cylinders, Piſtons, &c.
VIII. Fig. 1. Steam Boat, Elevation
2. Ditto, Plan
3. Maudſlay's Steam Engine
4, 5. Murray's Ditto
IX. Fig. 1—5. High Preſſure Steam Engine, uſed with the Dredging Machine on the River Thames
IX. Fig. 1—6. Parallel Motions
(This is wrongly numbered, Plate III.)

STEREOGRAPHY.

I. & II. (Plate I.) Fig. 1—3. Fig. 4. No. 1. Fig. 4. No. 2. Fig. 5, 6.
(Plate II.) Fig. 1, No. 1, 2. Fig. 2. No. 1, 2. Fig. 3. No. 1, 2. Fig. 4. No. 1, 2. Fig. 5—7.
III. Fig. 1—7. Fig. 8. No. 1.
8. No. 2. *(This is once referred to as fig.* 9. *No.* 2.)
9. No. 1, 2.

STEREOTOMY.

I. Fig. 1—8.
II. Fig. 1—9.

STOCKING FRAME.

Fig. 1. Needles
2. Perſpective View of a common Stocking Frame
3, 4. Sinkers, &c.
7. Arch

STONEHENGE.

Ground Plan in 1816
as originally
Elevations
Sections

PLATE

SUGAR MILL.

Fig. 1. Elevation
2. Plan

SURGERY.

I. Fig. 1—6. Tourniquets, and Amputating Inſtruments
II. Fig. 1. Amputating Saw
2. Large Amputating Knife
3. Smaller Ditto
4. Catling
5. Metacarpal Saw
6. Crooked Biſtoury
7. Probe-pointed Crooked Biſtoury
8. Straight Double-edged Scalpel
9. Tenaculum
10. Aneuriſm Needle
11. Forceps for taking up the Mouths of Veſſels
11. Bone Nippers
III. Fig. 1—3. Needles for ſewing up Wounds
4. Spatula
5. Lancet
6. Eye Probe
7. Cauſtic Caſe
8. Common Forceps
9. Probe
10. Director
11. Sciſſars
12. Pocket Tenaculum
13, 14. Female Catheters
16—19. Male Ditto
IV. Fracture of the Clavicle, &c.
(This Plate, and the three following Plates, are without numbers.)
V. Fracture of the Leg
Splints
Bandages
VI. Inſtruments for Lithotomy
Fig. 1. Sound
2—5. Staffs
6. Blunt Gorget
7. Hawkins's Cutting Gorget
8. Mr. Cline's Ditto
9. Mr. Abernethy's Gorget
10—12. Forceps
VII. Inſtruments for Lithotomy
Fig. 1. Mr. Earle's Stone Breaker
2. Scoop
3. Mr. C. Bell's Grooved Staff
4. Mr. A. Burn's Knife and Staff
5. Mr. Hunter's Knife
6. Mr. A. Cooper's Ditto
7. Mr. Thomas Blizard's Ditto
8. Frère Coſme's Biſtoire Caché
9. Screw for regulating the Blade
VIII. Trepanning Inſtruments
Fig. 1. Rodman's Trepanning Inſtrument
2. Elevator for raiſing depreſſed Portions of a Fractured Scull
3. Tripod Elevator
4. Petit's Elevator, improved by Louis
5. Old Conical Saw
6. Trepan

PLATE
VIII. No. 2. Trepanning Inſtruments
Fig. 1. Spring Forceps for extracting the Circle of Bone and Fragments
2, 3. Trephines, with ſliding Centre Pins, as made by Savigny
4. Scalpel
5. Common Elevator
6. Mr. Hey's Saw, with curved Edges
7. Lenticular
8. Raſpatory
9. Mr. Hey's ſmall ſtraight Saw
10. Trephine, with half of its ſawing edge filed away
11. Bruſh for cleaning the Teeth of the Trephine
12. Mr. Hey's large ſtraight Saw
13. Centre Pin and Screw
IX. Truſſes
Fig. 1—3. Common Truſſes
4. Dr. Hulme's Palm Truſs
5. Mr. Whitford's Ditto
7. Mr. Salmon's Patent Ditto
8. Mr. Marriſon's Ditto, for Exomphalos
9—11. Mr. Eagland's Ditto
X. Inſtruments for the Extraction of Cataract
Fig. 1. Minute Steel Tenaculum, for extract- Bits of the Capſule
2. Cline's Inſtrument for dividing the Capſule
3. La Faye's Cyſtotome for Ditto
4, 5. Sciſſars for enlarging the Wounds of the Cornea
6. Tube for injecting Quickſilver into the Lachrymal Sac
7—10. Anel's Syringe and Pipes
11. Ware's Stiles
12. Wathen's Tubes
13. Small Lancet for puncturing the Lachrymal Sac
14. Gibſon's Knife for Lithotomy
XI. Inſtruments for Couching, and the Extraction of the Cataract
Fig. 1. Broad Silver Hook for raiſing the Upper Eyelid
2. Pellier's Hook for the ſame purpoſe
3. A ſlender round Couching Needle
4. Spear-ſhaped two-edged Ditto
5, 6. Scarpa's curved Couching Needle
7. Hey's Couching Needle
8, 9. The ſame magnified
10, 11. Wathen and Phipps's Knives for Extraction
12. Richter's Knife
13. Wenzel's Ditto
14. Ware's Ditto
15, 16. Knives for enlarging the Wound of the Cornea
17. Forceps for taking away Pieces of the Capſule
18. Wenzel's Forceps for Ditto, and taking away Fragments of opaque Matter
19. Needle for dividing the Capſule, and Curette for extracting Fragments of the Cataract

PLATE

SURVEYING.

I. & VI. Fig. 1. Protractor
2. Semicircle (*See Plate* VII. *fig.* 3.)
3—9. Chain, Meaſuring by
10. Convergency of Meridians
(*Referred to as Plate* II. *fig.* 10.)
(VI.) Fig. 1, 2. Level, Common Spirit
3. Huygen's Level
4. American Ditto
5, 6. Watering Ditto
7—11. Deſaguliers's
II. & III. Fig. 1—3. Circumferentor
10. Convergency of Meridians
(*See Plate* I. *fig.* 10.)
(III.) Fig. 1—6. Croſs
9. Dendrometer
(*See Plate* VI.)
IV. Fig. 1. Foot Level
2, 3. Gauging
4. Rod
5. Artificer's Level
6. Artillery Foot Level
7. Gunner's Level
8—12. Mercurial Ditto
13. Plumb Ditto
V. Fig. 1—3. Levels by Mr. Ramſden
4. Troughton's Level
VI. Levels (*See Plate* I.)
VI. Fig. 1—8. Plain Table
9, 10. Perambulator
11. Plotting
12. Scale
13. Quadrant for meaſuring Heights
14. Carpenter's Rule
VI. Fig. 7, 8. Dendrometers
(*Referred to as on Plate* III.)
9—11. Mr. Broad's Machine for meaſuring Timber
VII. Levelling
Fig. 1, 2. Adjuſtment of Level
3. Principles of Levelling; true and apparent Level
4—9. Practice of Levelling
10. Levelling Staves
VII. Fig. 1, 2. Sector
3. Semicircle
4. Everard's Sliding Rule
5. Coggeſhall's Ditto
6—9. Roget's Ditto
VIII. Fig. 1—5. Grand Theodolite, by Ramſden
IX. Fig. 1—9. Portable Theodolite, by Troughton
X. Map of an Eſtate, near Eaſt Sheen, ſurveyed by James Wadmore, jun.

TELEGRAPH.

Fig. 1—13. Vocabulary and Machinery

TRIGONOMETRY.

I. Fig. 1—3. Gunter's Scale
4. Secant and Sine
5—7. Sector

Plate
I. Fig. 8, 9. Arithmetic of Sines
10. Sine
11. Figure of Sines
12. Coſines
13. Verſed Sines
14. Tangents
15. Cotangents
16. Secants
17. Coſecants
18—22. Sines
II. Fig. 1, 2. Spherical Angle
3—8. Triangle
9—12. Spherics
13. Tangent
14—22. Trigonometry
III. (*The figures referred to as on* Trigonometry, *Plate* III. *are on* Navigation, *Plate* III.)

TURNING.

Fig. 1—42. Lathe, and detached Parts of the Machinery and Inſtruments

VEGETABLE ANATOMY.

I. Fig. 1—11. Bark
II. Fig. 1—20. Branches and Buds
(*See Plates*, Vol. V. Natural History.)

VOLTAISM.

I. Fig. 1—8. Battery, &c.
(*This is the only Plate of Voltaiſm.*)

WATER WHEELS.

I. Overſhot and Underſhot
Fig. 1. Mr. Smeaton's Breaſt Wheel
2. Pentrough
3, 4. Mr. Nouaille's Overſhot Wheel
4, 5. Buchanan's improved Wheel and Pentrough
6. Chain of Buckets
7. Improved Breaſt Wheel
8. Greaſing Machine
II. Fig. 3. Breaſt Wheel with two Shuttles at Meſſrs. Strutt's Works
4. Ditto improved, at the Royal Armoury Mills
5. Burns's Overſhot Wheel
9. Method of laying on Water

WATER WORKS.

I. Machines for raiſing Water
(*This Plate is not numbered.*)
Fig. 1. Momentum Pump
2, 3. Mr. Boulton's Machine for raiſing Water
4—6. Hydraulic Ram
7. Mr. Whitehurſt's Machine for raiſing Water
8. Siphon Machine
9. Machine for raiſing Water by the lateral Communication of a Stream
10. Goodwin's Siphon Machine

Plate
I. Fig. 11. Spiral Pump, or Zurich Machine
13. Greaves's Bucket Machine
14. Chremnitz Fountain
15. Water Bellows
II. Fig. 1—8. Mr. Smeaton's Great Engine for raiſing Water at London Bridge

WATER PRESSURE ENGINE.

Fig. 1—5. Smeaton's Water Preſſure Engine

WEAVING.

I. Mr. Auſtin's Engine Loom Shuttle
II. Fig. 1—4. Looms, &c.

WINDMILL.

I. Fig. 1. Captain Hooper's Horizonal Windmill, Upright Section
2. Ditto, Plan
3—5. Smock Mill
(*This Plate is not numbered.*)
II. Fig. 1. Common Vertical Windmill
2. Smock Mill
3. Internal Mechaniſm of a Poſt Windmill
4. Dutch Windmill
5—7. Parts of the Mechaniſm of a Windmill
(*The reference under* "Rules for modelling the Sails of Windmills," *to fig.* 4, *Plate* II. Windmill, *ſhould be to fig.* 4, *Plate* I.)

WINDING ENGINE.

Smeaton's Deſign for a Water Gin, for drawing Coals from the Pits
Fig 1. Plan
2. Elevation of the Frame on the Pit Heap
3, 4. Elevations
5. Plan

WIRE-MILL.

Fig. 1—13. Machinery for Wire-Drawing

WOOLLEN MANUFACTURE.

I. Stubbing Machine, or Billy
II. Spinning Jenny
III. Shearing Machine
IV. Carding Engine
(*This Plate is not numbered*)
V. Gig-Mill

WORSTED MANUFACTURE.

I. Fig. 1. Combs
2. Supporter for Ditto
3. Stove for heating Ditto
4. Gilpin's Combing Machine
5. Breaking Frame
6. Roving Ditto
7. Spinning Ditto
II. Fig. 1—3. Cartwright's Combing Machine

WRITING BY CIPHER.

I.—III. Characters and Examples

PLATES. VOL. V.

NATURAL HISTORY.

GENERAL SYSTEMATIC ARRANGEMENT OF THE PLATES OF NATURAL HISTORY,

INCLUDING THE THREE KINGDOMS OF NATURE, ACCORDING TO THE

SYSTEM OF LINNÆUS.

*** The Arabic Numerals on the Left, denote the Number of the Plates, according to the Syſtematic Arrangement of them in the Catalogue.

PLATE

ANIMALS.

CLASS MAMMALIA.

ORDER I. PRIMATES.

GENUS HOMO

1* *Homo Sapiens*, Rational Man
(*See Plates* PAINTING)
Anatomical Structure
(*See Plates* ANATOMY)
2* Varieties of *Homo Sapiens*, Rational Man, according to Climate
α *Americanus*, American Man
β *Europæus*, European
γ *Aſiaticus*, Aſiatic, (of Paleſtine)
(of China)
δ *Afer*, African
(*See* PAINTING, *Plate* III.)

GENUS SIMIA.

1. Lettered MAMMALIA, Order 1. Primates. Plate I.
Fig. 1. *Simia Satyrus*, Black Oran Otan, or Outang, *Homo Sylveſtris*, var. *Pongo*
2. —— var. *Jocko*, Cheſnut Outan, or Outang
3. *Simia Troglodytes*, (Gmel.) *Satyrus indicus* Tulipii. *Chimpanzee*
4. *Simia Lar*, (Gmel.) Long-armed Ape
Simia longimana, (Schreb.)
5. *Simia Inuus*, Barbary Ape
6. *Simia Sylvanus*, Pigmy Ape

PLATE
1. Fig. 7. *Simia Œdipus*, Red-tailed Ape
8. *Simia Jacchus*, Striated Ape

GENUS LEMUR.

2. Lettered MAMMALIA, Order Primates, Genus Lemur, Plate II.
Fig. 1. *Lemur Podje*, Tarſier Lemur
2. *Lemur ecaudatus*, Tailleſs Lemur, or Maucauco
3. *Lemur murinus*, Murine Lemur
4. *Lemur Catta*, Ring-tailed Lemur, or Maucauco
5. *Lemur tardigradus*, Loris Lemur
6. *Lemur volans*, (Linn.) Flying Lemur, or Flying Colugo ?
* GENUS GALEOPITHECUS (*Rufus*) Audebert

GENUS VESPERTILIO.

3. Lettered MAMMALIA, Genus Veſpertilio, Plate III.
Fig. 1. *Veſpertilio Vampyrus*, Vampire Bat
2. *Veſpertilio auritus*, Long-eared Bat
3. *Veſpertilio Spaſma*, Cordated Bat
4. *Veſpertilio leporinus*, Peruvian Bat
5. *Veſpertilio Spectrum*, Spectre Bat

ORDER BRUTÆ.

GENUS BRADYPUS.

4. Lettered Claſs MAMMALIA, Order Brutæ, Genus Bradypus
Fig. 1. *Bradypus tridactylus*, Three-toed Sloth
2. *Bradypus didactylus*, Two-toed Sloth

PLATE

GENUS MYRMECOPHAGA.

4. Fig. 3. *Myrmecophaga didactyla*, Two-toed or ſmall Ant-Eater
    4. *Myrmecophaga tetradactyla*, Four-toed Ant-Eater
    5. *Myrmecophaga jubata*, Great Ant-Eater

GENUS ORNITHORINCHUS.

Fig. 6. *Ornithorinchus paradoxus*, Duck-bill
Platypus anatinus, (Shaw,) Duck-billed Platypus

GENUS MANIS.

5. Lettered MAMMALIA, Quadrupeds, Genus Manis
Fig. 1. *Manis pentadactyla*, (Linn.) Five-toed Manis, or Short-tailed Manis
    2. *Manis tetradactyla*, (Schreb.) Four-toed Manis, or Long-tailed Manis

GENUS DASYPUS.

3. *Daſypus ſexcinctus*, Six-banded Armadillo
4. *Daſypus novemcinctus*, Nine-banded Armadillo
5. *Daſypus duodecemcinctus*, (Schreb.) Twelve-banded Armadillo
Daſypus unicinctus, (Linn. et Gmel.) Ditto

GENUS RHINOCEROS.

6. Lettered QUADRUPEDS, Mammalia, Order Brutæ, Rhinoceros. Plate.
Fig. 1. *Rhinoceros unicornus*, One-horned Rhinoceros
    2. *Rhinoceros bicornis*, Two-horned Rhinoceros

GENUS SUKOTYRO.

(*A doubtful genus not admitted by Gmelin*)

7. Lettered QUADRUPEDS, Genus Sukotyro
Fig. 1. *Sukotyro Indicus*, Sukotyro
(*From Niewhoff, the Dutch traveller, and Churchill's Collection of Travels*)

GENUS ELEPHAS.

Fig. 2. *Elephas maximus*, Elephant

ORDER FERÆ.

GENUS TRICHECHUS.

8. Lettered QUADRUPEDS, Claſs Mammalia, Genus Trichechus
Fig. 1. *Trichechus Roſmarus*, Arctic Walrus, or Morſe
    2. *Trichechus Manatus*, *β borealis*, Whale-tailed Manatus

GENUS PHOCA.

Fig. 3. *Phoca Urſina*, Urſine Seal
    4. *Phoca groenlandica*, Harp Seal
    5. *Phoca Vitulina*, Sea Calf, or Common Seal
    6. *Phoca maculata*, Kurile or Spotted Seal

PLATE

GENUS CANIS.

9. Lettered QUADRUPEDS, Dogs, Plate II. of Order FERÆ
Fig. 1. *Canis familiaris*, Shepherd's Dog?
    2. *Dingo*, *Auſtralaſian*, or New Holland Dog
    3. *Canis familiaris*, var. Pomeranian Dog
    Canis β pomeranus, Ditto
    4. *Canis* var. *Sibiricus*, Siberian Dog
    5. Iceland Dog?
    6. var. *Aquaticus minor*, Small Barbet, or Water Dog
    7. var. *Aquaticus*, Great Barbet, or Water Dog

10. Lettered QUADRUPEDS. Plate III. Dogs, Genus XV. Canis
Fig. 1. var. *brevipilis*, King Charles's Dog
    2. Pyrama
    3. var. *Ægyptius*, Naked or Turkiſh Hound
    4. *fricator*, Pug-dog
    5. Spaniel
    6. Shock
    7. var. *variegatus*, Small Dane
    8. *leoninus*, Lion Dog
    9. *hybridus*, Roquet

11. Lettered QUADRUPEDS, Plate V. Dogs, Genus XV. Canis
Fig. 1. var. *Anglicus*, Maſtiff
    2. *Moloſſus*, Bull-dog
    3. Great Daniſh, or Harlequin-Dog
    4. Dalmatian Dog

12. Lettered QUADRUPEDS, Dogs, Plate IV. of Order Feræ, Genus XV. Canis
Fig. 1. Old Engliſh, or Talbot Hound
    2. Beagle
    3. Harrier
    4. Blood Hound

13. Lettered QUADRUPEDS, Dogs, Plate V. of Order Feræ, Genus XV. Canis
Fig. 1. Stag Hound
    2. Fox Hound
    3. Larger Terrier
    4. Smooth Terrier
    5. Rough Terrier

14. Lettered QUADRUPEDS, Order Feræ, Genus Canis
(*No number on the Plate*)
Fig. 1. *Canis Lupus*, Wolf
    2. *Canis Hyæna*, Striped Hyæna
    3. *Canis Meſomelas*, Cape Jackal
    4. *Canis Vulpes*, Common Fox
    5. *Canis Lagopus*. Arctic Fox

GENUS FELIS.

15. Lettered QUADRUPEDS, Plate I. Genus Felis, Lions
Fig. 1. *Felis Leo*, Lion, Lioneſs, and Young

NATURAL HISTORY.

PLATE

16. Lettered QUADRUPEDS, Plate II. Order 3, Genus Felis

Fig. 1. *Felis Tigris,* Tiger

2. *Felis Pardus,* Panther

3. *Felis Leopardus,* Leopard

17. Lettered QUADRUPEDS, Genus Felis, Tigers, Plate II.

Fig. 1. *Felis Puma,* Congouar

2. *Felis Lynx,* Lynx

3. *Felis Uncia,* Ounce

4. *Felis Caracal,* Perſian Lynx

5. *Felis Onca,* Jaguar

6. *Felis jubata,* Hunting Leopard

18. Lettered QUADRUPEDS, Plate III. of Order Feræ, Genus Felis

Fig. 1. *Felis pardalis,* Ocelot

2. *Felis Tigrina,* Margay

3. *Felis Serval,* Serval

4. *Felis Catus, α ferus,* Wild Cat

5. *Felis β domeſticus,* Tame or domeſticated

6. Tortoiſeſhell Cat

7. *Felis γ angorenſis,* Angora Cat

8. *Felis ε cæruleus,* Slate-coloured Cat, (Blue or Chartreux.)

GENUS VIVERRA.

19. Lettered QUADRUPEDS, Order Feræ, Genus Viverra (*No number on the Plate*)

Fig. 1. *Viverra Zibetha,* Zibet, or Indian Muſk Weeſel

2. *Viverra Foſſa,* Foſſane

3. *Viverra Ichneumon,* Ichneumon Weeſel

4. *Viverra Naſua,* Braſilian Weeſel

5. *Viverra Civetta,* Civet Weeſel, or Civet-Cat, African Muſk Weeſel

20. Lettered QUADRUPEDS, Order Feræ, Genus Muſtela (*No number on the Plate*)

Fig. 1. *Muſtela Lutris,* Sea Otter, Greater Otter

2. *Muſtela Lutra,* Common Otter

3. *Muſtela Foina,* Martin

4. *Muſtela Zibellina,* Sable, or Fiſher Weeſel

GENUS URSUS.

21. Lettered QUADRUPEDS, Order Feræ, Genus Urſus (*No number on the Plate*)

Fig. 1. *Urſus Americanus,* American Bear

2. *Urſus maritimus,* (Gmel.) Polar Bear

Urſus marinus, (Pallas) U. Albus, Briſſ.

3. *Urſus Gulo,* (Schreb.) Glutton

4. *Urſus Meles,* Badger

GENUS DIDELPHIS.

22. Lettered QUADRUPEDS, Genus Diadelphis, &c. (*No number on the Plate*)

Fig. 1. *Didelphis Opoſſum* (Gmel. Schreb.) Virginian Opoſſum

Didelphis Virginiana (Shaw) Ditto

2. *Didelphis petaurus* (Shaw) *volans,* New Holland Flying Opoſſum

3. *Didelphis Murina,* Murine Opoſſum

PLATE

GENUS MACROPUS.

22. Fig. 4. *Macropus Kanguroo, a.* male, *b.* female

GENUS TALPA.

23. Lettered QUADRUPEDS, Order Feræ, Genus Talpa, &c. (*No number on the Plate*)

Fig. 1. *Talpa Capenſis,* Cape Mole

2. *Talpa longicaudata,* Long-tailed Mole

3. *Talpa Europæa,* European Mole

GENUS SOREX.

Fig. 4. *Sorex minutus,* Minute Shrew

5. *Sorex moſchatus,* Muſky Shrew

6. *Sorex araneus,* Fetid Shrew

GENUS ERINACEUS.

Fig. 7. *Erinaceus Europæus,* Common Hedgehog

8. *Erinaceus ecaudatus,* Madagaſcar Hedgehog

ORDER GLIRES.

GENUS HYSTRIX.

24. Lettered QUADRUPEDS, Order Glires, Genus Hyſtrix (*No number on the Plate*)

Fig. 1. *Hyſtrix criſtata,* Common or creſted Porcupine

2. *Hyſtrix prehenſilis,* Braſilian Porcupine

3. *Hyſtrix dorſata,* Canadian Porcupine (white variety)

GENUS CAVIA.

Fig. 4. *Cavia Aguti,* Long-noſed Cavy

5. *Cavia Magellanica,* Patagonian Cavy

6. *Cavia Paca,* Spotted Cavy

GENUS CASTOR.

25. Lettered QUADRUPEDS, Order Glires, Genus Caſtor (*No number on the Plate*)

Fig. 1. *Caſtor Fiber,* Common Beaver

GENUS MUS.

Fig. 2. *Mus zibethicus,* Muſk Rat

3. *Mus decumanus,* Norway Rat

4. *Mus muſculus,* Common Mouſe

5. *Mus Cricetus,* German Hamſter Rat

6. *Mus burſarius,* Purſe Rat or Canada Rat

7. *Mus capenſis,* Cape Mole-Rat

GENUS ARCTOMYS.

26. Lettered QUADRUPEDS, Order Glires, Genus Arctomys, &c. (*No number on the Plate*)

Fig. 1. *Arctomys Citillus,* (Schreb.) Variegated Marmot

2. *Arctomys Empetra,* Canadian Marmot

GENUS SCIURUS.

Fig. 3. *Sciurus Petauriſta,* Taquan, or Taguan flying Squirrel, Sailing Squirrel (Penn.)

4. *Sciurus getulus,* Barbary Squirrel

5. *Sciurus vulgaris,* Common Squirrel

PLATE

GENUS MYOXUS.

26. Fig. 6. *Myoxus Muſcardinus* (Schreb.), *Mus avellanarius* (Linn.) Common Dormouſe.—(*Donov. Brit. Quadr.*)

GENUS DIPUS.

27. Lettered QUADRUPEDS, Order Glires, Genus Dipus (*No number on the Plate*)
Fig. 1. *Dipus Jaculus*, Common Jerboa (or Gerboa)
2. *Dipus Sagitta*, Arabian Jerboa
3. *Dipus cafer*, Cape Jerboa

GENUS LEPUS.

Fig. 4. *Lepus timidus*, Common Hare
5. *Lepus alpinus*, (Pallas) Alpine Hare
(*Diſtinct from the Alpine Hare of Forſter in Phil. Tranſ.* vol. lxii. *and Pennant Quadr., the latter being* Lepus variabilis, *Gmel. Donov. Brit. Quadr.*)

GENUS HYRAX.

Fig. 6. *Hyrax Capenſis*, Cape Hyrax

ORDER PECORA.

GENUS CAMELUS.

28. Lettered QUADRUPEDS, Order Pecora, Genus Camelus (*No number on the Plate*)
Fig. 1. *Camelus Dromedarius*, Arabian Camel or Dromedary
2. *Camelus Bactrianus*, Bactrian Camel

GENUS MOSCHUS.

29. Lettered QUADRUPEDS, Genus Moſchus (*No order or number on the Plate*)
Fig. 1. *Moſchus moſchiferus*, Thibet Muſk
2. *Moſchus pygmæus*, Guinea Muſk
3. *Moſchus javanicus*, Java Muſk

GENUS CERVUS.

4. *Cervus Alces*, Elk

30. Lettered QUADRUPEDS, Genus Cervus (*No order or number on the Plate*)
Fig. 1. *Cervus Tarandus*, Rein Deer
2. *Cervus Elaphas*, Stag or Hart
3. *Cervus Axis*, Spotted Axis

GENUS CAMELOPARDALIS.

4. *Camelopardalis Giraffa*, Giraff, or Camelopard

GENUS ANTILOPE.

31. Lettered QUADRUPEDS, Genus Antilope (*No order or number on the Plate*)
Fig. 1. *Antilope Rupicapra*, Chamois
2. *Antilope Cervicapra*, Antelope
3. *Antilope pygmæa*, Royal Antelope, or Pigmy Antelope
4. *Antilope Grimmia*, Guinea Antelope
5. *Antilope Gnu*, Gnou

PLATE

GENUS CAPRA.

32. Lettered QUADRUPEDS, Genus Capra (*No order or number on the Plate*)
Fig. 1. *Capra Ibex*, Ibex Goat
2. *Capra Ægagrus*, Mountain-cultivated Goat (*Donov. Brit. Quadr.*)
3, 4. *Capra Ægagrus*, Domeſticated Goat (*Donov. Brit. Quadr.*)
5. *Capra Ægagrus*, (var. *membrica* δ) Syrian Goat
6. *Capra Ægagrus*, (var. *angorenſis* γ) Angora Goat

GENUS ARIES.

33. Lettered QUADRUPEDS, Ovis, Aries (*No order or number on the Plate*)
Aries, Ovis, Common Sheep
var. South Down Polled Sheep of the improved breeds. From the Stock of the late Duke of Bedford, Woburn

34. Lettered QUADRUPEDS, Genus Ovis, Sheep (*No order or number on the Plate*)
Aries, Ovis, Common Sheep
Fig. 1. var. Norfolk Breed
2. Hereford Breed

GENUS BOS.

35. Lettered QUADRUPEDS, Bos, Taurus (*No order or number on the Plate*)
Bos, Taurus, Ox
Fig. 1. var. Scottiſh Wild Ox, the Bull
2. The Cow and Calf

36. Lettered QUADRUPEDS, Bos, Taurus (*No order or number on the Plate*)
Bos, Taurus, Common Ox
var. Long-horned or Lancaſhire Breed

ORDER BELLUÆ.

GENUS EQUUS.

37. Lettered HORSES, Plate I. (*No order on the Plate*)
Equus Caballus, Horſe
Fig. 1. var. Shetland Poney
2. var. Engliſh Cart Horſe

38. Lettered QUADRUPEDS, Order VI. Belluæ, Genus 33, Equus (*No number on the Plate*)
Equus Caballus, Horſe
var. Suffolk Agricultural Punch Horſe
var. Suffolk Mare and Foal, from the Stock of the late Duke of Bedford

39. Lettered QUADRUPEDS, Genus Equus (*No order or number on the Plate*)
Equus Caballus, Horſe
Fig. 1. var. Race Horſe, Royaliſt
2. var. The Hunter Skylark

NATURAL HISTORY.

Plate

Genus Hippopotamus.

40. Lettered Quadrupeds, Genus Hippopotamus (*No number on the Plate*)
Fig. 1. *Hippopotamus amphibius*, Hipppotamus

Genus Tapir.

Fig. 2. *Tapir Americanus*, Tapir

Genus Sus.

41. Lettered Quadrupeds, Genus Sus (*No number on the Plate*)
Fig. 1. *Sus Scrofa*, (*ferus* α) Wild Hog
2. *Sus Babyruſſa*, Babyrouſa
3. *Sus Æthiopicus*, Æthiopian Hog
4, 5. *Sus Scrofa*, (*domeſticus* β) Domeſticated Hog

Order Cete.

Genus Monodon.

42. Lettered Mammalia, Order Cete, Genus Monodon, &c.
(*No number on the Plate*)
Fig. 1. *Monodon Monoceros*, Narwhal, or Narval (*Sometimes* Sea Unicorn, *or* One-toothed Monodon, *ſo rarely having two teeth, that only a ſingle example of the kind is known. Donov. Muſ. Vide Donov. Brit. Quadrupeds*)

Genus Balæna.

Fig. 2. *Balæna Myſtecetus*, Great Myſtecete, or Common Whale
3. *Balæna Boops*, Pike-headed Whale

Genus Physeter.

43. Lettered Mammalia, Order Cete, Genus Phyſeter (*No number on the Plate*)
Fig. 1. *Phyſeter macrocephalus*, Blunt-headed Cachalot
2. *Phyſeter*, var. *gibboſus*, (Schreb.) Gibbous Cachalot

Genus Delphinus.

Fig. 3. *Delphinus Phocæna*, Porpoiſe
4. *Delphinus Delphis*, Dolphin

ORNITHOLOGY.

CLASS II. *AVES*.

Order Accipitres.

Genus Vultur.

44. Lettered Diviſion I. Land Birds, Plate II.
Fig. 1. *Vultur Gryphus*, Megallanic Condur, or Condor

Genus Falco.

2. *Falco Chryſaëtos*, Golden Eagle
3. *Falco gentilis*, Falcon Gentil
4. *Falco ſubbuteo*, Hobby

Plate

Genus Strix.

44. 5. *Strix Bubo*, Great Horned Owl, or Eagle Owl
6. *Strix ſlammea*, Common Owl

Order Picæ.

Genus Psittacus.

45. Lettered Diviſion I. Land Birds, Plate I. Order Picæ
Fig. 1. *Pſittacus Macao*, Red and blue Maccaw
2. *Pſittaccus Alexandri*, Alexandrine Parrot
3. *Pſittacus Æſtivus*, var. Amazon Parrot
4. *Pſittacus garrulus*, var. Ceram Lory
5. *Pſittacus Moluccenſis*, Great red-creſted Cockatoo
6. *Pſittacus Bankſii*, Bankſian Cockatoo
7. *Pſittacus pullarius*, Ethiopian Parrot

Genus Ramphastos.

46. Lettered Diviſion I. Land Birds, Plate II. Picæ
Fig. 1. *Ramphaſtos piſcivorus*, Braſilian Toucan
2. *Ramphaſtos Aracari*, Green Toucan, or Aracari

Genus Buceros.

Fig. 3. *Buceros Rhinoceros*, Rhinoceros Horn-bill

Genus Buphaga.

Fig. 4. *Buphaga Africana*, African Beef-eater

Genus Crotophaga.

Fig. 5. *Crotophaga Ani*, (*major*) greater Ani Bird

Genus Glaucopis.

Fig. 6. *Glaucopis cinereus*, Cinereous Wattle Bird

Genus Corvus.

47. Lettered Diviſion I. Land Birds, Picæ, Plate III.
Fig. 1. *Corvus Corax*, Raven
2. *Corvus Pica*, Magpie
3. *Corvus Caryocatactes*, Nut-cracker
4. *Corvus glandarius*, Jay
5. *Corvus criſtatus*, Creſted Jay

Genus Coracias.

Fig. 6. *Coracias Garrulus*, Roller,(Garrulous Roller, *Donov. Brit. Birds*)

Genus Oriolus.

48. Lettered Diviſion I. Land Birds, Order II. Picæ, Plate IV.
Fig. 1. *Oriolus criſtatus*, Creſted Oriole
2. *Oriolus Baltimorus*, Baltimore Oriole
3. *Oriolus Perſicus*, Black and Yellow Oriole
4. Neſt of ditto

Genus Cuculus.

Fig. 5. *Cuculus canorus*, Common Cuckow

Plate
48. Fig. 6. *Cuculus cupreus*, Coppery Cuckow
7. *Cuculus indicator*, Honey-guide

Genus Gracula.

49. Lettered Diviſion I. Land Birds, Order II. Picæ, Plate V.

Fig. 1. *Gracula Quiſcala*, Purple Grakle
2. *Gracula calva*, Bald Grakle
3. *Gracula Saularis*, Dial Grakle

Genus Paradisea.

Fig. 4. *Paradiſea Regia*, King Bird of Paradiſe
5. *Paradiſea Apoda*, Greater Bird of Paradiſe
6. *Paradiſea aurea*, Golden Bird of Paradiſe

Genus Todus.

Fig. 7. *Todus macrorhynchos*, Great-billed Tody
(*This genus ſhould be placed after Sitta.*)

Genus Trogon.

50. Lettered Diviſion I. Land Birds, Order II. Picæ, Plate VI.

Fig. 1. *Trogon Curucui*, Red-bellied Trogon

Genus Bucco.

Fig. 2. *Bucco Lathami*, Buff-faced Barbet
3. *Bucco Cayanenſis*, Cayenne Barbet

Genus Yunx.

Fig. 4. *Yunx Torquilla*, Wryneck

Genus Picus.

Fig. 5. *Picus pileatus*, Pileated Woodpecker
6. *Picus Carolinus*, var. Caroline Woodpecker

Genus Sitta.

Fig. 7. *Sitta Europæa*, European Nuthatch

Genus Alcedo.

51. Lettered Diviſion I. Land Birds, Order II. Picæ, Plate VII.

Fig. 1. *Alcedo criſtata*, Creſted King's Fiſher
2. *Alcedo venerata*, Venerated King's Fiſher
3. *Alcedo Alcyon*, Belted King's Fiſher
4. *Alcedo ſacra*, Sacred King's Fiſher

Genus Galbula.

Fig. 5. *Galbula paradiſea*, Lath. (*Alcedo paradiſea*, Gmel.) Long-tailed Jacamar, Paradiſe Jacamar
6. *Galbula viridis*, Lath. (*Alcedo Galbula*, Gmel.) Green Jacamar

Genus Merops.

52. Lettered Diviſion I. Land Birds, Order II. Picæ

Fig. 1. *Merops carunculatus*, Wattled Bee-eater
2. *Merops Novæ Seelandiæ*, New Zealand Bee-eater

Genus Upupa.

Fig. 3. *Upupa Pomerops*, Cape Hoopoe

Plate
52. Fig. 4. *Upupa Epops*, Common Hoopoe
5. *Upupa Erythrorynchos*, Red-billed Hoopoe

Genus Certhia.

53. Lettered Diviſion I. Land Birds, Order Picæ, Plate IX.

Fig. 1. *Certhia pacifica*, Great hooked-billed Creeper
2. *Certhia obſcura*, Hook-billed Green Creeper
3. *Certhia coccinea*, Hook-billed Red Creeper
4. *Certhia cærulea*, Blue Creeper

Genus Trochilus.

Fig. 5. *Trochilus pelta*, Topaz Humming Bird
6. *Trochilus furcatus*, Leſſer-forked Humming Bird
7. *Trochilus puniceus*, Creſted Humming Bird
8. *Trochilus ornatus*, Tufted-necked Humming Bird
9. *Trochilus minimus*, Leaſt Humming Bird

Order Anseres.

Genus Anas.

54. Lettered Diviſion II. Water Birds, Order III. Anſeres, Plate I.

Fig. 1. *Anas atrata*, Black Swan
2. *Anas Olor*, Tame Swan
3. *Anas cygnoides*, Chineſe Gooſe
4. *Anas gambenſis*, Spur-winged Gooſe

55. Lettered Diviſion II. Water Birds, Order III. Anſeres, Plate II.

Fig. 1. *Anas Erythropterus*, Bernacle Gooſe
2. *Anas Canadenſis*, Canada Gooſe
3. *Anas ſpectabilis*, Grey-headed Duck
4. *Anas Moſchata*, Muſcovy Duck

56. Lettered Diviſion II. Water Birds, Order III. Anſeres, Plate V.

Fig. 1. *Anas tardona*, Sheldrake, or Shieldrake
2. *Anas clypeata*, Shoveler
3. *Anas crecca*, Teal
4. *Anas curviroſtra*, Hooked-billed Duck, (var. *Donov. Brit. Birds*)
5. *Anas Boſchas*, Mallard
6. *Anas Galericulata*, Mandarine Drake

Genus Mergus.

57. Lettered Diviſion II. Water Birds, Order III. Anſeres, Plate IV.

Fig. 1. *Mergus Merganſer*, Gooſander
2. *Mergus cucullatus*, Creſted Merganſer
3. *Mergus albellus*, Smew, or Nun (White Smew, *Donov. Brit. Birds*)

Genus Alca.

Fig. 4. *Alca antiqua*, Ancient Auk
5. *Alca cirrata*, Tufted Auk

Genus Aptenodyta.

Fig. 6. *Aptenodyta patachonica*, Patagonian Penguin

NATURAL HISTORY.

PLATE

57. Fig. 7. *Aptenodyta papua*, Papuan Penguin
8. *Aptenodyta minor*, Little Penguin

GENUS PROCELLARIA.

58. Lettered Diviſion II. WATER BIRDS, Order III. Anſeres, Plate VI. *Obſ.* with ſix Birds.
Fig. 1. *Procellaria capenſis*, Pintado Petrel
2. *Procellaria fuliginoſa*, Sooty Petrel
3. *Procellaria pelagica*, Stormy Petrel
4. *Procellaria gigantea*, Gigantic Petrel

GENUS DIOMEDIA.

Fig. 5. *Diomedia ſpadicea*, Chocolate Albatroſs
6. *Diomedia chlororynchos*, Yellow-noſed Albatroſs

GENUS PELECANUS.

59. Lettered Diviſion II. WATER BIRDS, Order III. Anſeres, Plate VI. *Obſ.* This is the Plate VI. containing five Birds, both being lettered and numbered alike
Fig. 1. *Pelceanus Erythrorynchos*, Rough-billed Pelican
2. *Pelecanus Sula*, Booby
3. *Pelecanus Aquilus*, Frigate

GENUS PLOTUS.

Fig. 4. *Plotus punctatus*, Spotted Shag
5. *Plotus melanogaſter*, Black-bellied Darter

GENUS PHÆTON.

60. Lettered Diviſion II. WATER BIRDS, Order III. Anſeres, Plate VII.
Fig. 1. *Phæton æthereus*, Common Tropic Bird
2. *Phæton phœnicurus*, Red-tailed T. B.

GENUS COLYMBUS.

Fig. 3. *Colymbus marmoratus*, Marbled Guillemot
4. *Colymbus arcticus*, Black-throated Diver
5. *Colymbus Sinenſis*, Chineſe Diver
6. *Colymbus cornutus*, Horned Grebe

GENUS LARUS.

61. Lettered Diviſion II. WATER BIRDS, Order Anſeres, Plate IX.
Fig. 1. *Larus paraſiticus*, Arctic Gull
2. *Larus eburneus*, Ivory Gull
3. *Larus marinus*, Black-backed Gull

GENUS STERNA.

Fig. 4. *Sterna caſpia*, (*Sterna Tſchegrava*, Lepechin) Caſpian Tern
5. *Sterna ſtolida*, Noddy

GENUS RYNCHOPS.

Fig. 6. *Rynchops nigra*, Black Skimmer

ORDER GRALLÆ.

GENUS PHŒNICOPTERUS.

62. Lettered Order Grallæ, Plate I.
Fig. 1. *Phœnicopterus ruber*, Red Flamingo

PLATE

GENUS PLATALEA.

62. Fig. 2. *Platalea ajaja*, Roſeate Spoonbill

GENUS PALAMEDEA.

Fig. 3. *Palamedea cornuta*, Horned Screamer

GENUS MYCTERIA.

Fig. 4. *Mycteria Novæ Hollandiæ*, New Holland Jabiru

GENUS CANCROMA.

63. Lettered Order Grallæ, Plate II.
Fig. 1. *Cancroma Cochlearia*, Creſted Boatbill

GENUS SCOPUS.

Fig. 2. *Scopus Umbretta*, Tufted Umbre

GENUS ARDEA.

Fig. 3. *Ardea Pavonina*, Crowned Crane
4. *Ardea Antigone*, Indian Crane

64. Lettered Order Grallæ, Plate III.
Fig. 1. *Ardea Ciconia*, White Stork
2. *Ardea Dubia*, Gigantic Heron
3. *Ardea exilis*, Minute Bittern
4. *Ardea Egretta*, Great Egret
5. *Ardea Tigrina*, Tiger Bittern

GENUS TANTALUS.

65. Lettered Order Grallæ, Plate IV.
Fig. 1. *Tantalus Loculator*, Wood Ibis
2. *Tantalus melanopis*, Black-faced Ibis
3. *Tantalus calvus*, Bald Ibis

GENUS CORRIRA.

Fig. 4. *Corrira italica*, Italian Courier

GENUS SCOLOPAX.

Fig. 5. *Scolopax leucocephala*, White Headed Curlew
6. *Scolopax phæpus*, Whimbrel

66. Lettered Order Grallæ, Plate V.
Fig. 1. *Scolopax lapponica*, Red or Lapland Godwit
2. *Scolopax candida*, White red Shank
3. *Scolopax capenſis*, Cape Snipe
4. *Scolopax ruſticola*, Wood Cock
5. *Scolopax major*, Great Snipe
6. *Scolopax fedoa*, Great or American Godwit
7. *Scolopax limoſa*, Leſſer Godwit

GENUS TRINGA.

67. Lettered Order Grallæ, Plate V.
Fig. 1. *Tringa leucoptera*, White-winged Sandpiper
2, 3. *Tringa pugnax*, Ruff and Reeve
4. *Tringa lobata*, Grey Phalarope

GENUS CHARADRIUS.

Fig. 5. *Charadrius apricarius*, Alwagrim
6. *Charadrius Himantopus*, Long-legged Plover
7. *Charadrius ſpinoſus*, Spur-winged Plover

Plate

Genus Recurviroſtra.

68. Lettered Order Grallæ, Plate VII.

Fig. 1. *Recurviroſtra americana*, American Avocet

Genus Hæmatopus.

Fig. 2. *Hæmatopus oſtralegus*, Oyſter catcher (Pied Oyſter Catcher, *Donov. Brit. Birds.*)

Genus Glareola.

Fig. 3. *Glareola auſtriaca*, Auſtrian Pratincole

Genus Fulica.

Fig. 4. *Fulica Porphyrio*, Purple Gallinule
5. *Fulica criſtata*, Creſted Coot

Genus Vaginalis.

69. Lettered Order Grallæ, Plate VIII.

Fig. 1. *Vaginalis alba*, White Sheath-bill

Genus Parra.

Fig. 2. *Parra Jacana*, Cheſnut Jacana
3. *Parra ſinenſis*, China Jacana

Genus Rallus.

Fig. 4. *Rallus crex*, Land Rail
5. *Rallus variegatus*, Variegated Rail

Genus Psophia.

Fig. 6. *Pſophia crepitans*, Gold-breaſted Trumpeter

Order Gallinæ.

Genus Otis.

70. Lettered Diviſion I. Land Birds, Order 5. Gallinæ, Plate I.

Fig. 1, 2. *Otis Tarda*, Buſtard—male 1. female 2.

Genus Struthio.

Fig. 3. *Struthio Rhea*, American Oſtrich
4. *Struthio caſuarius*, Caſſowary, or Emeu
5. *Struthio Novæ-Hollandiæ*, New Holland Caſſowary

Genus Didus.

71. Lettered Diviſion II. Land Birds, Order 5. Gallinæ.

Fig. 1. *Didus Ineptus*, Hooded Dodo

Genus Struthio.

Fig. 2, 3. *Struthio Camelus*, Oſtrich — male 2. female 3.

Genus Pavo.

72. Lettered Diviſion I. Land Birds, Order Gallinæ, Plate III.

Fig. 1. *Pavo criſtatus*, Creſted Peacock
2. *Pavo criſtatus* (var. *varius*), Variegated or Pied Peacock
3. *Pavo criſtatus* (var. *albus*), White Peacock
4. *Pavo bicalcaratus*, Iris peacock

Plate

Genus Meleagris.

73. Lettered Diviſion II. Land Birds, Order 5. Gallinæ, Plate IV.

Fig. 1. *Meleagris Gallopavo*, American or Wild Turkey

Genus Penelope.

Fig. 2. *Penelope criſtata*, Guan

Genus Crax.

Fig. 3, 4. *Crax Alector*, Curaſſow—male 3. female 4.
5. *Crax Pauxi*, Cuſhew

Genus Phasianus.

74. Lettered Diviſion II. Land Birds, Order Gallinæ, Plate V.

Fig. 1, 2. *Phaſianus Gallus*, Wild Cock—male 1. female 2.
3. Ditto, var. *domeſticus*, domeſticated varieties, Rumpleſs Cock
4. Ditto, Silky Cock
5, 6. Hamburgh Cock—male 5. female 6.
7, 8. Game Cock—male 7. female 8.
9, 10. *puſillus* ϑ, Bantam Cock — male 9. female 10.

75. Lettered Diviſion II. Land Birds, Order Gallinæ, Plate VI.

Fig. 11, 12. *Phaſianus Gallus*, var. *domeſticus*, varieties, Malay Cock—male 11. female 12.
13, 14. Ditto, Dorking Cock — male 13. female 14.
15, 16. Ditto, Frizzled Cock — male 15. female 16.

76. Lettered Diviſion III. Land Birds, Order Gallinæ, Plate VII.

Fig. 1. *Phaſianus Colchicus*, Common Pheaſant
2. *Phaſianus pictus*, Gold Pheaſant
3. *Phaſianus Nycthemerus*, Silver Pheaſant
4. *Phaſianus Argus*, Argus Pheaſant

Genus Numidia.

77. Lettered Diviſion I. Land Birds, Order Gallinæ, Plate VIII.

Fig. 1. *Numidia meleagris*, Guinea Hen or Pintado
2. *Numidia criſtata*, Creſted Pintado

Genus Tetrao.

Fig. 3. *Tetrao umbellus*, Ruffed or Ruff-necked Grous
4. *Tetrao alchata*, Pin-tailed Grous
5. *Tetrao Canadenſis*, Spotted Grous
6. *Tetrao paradoxus*, Heteroclitus Grous, or Paradoxical Grous

78. Lettered Diviſion II. Land Birds, Order Gallinæ, Plate IX.

Fig. 1. *Tetrao perdix*, Common Partridge
2. *Tetra ferrugineus*, Hackled Partridge

PLATE

78. Fig. 3. *Tetrao gibraltaricus*, Gibraltar three-toed Quail
4. *Tetrao marylandus*, Maryland Quail
5. *Tetrao viridis*, Green Quail—male
6. *Tetrao major*, Great Tinamou
7. *Tetrao variegatus*, Variegated Tinamou

Order Passeres.

Genus Columba.

79. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate II.

Fig. 1. *Columba chalcoptera*, Bronze-winged Pigeon
2. *Columba erythroptera*, Garnet-winged Pigeon
3. *Columba macroura*, Great-tailed Pigeon
4. *Columba nicobarica*, Nicobar Pigeon
5. *Columba curviroſtra*, Hook-billed Pigeon
6. *Columba capenſis*, Cape Turtle, or Cape Pigeon
7. *Columba coronata*, Great-crowned Pigeon

Genus Alauda.

80. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate LXXX.

Fig. 1. *Alauda capenſis*, Cape Lark

Genus Sturnus.

Fig. 2. *Sturnus militaris*, Military Starling
3. *Sturnus undata*, Undulated Starling

81. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate III.

Fig. 1. *Turdus Orpheus*, Mocking Thruſh
2. *Turdus Rex*, King Thruſh
3. *Turdus perſpicillatus*, Spectacle Thruſh
4. *Turdus craſſiroſtris*, Thick-billed Thruſh
5. *Turdus cyanurus*, Blue-tailed Thruſh
6. *Turdus longiroſtris*, Long-billed Thruſh

Genus Ampelis.

82. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate IV.

Fig. 1. *Ampelis carunculata*, Carunculated Chatterer
2. *Ampelis cotinga*, Purple-breaſted Chatterer
3. *Ampelis Pompadora*, Pompadour Chatterer
4. *Ampelis carnifex*, Red Chatterer

Genus Colius.

Fig. 5. *Colius capenſis*, Cape Coly
6. *Colius erythropus*, White-backed Coly

Genus Loxia.

83. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate V.

Fig. 1. *Loxia lineola*, Lineated Groſbeak
2. *Loxia cucullata*, Creſted Dominican Groſbeak
3. *Loxia philippina*, Philippine Groſbeak
4. The pendulous Neſt of the Philippine Groſbeak
5. *Loxia Cardinalis*, Cardinal Groſbeak
6. *Loxia aſtrild*, Waxen-billed Groſbeak
7. *Loxia flabellifera*, Fan-tailed Groſbeak

PLATE

Genus Emberiza.

84. Lettered Diviſion I. Land Birds, Order Paſſeres, Plate VI.

Fig. 1. *Emberiza Paradiſea*, Whidaw Bird
2. *Emberiza ciris*, Painted Bunting
3. *Emberiza Regia*, Shaft-tailed Bunting
4. *Emberiza provincialis*, Muſtachoe Bunting
5. *Emberiza americana*, Black-throated Bunting
6. *Emberiza hortulana*, Ortolan Bunting

Genus Tanagra.

85. Lettered Diviſion I. Land Birds, Order 3. Paſſeres, Plate X.

Fig. 1. *Tanagra Tatao*, Paradiſe Tanager
2. *Tanagra capitalis*, Capital Tanager
3. *Tanagra Jacapa*, Red-breaſted Tanager

Genus Fringilla.

Fig. 4. *Fringilla ignita*, Fire Finch
5. *Fringilla flammea*, Crimſon-crowned Finch
6. *Fringilla bengalus*, Blue-bellied Finch
7. *Fringilla Pſittacus*, Parrot Finch

Genus Phytotoma.

Fig. 8. *Phytotoma rara* (*Molina*, *Hiſt. Nat. Chili*) Chili Phytotoma

Genus Muscicapa.

86. Lettered Order Paſſeres, Plate VIII.

Fig. 1. *Muſcicapa bicolor*, Black and White Flycatcher
2. *Muſcicapa barbata*, Whiſkered Flycatcher
3. *Muſcicapa tyrannus*, Forked-tailed Flycatcher
4. *Muſcicapa malachura*, Soft-tailed Flycatcher
5. *Muſcicapa flabellifera*, Fan-tailed Flycatcher

Genus Motacilla.

Fig. 6. *Motacilla cyanea*, Superb Wheat-ear
7. *Motacilla Madraſpatenſis*, Pied Wagtail (Madras Pied Wagtail)

Genus Motacilla.

87. Lettered Order Paſſeres, Plate IX.

Fig. 1. *Motacilla pileata*, Black-headed Warbler
2. *Motacilla ſpinicauda*, Thorn-tailed Warbler
3. *Motacilla ſuccica*, Blue-throated Warbler

Genus Pipra.

Fig. 4. *Pipra rupicola*, Rock Manakin
5. *Pipra ſtriata*, Striped-headed Manakin
6. *Pipra leucocephala*, White-capped Manakin
7. *Pipra punctata*, Speckled Manakin

Genus Parus.

88. Lettered Order Paſſeres, Plate XX.

Fig. 1. *Parus macrocephalus*, Great-headed Titmouſe
2. *Parus criſtatus*, Creſted Titmouſe

PLATE

GENUS HIRUNDO.

88. Fig. 4. *Hirundo eſculenta*, Eſculent Swallow
5. The eſculent Neſt of this Swallow
6. *Hirundo tahitica*, Otaheite Swallow
7. *Hirundo pelaſgia*, Aculeated Swallow
3. *Hirundo indica*, Rufous-headed Swallow

GENUS CAPRIMULGUS.

80. Lettered Diviſion LAND BIRDS, Order Paſſeres, Plate LXXX.

Fig. 4. *Caprimulgus longipennis*, Leona Goatſucker
5. *Caprimulgus grandis*, Great Goatſucker

ELEMENTARY PLATES

TO ILLUSTRATE

THE CLASSIFICATION OF BIRDS.

Characters of the Feet in the different Orders and Genera.

ACCIPITRES.

Feet formed for aſſiſting the Mandibles in ſeizing and tearing the prey, being armed with ſtrong talons.

89. Lettered ORNITHOLOGY, Elementary Plate I.

The Feet in *Falco* (*Falco Chryſaetos*, Golden Eagle); and Eagles, Falcons, Hawks
The Feet in *Strix* (*Strix flammea*, White Owl); ſtridula, brachyotos, paſſerina
(*The Shrikes belong to this order*)

PICÆ.

* *Feet formed for Perching.*

90. Lettered Plate IV.

The Feet in *Sitta* (Nuthatch) European Nuthatch

92. Lettered Plate II.

The feet in *Corvus* (Crow) Common Crow
Paradiſea (Bird of Paradiſe)

The ſame ſtructure prevails in the feet of the genera Buphaga, Oriolus, Coracias, Upupa, Certhia, Trochilus, &c.

** *Feet formed for Climbing.*

90. Lettered Elementary Plate IV.

The Feet of *Picus* (*P. Martius*, Great Black Woodpecker; *P. Viridis*, Green Woodpecker)
The Feet of *Muſophagus* (Muſophage)

This ſtructure is well exemplified in Pſittacus (Parrot), and Cuculus (Cuckow), which are familiar examples; and occurs in the genera Scythrops, Ramphaſtos, Trogon, Crotophaga, Galbula, Yunx, and Bucco.

PLATE

*** *Feet formed for Walking.*

90. Lettered Elementary Plate IV.

The Foot of *Alcedo* (King's-fiſher)

The other genera of Picæ, which have the feet formed for walking, are Momotus, Buceros, Merops, and Todus.

ANSERES.

Feet formed for Swimming.

91. Lettered ORNITHOLOGY, Elementary Plate III.

Feet in the genus *Anas* (Gooſe, Duck)
Alca (Auk)
Aptenodyta (Penguin)
Pelecanus (Pelican), two ſpecies
Colymbus (Grebe), three ſpecies
Larus (Gull)

90. Lettered ORNITHOLOGY, Elementary Plate IV.

Feet in the genus *Sterna* (Tern)

GRALLÆ.

Feet formed for Wading.

91. Lettered ORNITHOLOGY, Elementary Plate III.

Feet in the genus *Phœnicopterus* (Flamingo)

89. Lettered ORNITHOLOGY, Elementary Plate I.

Feet in the genus *Platalea* (Spoonbill) *P. ajaja*

90 & 92. Lettered ORNITHOLOGY, Elementary Plate IV. and II.

Feet in the genus *Ardea* (Heron)

89. Lettered ORNITHOLOGY, Elementary Plate I.

Feet in the genus *Ardea cinerea* (Grey Heron)

91. Lettered ORNITHOLOGY, Elementary Plate III.

Feet in the genus *Recurviroſtra*, (Avocet)

89. Lettered ORNITHOLOGY, Elementary Plate I.

Feet in the genus *Tantalus* (Ibis) *T. igneus*, Bay Ibis

91. Lettered ORNITHOLOGY, Elementary Plate III.

Feet in the genus *Tringa* (Phalarope) *T. lobata*, Scallop-toed Tringa

89. Lettered ORNITHOLOGY, Elementary Plate I.

Feet in the genus *Charadrius* (Plover, Long-legged P.)
Hæmatopus (Oyſter Catcher)
Glareola (Pratincole) *P. auſtriaca*

91. Lettered ORNITHOLOGY, Elementary Plate III.

Feet in the genus *Fulica* (Gallinule)
Viginalis (Sheathbill)

90. Lettered ORNITHOLOGY, Elementary Plate IV.

Feet in the genus *Rallus* (Rail)

NATURAL HISTORY.

Plate

91. Lettered Ornithology, Elementary Plate III.
Feet in the genus *Rallus* (Rallus gallinule)

90. Lettered Ornithology, Elementary Plate IV.
Feet in the genus *Parra* (Jacana), two ſpecies

Gallinæ.

Form of the Feet.

92. Lettered Ornithology, Elementary Plate II.
In the genus *Otis* (Buſtard)
Struthio (Oſtrich) *S. camelus*, Common or Black Oſtrich
Struthio caſuarius, Caſſowary
Cereopſis (Cereops)
Pavo (Peacock) Common P.
Phaſianus (Pheaſant) Common P.
Menura (Menura)

89. Lettered Ornithology, Elementary Plate I.
In the genus *Tetrao* (Grous), *T. Urogallus*, Great Grous. *T. lagopus*, Ptarmigan. *T. tetrix*, Black Game

Passeres.

Structure of the Feet.

89. Lettered Ornithology, Elementary Plate I.
In the genus *Colius* (Coly)

90. Lettered Ornithology, Elementary Plate IV.
In the genus *Alauda* (Lark), *A. arvenſis*, Sky-lark. *A. obſcura*, Duſky Lark
Pipra (Manakin)

92. Lettered Ornithology, Elementary Plate II.
In the genus *Parus* (Titmouſe)

90. Lettered Ornithology, Elementary, Plate IV.
In the genus *Turdus* (Thruſh)
Motacilla (Warbler)

89. Lettered Ornithology, Elementary Plate I.
In the genus *M. Regulus* (Gold-creſted Wren)

CLASS AMPHIBIA.

Order I. Reptiles.

Genus Testudo.

Marine Turtles.

93. Lettered Amphibia, Plate X.
Fig. 5. *Teſtudo mydas*, Eſculent Green Turtle
6. *Teſtudo imbricata*, Hawkſbill Turtle

Land Tortoiſes.

Fig. 1. *Teſtudo denticulata*, Denticulated Tortoiſe
2. *Teſtudo europæa*, Green Speckled Tortoiſe
3. *Teſtudo guttata*, Spotted Tortoiſe
4. *Teſtudo picta*, Painted Tortoiſe

Plate

Genus Rana.

94. Lettered Amphibia, Plate I.
Fig. 1. *Rana Pipa*, Surinam Toad—*Female with her young neſtling in cellules on the back*
2. *Rana bicolor*, Two-coloured Frog
3. *Rana paradoxa*, Paradoxical Frog, in the fiſh-like former tad-pole ſtate
4. *Rana arborea*, Tree Frog.

Genus Lacerta.

95. Lettered Amphibia, Plate VIII.
Fig. 1. *Lacerta Salamandra*, Salamander
2. *Lacerta Vittata*, Forked Lizard
3. *Lacerta Chamæleon*, Chameleon
4. *Lacerta agilis*, Green Lizard
5. *Lacerta lemniſcata*, Eight-lined Lizard

96. Lettered Amphibia, G. Lacerta, Plate IX.
Fig. 1. *Lacerta ſcincoides*, Auſtralaſian Galliwaſp
2. *Lacerta chalcides*, Chalcides Lizard
3. *Lacerta apus*, Apodal Lizard

Genus Draco.

Fig. 4. *Draco volans*, Flying Dragon, (*Lacerta volans*, Flying lizard)

Genus Siren.

97. Lettered Amphibia, G. Siren, Plate VI.
Fig. 1. *Siren lacertina*, Eel-ſhaped Siren
2. *Siren anguina*, Anguine Siren

Order II. Serpents.

Genus Crotalus.

98. Lettered Amphibia, G. Crotalus, Plate II.
Fig. 1. *Crotalus horridus*, Banded Rattle-ſnake
2. *Crotalus Duriſſus*, Striped Rattle-ſnake

Genus Boa.

99. Lettered Amphibia, G. Boa, Plate V.
Fig. 1. *Boa conſtrictor*, Great Boa Serpent
2. *Boa Phrygia*, Embroidered Boa Serpent
3. *Boa hortulana*, Garden Boa Serpent

Genus Coluber.

100. Lettered Amphibia, G. Coluber, Plate IV.
Fig. 1. *Coluber naſicornis*, Horn-noſed Viper
2. *Coluber ceraſtes*, Ceraſtes Viper
3. *Coluber naja*, Nagoo or Spectacle Viper

Genus Anguis.

101. Lettered Amphibia, G. Anguis, Plate III.
Fig. 1. *Anguis Corallinus*, Coral Slow Worm
2. *Anguis ater*, Black Banded Slow Worm
3. *Anguis Jamaicenſis*, Jamaica Slow Worm

Genus Amphisbæna.

102. Lettered Amphibia, G. Amphiſbæna, Plate VII.
Fig. 1. *Amphiſbæna alba*, White Amphiſbæna
2. *Amphiſbæna fuliginoſa*, Fuliginous Amphiſbæna

Plate

Genus Cæcilia.

102. Fig. 3. *Cæcilia tentacula*, Eel-ſhaped Cæcilia

Genus Hydrus.

103. Lettered Amphibia, G. Hydrus
Fig. 1. *Hydrus colubrinus*, Colubrine Hydrus
2. *Hydrus bicolor*, Black-backed Hydrus

Genus Langaya.

Fig. 3. *Langaya naſuta*, Snouted Langaya

Genus Acrochordus.

Fig. 4. *Acrochordus dubius*, Doubtful Acrochordus

ICHTHYOLOGY.

CLASS PISCES.

Order Apodes.

Genus Muræna.

104. Lettered Order Apodes, Plate I.
Fig. 1. *Muræna anguilla*, Eel Muræna, or Common Eel

Genus Synbranchus.

Fig. 2. *Synbranchus marmoratus*, Marbled Synbranchus

Genus Sphagebranchus.

Fig. 3. *Sphagebranchus roſtratus*, Snouted Sphagebranchus

Genus Gymnotus.

Fig. 4. *Gymnotus electricus*, Electric Gymnotus

Genus Gymnothorax.

Fig. 5. *Gymnothorax muræna*, Eel Gymnothorax
6. *Gymnothorax catenatus*, Chain Gymnothorax

Genus Stomateus.

105. Lettered Order Apodes, Plate II.
Fig. 1. *Stomateus cinereus*, Aſh-coloured Stomateus
2. *Stomateus niger*, Black Stomateus

Genus Stylephorus.

Fig. 3. *Stylephorus chordatus*, Chordated Stylephorus

Genus Trichiurus.

Fig. 4. *Trichiurus argenteus*, Silvery Trachiurus

Genus Sternoptyx.

Fig. 5. *Sternoptyx diaphana*, Diaphanous Sternoptyx

Genus Xiphias.

Fig. 6. *Xiphias gladius*, Sword-fiſh

Genus Anarhichas.

Fig. 7. *Anarhicas lupus*, Ravenous Wolf-fiſh

Plate

Order Jugulares.

Genus Trachinus.

106. Lettered Order Jugulares, Plate I.
Fig. 1. *Trachinus major*, Great Weever
2. *Trachinus draco*, Small Weever

Genus Uranoscopus.

Fig. 3. *Uranoſcopus ſcaber*, Rough Stargazer

Genus Callionymus.

Fig. 4. *Callionymus dracunculus*, Sordid Dragonet
5. *Callionymus lyra*, Gemmous Dragonet

Genus Gadus.

107. Lettered Ichthyology, Order Jugulares, Plate II.
Fig. 1. *Gadus morhua*, Cod-fiſh
2. *Gadus carbonarius*, Coal-fiſh
3. *Gadus minutus*, Poor
4. *Gadus Tau*, Tau Cod-fiſh

Genus Blennius.

Fig. 5. *Blennius maris*, Ocellated Blenny

Genus Kurtus.

Fig. 6. *Kurtus indicus*, Indian Kurtus

Order Thoracici.

Genus Cepola.

108. Lettered Ichthyology, Order Thoracici, Plate I.
Fig. 1. *Cepola Tænia*, Ribband-fiſh

Genus Echineis.

Fig. 2. *Echineis Remora*, Mediterranean Sucking-fiſh

Genus Coryphæna.

Fig. 4. *Coryphæna hippurus*, Common Coryphene
5. *Coryphæna pentadactyla*, Five-ſpotted Coryphene

Genus Gobius.

Fig. 3. *Gobius minutus*, Spotted Goby

Genus Cottus.

Fig. 6. *Cottus grunniens*, Grunting Bull-head
7. *Cottus cataphractus*, Mailed Bull-head

Genus Scorpæna.

109. Lettered Ichthyology, Order Thoracici, Plate II.
Fig. 1. *Scorpæna Scrofa*, Hog Sea-Scorpion
2. *Scorpæna horrida*, Horrid Sea-Scorpion
3. *Scorpæna antennata*, Antennated Sea-Scorpion

Genus Zeus.

Fig. 4. *Zeus gallus*, American Zeus
5. *Zeus ciliaris*, Filamentous Zeus
6. *Zeus inſidiator*, Inſidious Zeus

NATURAL HISTORY.

PLATE

GENUS PLEURONECTES.

110. Lettered ICHTHYOLOGY, Order Thoracici, Plate III.
Fig. 1. *Pleuronectes Zebra*, Zebra Sole
2. *Pleuronectes Argus*, Argus Flounder
3. *Pleuronectes plateſſa*, Plaice
4. *Pleuronectes bilineatus*, Bilineated Sole

111. Lettered ICHTHYOLOGY, Order Thoracici, Plate IV.
Fig. 1. *Pleuronectes punctatus*, Dotted Flounder

GENUS CHÆTODON.

110. Lettered ICHTHYOLOGY, Order Thoracici, Plate III.
Fig. 5. *Chætodon bicolor*, Two-coloured Chætodon
6. *Chætodon faſciatus*, Banded Chætodon

111. Lettered ICHTHYOLOGY, Order Thoracici, Plate IV.
Fig. 2. *Chætodon imperator*, Imperial Chætodon
3. *Chætodon marginatus*, Bordered Chætodon
4. *Chætodon arcuatus*, Bowed Chætodon
5. *Chætodon roſtratus*, Snouted Chætodon
6. *Chætodon Teira*, Teira Chætodon

GENUS SPARUS.

112. Lettered ICHTHYOLOGY, Order Thoracici, Plate VII.
Fig. 1. *Sparus falcatus*, Falcated Gilthead
2. *Sparus Surinamenſis*, Surinam Gilthead
3. *Sparus faſciatus*, Banded Gilthead
4. *Sparus chryſurus*, Golden-tailed Gilthead
5. *Sparus annularis*, Annulated Gilthead
6. *Sparus mæna*, Cackarel

GENUS SCARUS.

113. Lettered ICHTHYOLOGY, Order Thoracici, Plate VIII.
Fig. 7. *Scarus viridis*, Green Scarus

114. Lettered ICHTHYOLOGY, Order Thoracici, Plate X. & XI.
1. *Scarus cretenſis*, Large-ſcaled Scarus

GENUS LABRUS.

113. Lettered ICHTHYOLOGY, Order Thoracici, Plate VIII.
Fig. 1. *Labrus microlepidotus*, Large-ſcaled Wraſſe
2. *Labrus trichopterus*, Hair-finned Wraſſe
3. *Labrus malapterus*, Soft-finned Wraſſe
4. *Labrus maculatus*, Spotted Wraſſe
5. *Labrus punctatus*, Dotted Wraſſe
6. *Labrus melagaſter*, Black-bellied Wraſſe

GENUS SCIÆNA.

114. Lettered ICHTHYOLOGY, Order Thoracici, Plate X. & XI.
Fig. 2. *Sciæna diacantha*, Two-ſpined Umber, or Sciæna
3. *Sciæna cirroſa*, Cirroſe Sciæna
4. *Sciæna punctata*, Dotted Sciæna
5. *Sciæna plumiera*, Plumier's Sciæna

PLATE

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.
Fig. 1. *Sciæna undecimalis*, Eleven-ſpot Sciæna
2. *Sciæna lineata*, Lineated Sciæna

GENUS PERCA.

115. Lettered ICHTHYOLOGY, Order Thoracici, Plate IX.
Fig. 1. *Perca Braſilienſis*, Braſilian Perch
2. *Perca ſaxatilis*, Rock Perch
3. *Perca punctata*, Dotted Perch
4. *Perca guttata*, Guttated Perch
5. *Perca maculata*, Spotted Perch
6. *Perca bimaculata*, Bimaculated Perch

GENUS TRACHYCHTHYS.

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.
Fig. 4. *Trachychthys auſtralis*, Auſtralaſian Trachychthys

GENUS GASTEROSTEUS.

Fig. 3. *Gaſteroſteus aculeatus*, Stickleback

GENUS SCOMBER.

117. Lettered ICHTHYOLOGY, Order Thoracici, Plate XII.
Fig. 1. *Scomber Sarda*, (*Scomber Scomber*, Linn.) Common Mackarel
2. *Scomber niger*, Black Mackarel
3. *Scomber ſaliens*, Salient Mackarel
4. *Scomber ruber*, Red Mackarel

116. Lettered ICHTHYOLOGY, Order Thoracici, Plate XI.
Fig. 5. *Scomber Rotleri*, Rotlerian Mackarel
6. *Scomber aculeatus*, Aculeated Mackarel

GENUS MULLUS.

118. Lettered ICHTHYOLOGY, Order Thoracici, Plate XIII.
Fig. 1. *Mullus ſurmuletus*, Surmullet

GENUS TRIGLA.

Fig. 2. *Trigla Carolina*, Caroline Gurnard
3. *Trigla Hirundo*, Swallow Gurnard
5. *Trigla cataphractus*, Mailed Gurnard
4. *Trigla punctata*, Dotted Gurnard

GENUS LONCHIURUS.

117. Lettered ICHTHYOLOGY, Order Thoracici, Plate XII.
Fig. 5. *Lonchiurus barbatus*, Bearded Lonchiurus

ORDER ABDOMINALES.

GENUS COBITIS.

119. Lettered ICHTHYOLOGY, Order Abdominales, Plate V.
Fig. 4. *Cobitis foſſilis*, Great Loche

GENUS ANABLEPS.

Fig. 5. *Anableps tetrophthalmus*, Four-eyed Anableps

GENUS SILURUS.

Fig. 1. *Silurus clarias*, Long-bearded Silurus

Plate

Genus Platystachus.

119. Fig. 6. *Platyſtachus anguillaris*, Eel-ſhaped Platyſtachus

Genus Loricaria.

Fig. 2. *Loricaria coſtalis*, Ribbed Loricaria
3. *Loricaria flava*, Yellow Loricaria

Genus Salmo.

120. Lettered Ichthyology, Order Abdominales, Plate III.

Fig. 1. *Salmo bimaculatus*, Bimaculated Salmon
2. *Salmo faſciatus*, Banded Salmon
3. *Salmo tumbil*, Barred Salmon
4. *Salmo Odoe*, Odoe Salmon
5. *Salmo Gaſteropelecus*, Yellow-finned Salmon
6. *Salmo Friderici*, Frederician Salmon
7. *Salmo rhombeus*, Rhombic Salmon

Genus Fistularia.

121. Lettered Ichthyology, Order Abdominales, Plate II.

Fig. 1. *Fiſtularia chinenſis*, Chineſe Tobacco-pipe Fiſh
2. *Fiſtularia tabaccaria*, Spotted Tobacco-pipe Fiſh

Genus Esox.

Fig. 3. *Eſox oſſeus*, Bony Gar Fiſh, or Sea Pike
4. *Eſox Belone*, Sea Pike, or Gar Fiſh
5. *Eſox braſilienſis*, Braſilian Pike, or Gar Fiſh

Genus Elops.

Fig. 6. *Elops Saurus*, Saury Elops

Genus Argentina.

Fig. 7. *Argentina Sphyræna*, European Argentine

Genus Atherina.

122. Lettered Ichthyology, Order Abdominales, Plate I.

Fig. 1. *Atherina Hepſetus*, Common Atherine

Genus Mugil.

Fig. 2. *Mugil Tang*, Tang Mullet
3. *Mugil cephalus*, Grey Mullet

Genus Exocœtus.

Fig. 4. *Exocœtus evolans*, Mediterranean Flying Fiſh
5. *Exocœtus exiliens*, Swallow Flying Fiſh
6. *Exocœtus Meſogaſter*, Atlantic Flying Fiſh

Genus Polynemus.

123. Lettered Ichthyology, Order Abdominales, Plate IV.

Fig. 1. *Polynemus paradiſeus*, Paradiſe Polyneme
2. *Polynemus decadactylus*, Ten-fingered Polymene

Plate

Genus Clupea.

123. Fig. 3. *Clupea Thriſſa*, Thriſſa Herring
4. *Clupea naſus*, Naſal Herring

Genus Cyprinus.

Fig. 5. *Cyprinus cultratus*, Razor Carp
6. *Cyprinus auratus*, Golden Carp, *var.*
7. *Cyprinus phoxinus*, Minnow

Order Branchiostegi.

Genus Ostracion.

124. Lettered Ichthyology, Order Branchioſtegi, Genus Oſtracion, Plate V.

Fig. 1. *Oſtracion turritus*, Eared Trunk Fiſh
2. *Oſtracion triqueter*, Triangular Trunk Fiſh
3. *Oſtracion naſus*, Snouted Trunk Fiſh
4. *Oſtracion bicaudalis*, Bicaudate Trunk Fiſh
5. *Oſtracion quadricornis*, Four-horned Trunk Fiſh
6. *Oſtracion cornutus*, Horned Trunk Fiſh

Genus Tetrodon.

125. Lettered Ichthyology, Order Branchioſtegi, Plate V.

Fig. 1. *Tetrodon hiſpidus*, Hiſpid Tetrodon
2. *Tetrodon ocellatus*, Ocellated Tetrodon
3. *Tetrodon lineatus*, Lineated Tetrodon
4. *Tetrodon lagocephalus*, Hare Tetrodon

Genus Diodon.

Fig. 5. *Diodon Hyſtrix*, Porcupine Diodon
6. *Diodon orbicularis*, Round Diodon

Genus Syngnathus.

126. Lettered Ichthyology, Order Branchioſtegi, Plate VI.

Fig. 1. *Syngnathus foliatus*, Foliated Pipe Fiſh
2. *Syngnathus acus*, Great Pipe Fiſh
3. & 3.* *Syngnathus Hippocampus*, Sea-Horſe Pipe Fiſh

Genus Pegasus.

Fig. 4. & 4.* *Pegaſus Draconis*, Dragon Pegaſus
5. & 5.* *Pegaſus natans*, Swimming Pegaſus

Genus Centriscus.

Fig. 6. *Centriſcus ſcutatus*, Mailed Centriſcus

Genus Balistes.

127. Lettered Ichthyology, Order Branchioſtegi, Plate III.

Fig. 1. *Baliſtes vetula*, Old Wife
2. *Baliſtes maculatus*, Spotted Old Wife
3. *Baliſtes aculeatus*, Aculeated Old Wife
4. *Baliſtes monoceros*, One-horned Old Wife

Genus Cyclopterus.

128. Lettered Ichthyology, Order Branchioſtegi, Plate IV.

Fig. 1. *Cyclopterus Lumpus*, Common Lump-ſucker

PLATE

128. Fig. 2. *Cyclopterus ocellatus*, Ocellated Lump-ſucker
3. *Cyclopterus lineatus*, Lineated Lump-ſucker

Genus Lophius.

Fig. 4. *Lophius marmoratus*, Marbled Angler
5. *Lophius Hiſtrio*, Harlequin Angler
6. *Lophius roſtratus*, Beaked Angler
7. *Lophius pictus*, Painted Angler

Order Chondropterygii.

Genus Acipenser.

129. Lettered Ichthyology, Order Chondropterygii, Plate I.

Fig. 3. *Acipenſer Sturio*, Common Sturgeon
4. *Acipenſer Ruthenus*, Sterlet

Genus Chimæra.

Fig. 2. *Chimæra monſtroſa*, Sea-monſter
5. *Chimæra callorhynchus*, Southern Sea-monſter

Genus Pristis.

Fig. 1. *Priſtis antiquorum*, Common Saw-fiſh

Genus Squalus.

130. Lettered Ichthyology, Order Chondropterygii, Plate II.

Fig. 1. *Squalus glaucus*, Blue Shark
2. *Squalus Catulus*, Leſſer ſpotted Shark
3. *Squalus Squatina*, Angel Shark
4. *Squalus Zygæna*, Hammer-headed Shark
5. *Squalus Zebra*, Zebra Shark

Genus Spatularia.

Fig. 6. *Spatularia reticulata*, Reticulated Spatularia

Genus Raja.

131. Lettered Ichthyology, Order Chondropterygii, Plate VI.

Fig. 1. *Raia diabolus*, Dæmon Ray
2, 3. *Raia clavata*, Thorn-back
4. *Raia undulata*, Undulated Ray
5. *Raia torpedo*, Electric Ray
6. *Raia rhinobatos*, Long-noſed Ray

Genus Gastrobranchus.

132. Lettered Ichthyology, Order Chondropterygii, Plates III., IV., V.

Fig. 1. *Gaſtrobranchus coecus*, Hag-fiſh
2. *Gaſtrobranchus Dombeyi*, Dombeyan Hag-fiſh

Genus Petromyzon.

Fig. 3. *Petromyzon marinus*, Marine Lamprey
4. *Petromyzon fluviatilis*, River Lamprey
5. *Ditto*, the young, ſhewing the under ſurface

PLATE

ENTOMOLOGY.

CLASS INSECTA.

Order Coleoptera.

Genus Scarabæus.

133. Lettered Entomology, Order Coleoptera, Plate I.

Fig. 1. *Scarabæus Hercules*
2. *Scarabæus Chorinæus*
3. *Scarabæus Titytus*
4. *Scarabæus moloſſus*
5, 6. *Scarabæus carnifex*, male and female
7. *Scarabæus ſacer*

Genus Goliathus.

134. Lettered Entomology, Genus Goliathus, Plate I.

Fig. 1. *Goliathus Cæcicus*
2. *Goliathus magnus*

Genus Lucanus.

135. Lettered Entomology, Order Coleoptera, Plate IV.

Fig. 1. *Lucanus cervus*
2. *Lucanus inermis*

Genus Dermestes.

Fig. 3. *Dermeſtes viginti-guttatus*
4. *Dermeſtes ſex-dentatus*
5. *Dermeſtes brachypterus*
6. *Dermeſtes pedicularius*
7. *Dermeſtes picipes*

Genus Bostrichus.

136. Lettered Entomology, Order Coleoptera, Plate V.

Fig. 12. *Boſtrichus pubeſcens*
1. *Boſtrichus polygraphus*
2. *Boſtrichus typographus*
3. *Boſtrichus piniperda*

Genus Melyris.

137. Lettered Entomology, Order Coleoptera, Plate XII.

Fig. 13. *Melyris viridis*

Genus Ptinus.

136. Lettered Entomology, Order Coleoptera, Plate V.

Fig. 4. *Ptinus Scotius*
5. *Ptinus Imperialis*
6. *Ptinus ſex-punctatus*
7. *Ptinus teſſellatus*
8. *Ptinus pectinicornis*

Genus Hister.

Fig. 9. *Hiſter unicolor*
10. *Hiſter planus*

Genus Gyrinus.

Fig. 11. *Gyrinus natator*

Genus Byrrhus.

137. Lettered Entomology, Order Coleoptera, Plate XII.

Fig. 1. *Byrrhus pilula*

NATURAL HISTORY.

Plate

Genus Anthrenus.

137. Fig. 2. *Anthrenus Scrophulariæ*

Genus Silpha.

Fig. 6. *Silpha Germanica*
7. *Silpha veſpillo*
8. *Silpha thoracica*
9. *Silpha humator*
10. *Silpha obſcura*
11. *Silpha quadrimaculata*
12. *Silpha ſinuata*

135. Lettered Entomology, Order Coleoptera, Plate IV.
Fig. 8. *Silpha hæmorrhoidalis*
9. *Silpha rufipes*
10. *Silpha quadri-guttata*
11. *Silpha marginalis*

Genus Opatrum.

138. Lettered Entomology, Order Coleoptera, Plate IX.
Fig. 1. *Opatrum ſabuloſum*

Genus Tritoma.

Fig. 2. *Tritoma rufipes*
3. *Tritoma piloſa*

Genus Tetratoma.

Fig. 4. *Tetratoma cinnamomeum*
5. *Tetramona fungorum*
6. *Tetratoma ancora*

Genus Cassida.

Fig. 7. *Caſſida groſſa*
8. *Caſſida lateralis*
9. *Caſſida cruentata*
10. *Caſſida maculata*

Genus Coccinella.

139. Lettered Entomology, Order Coleoptera, Plate XIII.
Fig. 1. *Coccinella 16-guttata*
2. *Coccinella oblongo-guttata*
3. *Coccinella 12-puſtulata*
4. *Coccinella frontalis*
5. *Coccinella 12-punctata*
6. *Coccinella 22-punctata*
7. *Coccinella ſeptem-notata*
8. *Coccinella 4-puſtulata*
9. *Coccinella punctata*
10. *Coccinella analis*
11. *Coccinella parvula*
12. *Coccinella 6-puſtulata*

Genus Chrysomela.

140. Lettered Entomology, Order Coleoptera, Genus Chryſomela, Plate XIII.
Fig. 1. *Chryſomela gigantea*
2. *Chryſomela ſurinamenſis*
3. *Chryſomela 20-punctata*
4. *Chryſomela cyanicornis*

Plate
Fig. 5. *Chryſomela cyanipes*
6. *Chryſomela limbata*
7. *Chryſomela didymus*
8. *Chryſomela boleti*
9. *Chryſomela 14-guttata*
10. *Chryſomela marginalis*
11. *Chryſomela marginata*
12. *Chryſomela marginella*
13. *Chryſomela hannoveriana*

Genus Cryptocephalus.

141. Lettered Entomology, Order Coleoptera, Plate VIII.
Fig. 1. *Cryptocephalus cordiger*
2. *Cryptocephalus variabilis*
3. *Cryptocephalus diſtinguendus*
4. *Cryptocephalus lobatus*
5. *Cryptocephalus obſcurus*

Genus Cistela.

137. Lettered Entomology, Order Coleoptera, Plate XII.
Fig. 3. *Ciſtela pallida*
4. *Ciſtela læta*
5. *Ciſtela lepturoides*

Genus Crioceris.

141. Lettered Entomology, Order Coleoptera, Plate VIII.
Fig. 6. *Crioceris campeſtris*
7. *Crioceris punctatus*

Genus Hispa.

Fig. 8. *Hiſpa mutica*

Genus Bruchus.

Fig. 9. *Bruchus bipunctatus*

Genus Pausus.

Fig. 10. *Pauſus denticornis* (*Donov. Ind. Inſ.*)
11. *Pauſus thoracicus* (*Donov. Ind. Inſ.*)
12. *Pauſus Fichtelii* (*Donov. Ind. Inſ.*)
13. *Pauſus pectinicornis* (*Donov. Ind. Inſ.*)

Genus Curculio.

142. Lettered Entomology, Order Coleoptera, Plate XI.
Fig. 1. *Curculio bimaculatus*
2. *Curculio palmarum*
3. *Curculio elegans*
4. *Curculio annulatus*
5. *Curculio imperialis*
6. *Curculio eremitus*
7. *Curculio hemipterus*
8. *Curculio brachypteros* (*nigro ſpinoſus*)
9. *Curculio aſſimilis*
10. *Curculio rhinomacer*
11. *Curculio regalis* (*Donov. Ind. Inſ.*)
12. *Curculio bilineatus*
13. *Curculio viridis*
14 *Curculio bachus*
15. *Curculio betulæ*

PLATE

Genus Prionus.

143. Lettered Entomology, Order Coleoptera, Plate II.
Fig. 1. *Prionus longimanus*
2. *Prionus unidentatus*

Genus Cerambyx.

Fig. 3. *Cerambyx imperialis*

Genus Lamia.

Fig. 4. *Lamia quadrimaculata*

Genus Clytus.

Fig. 5. *Clytus thoracicus*

Genus Saperda.

Fig. 6. *Saperda collaris*
7. *Saperda nigro-virens*

Genus Rhagium.

Fig. 8. *Rhagium bifaſciatum*

Genus Cicindela.

144. Lettered Entomology, Order Coleoptera, Plate X.
Fig. 1. *Cicindela campeſtris*
2. *Cicindela ſylvatica*
3. *Cicindela flexuoſa*
4. *Cicindela ſinuata*
5. *Cicindela capenſis*
6. *Cicindela littoralis*
7. *Cicindela germanica*
8. *Cicindela riparia*
9. *Cicindela paludoſa*
10. *Cicindela aquatica*
11. *Cicindela flavipes*

Genus Dytiscus.

145. Lettered Entomology, Order Coleoptera, Plate XII.
Fig. 1. *Dytiſcus piceus*
2. *Dytiſcus latiſſimus*
3. *Dytiſcus marginatus*
4. *Dytiſcus cinereus*
5. *Dytiſcus caraboides*
6. *Dytiſcus ſulcatus*
7. *Dytiſcus minutus*
8. *Dytiſcus bipuſtulatus*
9. *Dytiſcus uliginoſus*

Genus Carabus.

146. Lettered Entomology, Order Coleoptera, Plate XV.
Fig. 1. *Carabus ſexmaculatus*
2. *Carabus ſycophanta*
3. *Carabus punctatus*
4. *Carabus auronitens*

PLATE
146. Fig. 5. *Carabus arenarius*
6. *Carabus granulatus*
7. *Carabus thoracicus*
8. *Carabus bimaculatus*
9. *Carabus germanus*
10. *Carabus praſinus*
11. *Carabus crux minor*
12. *Carabus ſemipunctatus*

Genus Tenebrio.

147. Lettered Entomology, Order Coleoptera, Plate XI.
Fig. 1. *Tenebrio gigas*
2. *Tenebrio femoratus*
3. *Tenebrio molitor*
4. *Tenebrio curvipes*
5. *Tenebrio culinaris*
6. *Tenebrio ferrugineus*

Genus Pimelia.

Fig. 7. *Pimelia gages*
8. *Pimelia ſepidium*
9. *Pimelia tragoſita*

Genus Helops.

Fig. 10. *Helops lanipes*
11. *Helops faſciata*
12. *Helops fuſca*

Genus Lytta.

148. Lettered Entomology, Order Coleoptera, Plate VI.
Fig. 1. *Lytta veſicatoria*
2. *Lytta dubia*
15. *Lytta Schaefferi*

Genus Meloe.

Fig. 3. *Meloe proſcarabæus*
4. *Meloe variegatus*

Genus Mordella.

Fig. 5. *Mordella bicolor*
6. *Mordella flava*
7. *Mordella dorſalis*
8. *Mordella frontalis*

Genus Mylabris.

Fig. 9—11. *Mylabris cichorei*, var.

Genus Staphylinus.

Fig. 12. *Staphylinus hirtus*

Genus Forficula.

Fig. 13, 14. *Forficula gigantea*

149. Lettered Entomology, Coleoptera, Plate III.
Supplementary Plate of the Order Coleoptera*

---

* This Plate, which we have placed as an Appendix to the Coleoptera tribe, was engraved and publiſhed in the Cyclopædia before the Proprietors had determined to undertake the very ample elucidation of the ſubject, which they were afterwards induced to adopt. The ſelection of the ſubjects had been alſo left at the diſcretion of the artiſt ;

PLATE

ORDER HEMIPTERA.

150. Lettered ENTOMOLOGY, Order Hemiptera, Plate I.
Fig. 1. *Blatta orientalis*

GENUS MANTIS.

Fig. 2. *Mantis biſpinoſa*
3. *Mantis precaria*
4. *Mantis gongyloides*
5. *Mantis ſtrumaria*

GENUS GRYLLUS.

151. Lettered ENTOMOLOGY, Order Hemiptera, Plate II.
Fig. 1. *Gryllus Dux*
2. *Gryllus naſutus*
3. *Gryllus viridiſſimus minor*
4. *Gryllus ſubulata*
5. *Gryllus Gryllo-talpa*
6. *Larva of Gryllus*
7. *Pupa of Gryllus morbilloſus*

GENUS FULGORA.

152. Lettered ENTOMOLOGY, Order Hemiptera, Plate III.
Fig. 1. *Fulgora Lanternaria*, in a reſting poſition
2. with expanded wings
3. *Fulgora candelaria*
4. *Cicada Tibicien*, (*Tettigonia*, Fabr.)
5. *Cicada hæmatodes*
6. *Cicada ſtridula*
7. *Cicada phalænoides*
8. *Cicada ſanguinolenta*
9. *Cicada taurus*
10. *Cicada ſpinoſa*

PLATE

GENUS NOTONECTA.

152. Fig. 11. *Notonecta glauca*

GENUS NEPA.

153. Lettered ENTOMOLOGY, Order Hemiptera, Plate IV.
Fig. 1. *Nepa grandis*

GENUS CIMEX.

Fig. 2. *Cimex lectularius*
3. *Cimex aurantius*

GENUS APHIS.

Fig. 4. *Aphis perſicæ*
5. *Aphis ſalicis*
6. *Aphis gallarum*

GENUS CHERMES.

Fig. 7. *Chermes alni*
8. *Chermes buxi*

GENUS COCCUS.

Fig. 9. *Coccus Fol. Quercus*
10. *Coccus perſicæ*
11. *Coccus heſperidum*
12. *Coccus cataphractus*

GENUS THRIPS.

Fig. 13. *Thrips phyſapus*
14. *Thrips juniperina*

---

and theſe, it muſt be allowed, were not choſen altogether with that due attention to accuracy which the intricacy of this branch of Natural Hiſtory demanded. Theſe inſects were copied, we underſtand, from ſpecimens in the very valuable cabinet of Mr. Francillon; but owing to the diſperſion of that collection by public ſale, the means of compariſon has paſſed away, and the death of the artiſt then employed, as well as of the zealous proprietor of that collection, has oppoſed a period to enquiry further. The far greater and more coſtly portion of the Francillonian Cabinet is indeed preſerved, being incorporated in the princely cabinet of Alexander M^{c}Leay, Eſq., a cabinet to which true ſcience is never refuſed an eaſy acceſs; but the inſects in queſtion having been removed from their reſpective ſituations, in Mr. Francillon's drawers, they can be no longer recognized as the ſpecimens from which the figures in this plate are taken; and this, in ſome few inſtances at leaſt, it muſt be confeſſed, is requiſite to enable us to ſpeak of them with certainty. We may obſerve, moreover, that very few names accompany the articles repreſented in this Plate of Mr. Edwards; and of thoſe few ſome are certainly faulty. *Hiſpa* is doubtful (a true Hiſpa has been ſince given in Plate 141. fig. 8.). *Bruchus* is erroneous, and appears to be, with the exception of the antennæ, Attelabus Coryli; (a true Bruchus is inſerted by us in Plate 141. fig. 9.); and his inſect named Attelabus, has much the appearance of Mylabris, except in having pectinated inſtead of moniliform antennæ: nevertheleſs this may be a Clerus, and allied to Apiarus. (See Plate 148. fig. 9.) Lampyris is indifferent; Cantharis unintelligible. With theſe, and ſome few other exceptions, the Plate ſhould be preſerved, as it contains other inſects of intereſt, the repetition of whoſe figures has been purpoſely avoided in ſelecting the materials for the reſt of the Plates of Coleoptera.

We believe Curculio, No. 1. to be Curculio biſpinoſus; No. 3. to be Curculio Imperialis, the Braſilian or Diamond Beetle; No. 4. Curculio vittata, of Jamaica; Cerambyx, No. 3., C. Moſchatus; No. 4. Cerambyx marginatus; Necydalis, No. 2., N. cærulea; Lampyris, fig. 1., L. vulgaris, male (having wings); No. 2. the female (being apterous, or without wings); Elater, No. 1., E. ocellatus, Weſt Indies; No. 2. is uncertain; but is, no doubt, an Elater, placed on its back, to ſhew the ſituation of the pointed ſternum in that genus, by ſtriking which upon the breaſt, the inſect is enabled to ſpring up with inſtantaneous velocity when laid down in that poſition.

PLATE

Order Lepidoptera.

Genus Papilio.

154. Lettered Entomology, Order Lepidoptera, Plate I.

Fig. 1. *Papilio Hector, Eq. Troës* 1. Upper figure on the left hand
2. *Papilio Echius, Eq. Troës* 2. Right-hand ſide, middle figure
3. *Papilio Deiochus, Eq. Achiv.* 2. Left-hand ſide, middle figure
4. *Papilio Agamemnon, Eq. Achiv.* 2. Loweſt figure on the left hand
5. *Papilio Machaon, Eq. Achiv.* 3. Loweſt figure on the right hand
6. *Papilio Medon, Eq. Achiv.* 4. Upper figure on the right hand
7. *Papilio Mecyſtes, Eq. Achiv.* 5. Butterfly with erect wings, in the middle of the Plate

Genus Sphinx.

155. Lettered Entomology, Order Lepidoptera, Plate VII.

Fig. 1. *Sphinx ruſtica.* The largeſt figure in the lower part of the Plate
2. *Sphinx vitis.* The largeſt figure in the upper part of the Plate
3. *Sphinx Ello.* Shewing the natural erect poſition of the wings in this family of Sphinges, when they are at reſt. Placed on the left hand, towards the middle of the Plate
4. *Sphinx fuciformis*, (*Seſia*, Fabricius). Upper figure on the left hand
5. *Sphinx chryſorrhoa*, (*Seſia*, Fabricius). Loweſt figure in the Plate on the left ſide
6. *Sphinx tipuliformis*, (*Seſia*, Fabricius). Smalleſt figure in the Plate, and placed in the centre, in a flying poſition
7. *Sphinx Polymena*, (*Zygæna* of Fabricius, Donov. Inſ. China). Right hand, towards the middle of the Plate
8. *Sphinx fauſta*, (*Zygæna fauſta*, Fabricius). Bottom figure of the Plate on the right hand

Genus Phalæna.

156. Lettered Entomology, Order Lepidoptera, Plate I. Phalæna

Fig. 1. *Phalæna Atlas* (*Bombyx fam.*), with wings expanded

157. Lettered Entomology, Order Lepidoptera, Plate II.

Fig. 1. *Phalæna Saturnus* (*Bombyx*)

156. Lettered Entomology, Order Lepidoptera, Plate I.

Fig. 2. *Phalæna Laocoon* (*Bombyx*)
3. *Phalæna Luna* (*Bombyx*)
4. *Phalæna Pavonia* (*Bombyx*)
5. *Phalæna Tau* (*Bombyx*)

PLATE

157. Lettered Entomology, Order Lepidoptera, Plate II.

Fig. 2. *Phalæna Quercifolia* (*Bombyx*), with wings reverſed
3. *Phalæna potatoria* (*Bombyx*)
4. *Phalæna verſicolora* (*Bombyx*)
5. *Phalæna vinula* (*Bombyx*)
6. *Phalæna Hebe* (*Bombyx*), with wings deflected

Order Neuroptera.

Genus Libellula.

158. Lettered Entomology, Order Neuroptera, Plate I.

Fig. 1. *Libellula indica*
2. *Libellula grandis*, (*Æſhna* genus, Fabr.)
3. *Libellula clavata*, (*Æſhna*, Fabr.)
4. *Libellula linearis*, (*Agrion* genus, Fabr.)
5. *Libellula virgo*, (*Agrion*, Fabr.)
6. *Libellula puella*, (*Agrion*, Fabr.)

Genus Ephemera.

Fig. 7. *Ephemera vulgata*

Genus Phryganea.

Fig. 8. *Phryganea varia*

Genus Hemerobius.

159. Lettered Entomology, Order Neuroptera, Plate II.

Fig. 1. *Hemerobius chryops*

Genus Myrmeleon.

Fig. 2. *Myrmeleon Libelluloides*
3. *Myrmeleon Americanus*, (*Aſcalaphus Americanus*, Fabr.)
4. *Myrmeleon barbarus*, (*Aſcalaphus barbarus*, Fabr.)

Genus Panorpa.

Fig. 5. *Panorpa communis*
6. *Panorpa coa*

Genus Raphidia.

Fig. 7. *Raphidia ophiopſis*

Order Hymenoptera.

Genus Cynips.

160. Lettered Entomology, Order Hymenoptera Plate XI.

Fig. 1. *Cynips quercus folii*

Genus Tenthredo.

Fig. 2. *Tenthredo bimaculata*
3. *Tenthredo femorata*
4. *Tenthredo falcicornis*

Genus Sirex.

Fig. 5. *Sirex gigas*
6. *Sirex juvencus*

NATURAL HISTORY.

Plate

Genus Sphex.

160. Fig. 7. *Sphex lobata*

161. Lettered Entomology, Order Hymenoptera, Plate III.
Fig. 1. *Sphex ſabuloſa*, (*Ammophila*, Kirby)

Genus Ichneumon.

160. Lettered Entomology, Order Hymenoptera, Plate XI.
Fig. 8. *Ichneumon flavicornis*
9. *Ichneumon perſuaſorius*

Genus Scolia.

161. Lettered Entomology, Order Hymenoptera, Plate III.
Fig. 2. *Scolia flavifrons*

Genus Thynnus.

Fig. 3. *Thynnus emarginatus*

Genus Leucopsis.

Fig. 4. *Leucopſis dorſigera*

Genus Tiphia.

Fig. 5. *Tiphia nudata*
6. *Tiphia villoſa*

Genus Chalcis.

Fig. 7. *Chalcis ſiſpes*

Genus Chrysis.

Fig. 8. *Chryſis ſplendida*
9. *Chryſis amethyſtina*
10. *Chryſis faſciata*
11. *Chryſis ignita*

Genus Vespa.

162. Lettered Entomology, Order Hymenoptera, Plate XIII.
Fig. 1. *Veſpa cincta*
2. *Veſpa teſtacea*
3. *Veſpa arcuata*
4. *Veſpa faſciata*

Genus Apis.

Fig. 5. *Apis feſtiva*
6. *Apis violacea*
7. *Apis æſtuans*

Genus Formica.

Fig. 8. *Formica gigas*
9. *Formica bengalenſis*
10. *Formica bihamata*

Genus Mutilla.

Fig. 11. *Mutilla Americana*, (female)
12. *Mutilla bengalenſis*
13. *Mutilla rubra*

Plate

Order Diptera.

Genus Oestrus.

163. Lettered Entomology, Order Diptera, Plate II.
Fig. 1, 2. *Oeſtrus equi*
3. *Oeſtrus bovis*
4. *Oeſtrus ovis*

Genus Tipula.

Fig. 5. *Tipula rivoſa*
6. *Tipula hortorum*
7. *Tipula variegata*
8. *Tipula crocata*
9. *Tipula punctata*
10. *Tipula atrata*
11. *Tipula plumoſa*
12. *Tipula pectinicornis*

Genus Diopsis.

Fig. 13. *Diopſis ichneumonea*

Genus Musca.

164. Lettered Entomology, Order Diptera, Plate IV.
Fig. 1. *Muſca groſſa*, hair of the antennæ naked
2. *Muſca hottentotta*
3. *Muſca bifaſciata*
4. *Muſca cupraria*
5. *Muſca vibrans*
6. *Muſca ſcybalaria*
7. *Muſca ſolſtitialis*
8. *Muſca onopordinis*
9. *Muſca ſtellata*
10. *Muſca faſciata*
11. *Muſca Chamæleon*, (*Stratiomys Chamæleon*, Fabr.)
12. *Muſca morio*
13. *Muſca clavicornis*, (*Ceria clavicornis*, Fabr.)
14. *Muſca ſcolopacea*, (*Rhagio ſcolopacea*, Fabr.)
15. *Muſca triangularia*
16. *Muſca analis*, (*Bibio analis*, Fabr.)
17. *Muſca tenax*, (*Syrphus tenax*, Fabr.)
18. *Muſca pendula*, (*Syrphus*, Fabr.)
19. *Muſca florea*, (*Syrphus*, Fabr.)
20. *Muſca lurida*
21. *Muſca veſpiformis*
22. *Muſca noctiluca*
23. *Muſca bilineata*
24. *Muſca uliginoſa*, (*Nemotelus uliginoſus*, Fabr.)

Genus Tabanus.

165. Lettered Entomology, Diptera, Plate IV.
Fig. 1. *Tabanus bovinus*
2. *Tabanus tropicus*
3. *Tabanus bromius*
4. *Tabanus pluvialis*
5. *Tabanus ruſticus*
6. *Tabanus cæcutiens*

Genus Culex.

Fig. 7. 7.* *Culex pipiens*, natural ſize and magnified

PLATE

GENUS EMPIS.

165. Fig. 8. *Empis forcipata*
9. *Empis borealis*

GENUS STOMOXYS.

Fig. 10. *Stomoxys roſtrata*
11. *Stomoxys irritans*
12. *Stomoxys calcitrans*
13. *Stomoxys pungens*

GENUS CONOPS.

166. Lettered ENTOMOLOGY, Order Diptera, Plate I.
Fig. 1. *Conops ferruginea*
2. *Conops aculeata*
3. *Conops petiolata*

GENUS ASILUS.

Fig. 4. *Aſilus teutonus*
5. *Aſilus gibboſus*
6. *Aſilus crabroniformis*

GENUS BOMBYLIUS.

Fig. 7. *Bombylius major*
8. *Bombylius medius*

GENUS HIPPOBOSCA.

Fig. 9. *Hippoboſca equina*
10. *Hippoboſca ovina*
11. *Hippoboſca avicularia*
12. *Hippoboſca hirundinis*

APTERA.

GENUS TERMES.

167. Lettered Plate V. Aptera
Termes bellicoſus, Great African White Ant
Fig. 1. Labourers
2. Soldiers
3. King
4. 4. Males, which are furniſhed with wings
5. 5. Pregnant Females, or Queens
(All the above are repreſented of their natural ſize)
6. *Termes bellicoſus*, their Neſts in the diſtance

GENUS LEPISMA.

Fig. 7. *Lepiſma Polypoda*
8. *Lepiſma punctata*
9. *Lepiſma obſcura*
10. *Lepiſma lineatus*

GENUS PODURA.

Fig 11. *Podura Villoſa*, Upper and Under Surface

ORDER APTERA.

GENUS PEDICULUS.

168. Lettered ENTOMOLOGY, Order Aptera, Plate IV.
Fig. 1. *Pediculus humanus*, Human Louſe
2. *Pediculus Aſini*, Aſs's Louſe

PLATE

168. Fig. 3. *Pediculus cygni*, Swan's Louſe
4. *Pediculus corvi*, Crow's Louſe
5. *Pediculus picæ*, Magpie's Louſe
6. *Pediculus gruis*, Crane's Louſe
7. *Pediculus Columbæ*, Pigeon's Louſe
8. *Pediculus pluvialis*, Plover's Louſe
9. *Pediculus apis*, Bee's Louſe

GENUS PULEX.

Fig. 10. 10.* *Pulex iritans*, Common Flea, natural ſize, and magnified

GENUS ACARUS.

Fig. 11. *Acarus reduvius*, Tick

GENUS TROMBIDIUM.

Fig. 12. *Trombidium aquaticum*
13. *Trombidium abſtergens*

GENUS HYDRACHNA.

Fig. 14. *Hydrachna geographica*
15. *Hydrachna abſtergens*

GENUS NYMPHION.

169. Lettered ENTOMOLOGY, Order Aptera, Plate I.
Fig. 1. *Phalangium Groſſipes*, Linn. (*Nymphion*, Fabr.)

GENUS PYCNOGONUM.

Fig. 2. *Phalangium balænarum*, Linn. (*Pycnogonum*, Fabr.)
Fig. 3. *Phalangium hirſutum*, Linn. (*Pycnogonum*, Fabr.)

GENUS PHALANGIUM.

Fig. 4, 4. *Phalangium Cancroides*, (*Tarantula*, Linn. Trans. ?) natural ſize, and magnified
5. *Phalangium cornutum*, (*Scorpio cimicoides*, Fabr.)

GENUS TARANTULA.

Fig. 6, 6. *Tarantula reniforme*, male and female
7. *Tarantula caudata*

GENUS ARANEA.

170. Lettered ENTOMOLOGY, Order Aptera, Plate II.
Fig. 1. *Aranea extenſa*
2. *Aranea globoſa*
3. *Aranea bimaculata*
5. *Aranea faſciata*
6. *Aranea angulata*
7. *Aranea Tarantula*
8. *Aranea avicularia*
9. *Aranea maculata*

The Poſition of the Eyes in different Tribes of Spiders.

No. 1. in Aranea extenſa. No. 2. Aranea globoſa. No. 3. Aranea horrida. No. 4. Aranea argentata. No. 5. Aranea faſciata. No. 6. Aranea angulata. No. 7. Aranea Tarantula. No. 8. Aranea avicularia. No. 9. Aranea maculata

PLATE

GENUS SCORPIO.

171. Lettered ENTOMOLOGY, Order Aptera, Plate III.
    Fig. 1, 2. *Scorpio afer*, Great Scorpion. Upper Surface, No. 1. Under Surface, No. 2.
    3. *Scorpio linearis*, Linear Scorpion. Upper Surface
    4. *Scorpio linearis*, Linear Scorpion. Under Surface
    5. *Scorpio europæus*, European Scorpion

CRUSTACEA.

GENUS CANCER.

172. Lettered CRUSTACEA, Order Cancer, Plate I.
    Fig. 1. *Cancer ruricola*
    2. *Cancer faſcicularis*
    3. *Cancer Facchino* (*Dorippe Facchino*)
    4. *Cancer Dormio* (*Dormio artificioſa*)

173. Lettered CRUSTACEA, Order Cancer, Plate II.
    Fig. 5. *Cancer meneſtho* (*Portunus meneſtho*)
    6. *Cancer forceps* (*Portunus forceps*)
    7. *Cancer mammillaris* (*Orithyia mammillaris*)
    8. *Cancer lunaris* (*Matuta lunaris*)

174. Lettered CRUSTACEA, Genus Cancer, Plate III., IV., V.
    Fig. 1. *Cancer depreſſus*
    2. *Cancer perlatus*
    3. *Cancer perſonatus*

GENUS PAGURUS.

175. Lettered CRUSTACEA, Genus Cancer, Plate VII. Entomology
    Fig. 3. *Cancer ſtrigatus* (*Pagurus ſtrigatus*)
    5. *Cancer dubius* (*Pagurus dubius*)

176. Lettered CRUSTACEA, Order Cancer, Plate VI.
    Fig. 1. *Cancer arroſor* (*Pagurus arroſor*)
    2. *Cancer canaliculatus* (*Pagurus canaliculatus*)
    3. *Cancer excavatus* (*Pagurus excavatus*)

GENUS ASTACUS.

Fig. 4. *Cancer variegatus* (*Aſtacus variegatus*)

175. Lettered CRUSTACEA, Genus Cancer, Plate VII., Entomology
    Fig. 7. *Cancer fluviatilis* (*Aſtacus fluviatilis*)
    4. *Cancer narval* (*Aſtacus narval*)

GENUS SQUILLA.

Fig. 2. *Cancer digitalis* (*Squilla digitalis*)

176. Lettered CRUSTACEA, Order Cancer, Plate VI.
    Fig. 4. *Cancer ampulla* (*Gammarus ampulla*)
    6. *Cancer linearis* (*Gammarus linearis*)
    5. *Cancer mantis* (*Gammarellus mantis*)
    6. *Cancer ſpinoſus* (*Gammarellus ſpinoſus*)
    7. *Cancer paludoſus* (*Gammarellus paludoſus*,) natural ſize, and magnified

PLATE

176. Fig. 8. *Cancer linearis* (*Gammarellus linearis*)
    9. *Cancer pulex* (*Gammarellus pulex*)

GENUS SCYLLARUS.

175. Lettered CRUSTACEA, Genus Cancer, Plate VII. Entomology
    Fig. 7. *Cancer Arctus* (*Scyllarus Arctus*)

GENUS MONOCULUS.

177. Lettered ENTOMOLOGY, Order Aptera, Plate X.
    Fig. 1. *Monoculus quadricornis*
    2, 2. *Monoculus polyphemus*, Upper Surface and Under Surface

GENUS ONISCUS.

Fig. 3, 3. *Oniſcus pſora*, Upper Surface and Under Surface
    4. *Oniſcus craſſipes*
    5. *Oniſcus Oeſtrum*
    6. *Oniſcus Oceanicus*
    7. *Oniſcus aquaticus*
    8. *Oniſcus armadillo*

GENUS SCOLOPENDRA.

Fig. 9. *Scolopendra morſitans*

GENUS JULUS.

Fig. 10. *Julus terreſtris*

CLASS VI. *VERMES.*

ORDER INTESTINA.

GENUS ASCARIS.

178. Lettered VERMES, Order Inteſtina, Plate I., II., III.
    Fig. 1. *Aſcaris vermicularis*

GENUS ECHINORYNCHUS.

Fig. 2. *Echinorynchus lucii*
    Head magnified *
    2. *Echinorynchus candidus*
    Head magnified *
    3. *Echinorynchus coryphænæ*
    4. *Echinorynchus lineolatus*
    Head magnified *
    5. *Echinorynchus attenuatus*, natural ſize, and magnified
    6. *Echinorynchus attenuatus*, natural ſize, adhering to the ſkin of a fiſh
    7. *Echinorynchus alba*
    8. *Echinorynchus brunnea*

GENUS LINGULATA.

9. *Lingulata abrupta*, Upper and Under Surface

GENUS FASCIOLA.

Fig. 2. *Faſciola binodis*, the minute Figures which accompany the larger ones denote the natural Size
    3. *Faſciola Æglefini*, Ditto

PLATE

178. Fig. 4. *Faſciola Scorpii*, the minute Figures which accompany the larger ones denote the natural Size
5. *Faſciola lucioperca*, Ditto
6. *Faſciola bramæ*, Ditto

GENUS TÆNIA.

179. Lettered VERMES, Order Inteſtina, Plate V.

Fig. 1. *Tænia ſolium*, grouped into folds in order to include the whole animal, which is of extreme length, within the limits of the Plate. Found in the human body
2. The head, natural ſize, of a ſpecimen twenty feet in length
3. Head magnified
7. Two joints retaining the external ſkin, and ſhewing the alternate diſpoſition of the oſcula along the edges of the joints as they uſually appear
8. Two joints ſhewing their lateral diſpoſition when they occur on both the margins of each joint, which ſometimes happens
4. A portion of the joints of the natural ſize diveſted of the outer ſkin, and diſcloſing more fully the alternate lateral oſcula, together with the alimentary canals, as they communicate from one joint to the other
5. The middle ſyſtem of veſſels illuſtrated in another portion of four joints
6. Another portion deprived of the outer coating, and diſplaying all the canals in their relative ſituation. Vide *Carliſle in Linn. Tranſ. v.* 2.
Tænia lata. Carliſle in Linn. Tranſ. 2.—*Tænia oſculis lateralibus ſolitariis*, Linn. Amoen. Acad. 2.?
10. A portion of ſeveral joints exhibiting the oſcula, which are diſpoſed in a ſingle ſeries down the center of the joints
11. Another portion diveſted of the outer coating, and ſhewing the ſtelliform veſſels down the center within, and alſo the lateral alimentary canals. Found in the inteſtines of mankind
9. *Tænia canina*, head, and a portion of the body, conſiſting of the five firſt joints. Found in the dog.

GENUS GORDIUS.

180. Lettered VERMES, Genus Gordius, Plate IV.

Fig. 1. *Gordius aquaticus*

GENUS LUMBRICUS.

Fig. 2, 3. *Lumbricus terreſtris*

GENUS HIRUDO.

Fig. 4. *Hirudo muricata*
5. *Hirudo geometra*. The ſmaller figures at No. 1. denote the eggs and natural ſize of the animal: No. 4. magnified ſhews the animal affixed by the broad pedal-like tail with the body extended horizontally: No. 3. the ſame contracting into an arched form: No 2. when moſt contracted, arched, and elevated, preparatory to walking, which it does ſomewhat in the manner of the larvæ of the Geometra tribe of moths, or as uſually deſcribed as if meaſuring the ground like a pair of compaſſes.

GENUS PLANARIA.

Fig. 6. *Planaria crenata*. No. 1, 2, 3, 4, 5, ſhews various poſitions and contractions of this animal

GENUS SIPHUNCULUS.

Fig. 7. *Siphunculus nudus*

ORDER MOLLUSCA

GENUS LIMAX.

Fig. 8. *Limax ater*
9. *Limax maximus*

GENUS ONCHIDIUM.

181. Lettered VERMES, Order Molluſca, Plate VII.

Fig. 1, 1. *Onchidium typhæ*

GENUS LAPLISIA.

Fig. 2. *Lapliſia depilans*

GENUS DORIS.

Fig. 3. *Doris argo*
4. *Doris radiata*
5. *Doris papilloſa*

GENUS APHRODITA.

Fig. 6. *Aphrodita aculeata*. No. 6. † ſmall, upper ſurface, right-hand figure
No. 6. † ditto, under ſurface, left-hand figure
No. 6. large ſize
7. *Aphrodita ſquamata*

GENUS NAIS.

182. Lettered VERMES, Genus Nais, Plate V.

Fig. 1, 2, 3, 4. *Nais ſerpentina*, highly magnified, the natural ſize being three quarters of an inch in length, or not exceeding that of the cluſter ſhewn on the duckweed, fig. 5.
5, 6, 7, 8, 9, 10, 11. *Nais vermicularis*, highly magnified, natural ſize one-tenth of an inch
12, 13. *Nais proboſcidea*, highly magnified, natural ſize three-fourths of an inch

GENUS ACTINIA.

183. Lettered VERMES, Genus Actinia, Plate II.

Fig. 1. *Actinia dianthus*
2. *Actinia cereus*

GENUS HOLOTHURIA.

184. Lettered ZOOLOGY, Claſs Vermes, Plate I. of Molluſca

Fig. 1. *Holothuria elegans*
2. *Holothuria pentactes*

PLATE

184. Fig. 3, 4. *Holothuria fuſus*
5. *Holothuria pencillus*
6, 7, 8. *Holothuria ſquamata.* No. 1. upper ſurface : No. 2. lower ſurface, in a quieſcent ſtate : No. 3. with the tentacula expanded
9, 10. *Holothuria inhærens,* No. 1. with tentacula expanded : No. 2. tentacula retracted

Genus Sepia.

185. Lettered Vermes, Order Molluſca, Plate VI.

Fig. 1. *Sepia octopus*
2, 3. *Sepia media.* No. 1. upper ſurface : No. 2. under ſurface

Genus Medusa.

186. Lettered Vermes, Order Molluſca, Plate IV.

Fig. 1, 2. *Meduſa pulmo,* No. 1. † upper ſurface, No. 1. under ſurface
3. *Meduſa campanula*

Genus Asterias.

187. Lettered Vermeology, Vermes, Molluſca, Plate III. of Aſterias.

Fig. 1. *Aſterias Caput meduſæ*
2. *Aſterias pectinata*
3. *Aſterias ſphærulata*
4. *Aſterias ophiura, a* upper ſurface, *b* under ſurface

Order Testacea.

Genus Chiton.

188. Lettered Conchology, Genus Chiton, Plate IX.

Fig. 1, 2. *Chiton arundo*
Chiton aculeatus, No. 1. upper ſurface, No. 2. inſide
3. *Chiton ſquamoſus*
4. *Chiton olivaceus,* No. 1. outſide, No. 2. inſide, ſmall

Genus Lepas.

189. Lettered Conchology, Genus Lepas, Plate XIII.

Fig. 1. *Lepas anatifera*
2. *Lepas anſerifera*

Genus Pholas.

190. Lettered Conchology, Genus Pholas, Plate VIII.

Fig. 1, 2, 3. *Pholas dactylus,* No. 1. ſide view ; No. 2. the two lateral valves united at the hinge ; No. 3. inſide of one of the lateral valves
4. *Pholas coſtata*
5, 6, 7. *Pholas ſtriata,* No. 1., the loweſt figure, exhibits a ſide view of this ſhell, as compoſed of ſeveral valves ; No. 2., the uppermoſt figure, ſhews the teſtaceous valves at the top or hinge ſide of the ſhell ; No. 3. the manner in which this ſpecies of Pholas buries itſelf into ſhips' bottoms or other timber

PLATE

Genus Mya.

193. Lettered Conchology, Genus Mya, Plate XI. B.

Fig. 1. *Mya truncata*

Genus Solen.

191. Lettered Conchology, Genus Solen, Plate (no number)

Fig. 1. *Solen grandis,* the loweſt figure in the plate
2, 3. *Solen radiatus,* No. 1. outſide, No. 2. inſide, ſmaller ſhell
4. *Solen ſtrigilatus*
5. *Solen vagina,* No. 1. outſide, No. 2. of a younger ſhell, ſhewing the teeth of the hinge
6. *Solen enſis*

Genus Tellina.

192. Lettered Conchology, Genus Tellina, Plate V.

Fig. 1, 1. *Tellina radiata,* No. 1. outſide, No. 2. inſide (*Donov. Brit. Shells*)
2, 2. *Tellina ſqualida,* No. 1. outſide, No. 2. inſide (*Donov. Brit. Shells*)
3, 3. *Tellina fabula,* one valve of this Shell is marked externally with very fine oblique ſubflexuous ſtriæ, the other ſmooth or deſtitute of ſtriæ (*Donov. Brit. Shells*)
4. *Tellina bimaculata,* inſide and outſide (*Donov. Brit. Shells*)

Genus Cardium.

Fig. 5. *Cardium aculeatum*
6. *Cardium lævigatum*
7. *Cardium edule*
8. *Cardium medium*

Genus Mactra.

193. Lettered Conchology, Genus Mya, &c. Plate XI. B.

Fig. 2. *Mactra radiata*

Genus Donax.

Fig. 3. *Donax trunculus*

Genus Venus.

Fig. 4. *Venus iſlandica,* No. 1. outſide, No. 2. inſide

Genus Chama.

Fig. 5. *Chama Cor*

Genus Spondylus.

194. Lettered Conchology, Genus Spondylus, Plate XVII.

Fig. 1, 2, 3. *Spondylus gædaropus.* Upper figure on the left hand the uſual ſize ; upper figure on the right ſide ſhews the inſide of both valves ; the lower figure a ſuperb ſpecimen, in point of magnitude, and perfection of the elongated ſpines. *Cabinet of Alexander M‘Leay, Eſq.*

PLATE

GENUS ARCA.

195. Lettered CONCHOLOGY, Genus Arca, Plate VIII.

Fig. 1, 2. *Arca tortuoſa*, No. 1. outſide, lower figure. No. 2. inſide
3, 4. *Arca ſenilis*, No. 1. the outſide, lower figure, No. 2. inſide, the upper figure
5, 6. *Arca noduloſa*, No. 1. outſide, lower figure, No. 2. inſide
7. *Arca nebuloſa*

GENUS OSTREA.

Pecten, or *Scallops*.

196. Lettered CONCHOLOGY, Genus Oſtrea, Plate XII.

Fig. 1. *Oſtrea Jacobæa*
2. *Oſtrea ſubrufa*
3. *Oſtrea nodoſa*
4. *Oſtrea lineata*
5. *Oſtrea obſcura*
6. *Oſtrea varia*, various ſizes
7. *Oſtrea obſoleta*, nat. ſize (*Donov. Brit. Shells*)

GENUS MYTILUS.

193. Lettered CONCHOLOGY, Genus Mya, &c. Plate XI. B.

Fig. 6, 6. *Mytilus edulis*, var. *purpureus*, (*Donov. Brit. Shells*,) inſide and outſide

GENUS PINNA.

197. Lettered CONCHOLOGY, Genus Pinna, Plate VII.

Fig. 1. *Pinna nigra*, inſide and outſide, ſmall ſize
2 *Pinna muricata*, ſhewing the byſſus or beard
3. *Pinna rubra*, ditto
4. *Pinna fragilis*

UNIVALVES.

GENUS ARGONAUTA.

198. Lettered CONCHOLOGY, Order Univalve, Plate IV.

Fig. 1. *Argonauta argo*, Paperſailor Shell
2. *Argonauta vitreus*, called the Glaſſy Nautilus, a ſhell of unuſual rarity

GENUS NAUTILUS.

Fig. 3. *Nautilus Pompilius*, Great Nautilus.
4. No. 1. the largeſt of the ordinary ſize; No. 2. young; No. 3. ſection of the young ſhell, ſhewing the chambers and the ſiphunculus

GENUS CONUS.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 1. *Conus Ammiralis*, var. *Banded Cedo nulli cone*
2. *Conus Ammiralis*, var. *Curaçao Cedo nulli cone*
3. *Conus Ammiralis*, var. *Southern Cedo nulli cone*
4. *Conus Ammiralis*, var. *Seba's Cedo nulli cone*
5. *Conus Ammiralis*, var. *Marbled Cedo nulli cone*

* All theſe varieties are eſteemed valuable: ſome few bear an exceſſive price; that known by the name of Lyonet's Shell was reputed to be worth one hundred pounds ſterling, or as it has been otherwiſe ſtated a much higher ſum. The figure in the upper part of the plate repreſents the moſt uncommon kind of Cedo Nulli

GENUS CYPRÆA.

200. Lettered CONCHOLOGY, Genus Cypræa, Plate XIV.

Fig. 1, 1. *Cypræa tigris*, upper and under ſurface
2. *Cypræa aurora*, Aurora or Orange Cowry of the South Seas
3. *Cypræa argus*
4. *Cypræa Arabica*
5. *Cypræa annulata*, upper and under ſurface
6. *Cypræa faſciata*
7. *Cypræa maculata*
8. *Cypræa veſpa*
9, 9. *Cypræa monetas*, upper and under ſurface
10, 10. *Cypræa pediculus*

GENUS BULLA.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 6, 6. *Bulla lignaria*, No. 1. the outſide. No. 2., the lower figure, ſhews the mouth

GENUS VOLUTA.

201. Lettered CONCHOLOGY, Genus Voluta, Plate I.

Fig. 1. *Voluta tornatilis*
2. *Voluta porphyria*
3. *Voluta oliva*
4. *Voluta pallida*
5, 5. *Voluta papalis*, No. 1. the back, No. 2. ſhews the mouth
6. *Voluta epiſcopalis*
7. *Voluta Æthiopica*
8. *Voluta indica*

GENUS BUCCINUM.

202. Lettered CONCHOLOGY, Order Voluta, &c. Plate II.

Fig. 1. *Buccinum harpa*
2. *Buccinum patulum*
3. *Buccinum maculatum*
4. *Buccinum ſtrigillatum*

GENUS STROMBUS.

Fig. 5. *Strombus chiagra*
6. *Strombus pugilis*
7. *Strombus lentiginoſus*
8. *Strombus urceus*

GENUS MUREX.

203. Lettered CONCHOLOGY, Order Univalve, Plate III.

Fig. 1. *Murex hauſtellum*
2. *Murex longicauda*
3. *Murex muricatus*
4. *Murex tulipa*

GENUS TROCHUS.

Fig. 5. *Trochus niloticus*
6, 6. *Trochus perſpectivus*. No. 1., right-hand figure, ſhews the convex ſurface; No. 2. left-hand, the concave ſurface or under ſide
7. *Trochus pictus*
8. *Trochus turritus*

PLATE

GENUS TURBO.

199. Lettered CONCHOLOGY, Genus Bulla, &c. Plate XI. A.

Fig. 7, 7. *Turbo trilineatus*, (*Donov. Brit. Shells*) ſmalleſt figure ſhews the natural ſize

8, 8. *Turbo fuſiformis*, (*Donov. Brit. Shells*) ditto

GENUS HELIX.

Fig. 9, 9. *Helix hortenſis*

GENUS NERITA.

Fig. 10, 10, 10. *Nerita carena*, the figure on the left hand exhibits the carinated umbilicus

GENUS HALIOTIS.

204. Lettered CONCHOLOGY, Genus Haliotis, Plate VI.

Fig. 1, 1. *Haliotis Aſinum.* The lower figure ſhews the outſide or upper ſurface of the ſhell, as the animal moves; the upper figure exhibits the hollow of the ſhell, when deprived of the animal

2. *Haliotis tuberculata*

3, 4. *Haliotis ſpadicea*, outſide and inſide

5. *Haliotis lævigata*

GENUS PATELLA.

* *Shell valved within.*

205. Lettered CONCHOLOGY, Genus Patella, Plate (blank)

Fig. 1, 1. *Patella equeſtris.* The upper figure ſhews the outſide of the ſhell, which is rugoſe; the lower one the inſide, which is ſmooth, and furniſhed with an internal lip or valve in the hollow center

2, 2. *Patella fornicata.* The figure on the left hand exhibits the outſide; that on the right hand the inſide, with the broad inner lip or valve

3, 3. *Patella ſtriata.* No. 1., the lower figure, ſhews the ſtriated outer ſurface; No. 2., the upper figure, the concave hollow beneath, with the inner lip or valve

* * *Shell at the Apex perforated.*

4, 4. *Patella fiſſura*

5. *Patella fiſſurella*

6. *Patella græca*

7. *Patella raaiata*

8. *Patella lobata*

9. *Patella nimboſa.* The upper figure ſhews the outſide ſurface; the lower one the hollow cavity, or inſide

*** *Apex of the Shell entire.*

206. Lettered CONCHOLOGY, Genus Patella, Plate XVI.

Fig. 1. *Patella granatina.* The upper figure ſhews the outſide; the lower one the concave, or inſide

PLATE

206. Fig. 2, 2, *Patella Auricula*, two varieties. The figure in the middle of the left-hand margin ſhews the outer ſurface; the others the concavity

3. *Patella vulgata*, var.

4. *Patella ſtrigata*

5. *Patella ſagittata*

6. *Patella virgata*

7. *Patella anatina*

GENUS DENTALIUM.

207. Lettered CONCHOLOGY, Genus Dentalium, Plat (blank)

Fig. 1. *Dentalium elephantium*

GENUS SERPULA.

Fig. 2. *Serpula triquetra*, various examples adhering to a Pecten, (*Oſtrea*)

3. *Serpula triquetra*, ditto, adhering to the valve of a Mytilus

3. *Serpula vermicularis*, intermixed with S. triquetra

4. *Serpula vermicularis*, detached

5. *Serpula filiformis*

6. *Serpula reticulata*

7. *Serpula papilloſa*

8. *Serpula tortuoſa*

9. *Serpula anguina*

10. *Serpula penis*

GENUS TEREDO.

208. Lettered CONCHOLOGY, Genus Teredo, Plate X.

Fig. 1. *Teredo navalis*, exhibiting the manner in which the timbers of ſhips' bottoms are ſometimes perforated by this deſtructive creature

2. *Teredo navalis*, a ſingle ſhell detached from the timber, is ſhewn at the bottom of the Plate

GENUS SABELLA.

Fig. 3. *Sabella belgica*

4. *Sabella alveolata*

ELEMENTAYY PLATES OF CONCHOLOGY.

UNIVALVES.

209. Lettered CONCHOLOGY, Elementary Plate I.

Fig. 1, 1, 1. The part denominated the Baſe of an univalve ſhell, illuſtrated by examples ſelected from different Genera, as in *Dentalium*, *Turbo*

2, 2, 2. the Apex, as in *Dentalium* and *Patella*

3, 3. the Front, as in *Turbo*, *Buccinum*

4, 4. the Back, as in *Turbo*, *Helix*

5, 5. the Sides, as in *Turbo*, *Buccinum*

6, 6, 6. the Body, as in *Helix*, *Murex*

7. the Belly, as in *Nerita*

8. the Whorl, as in *Turbo*

9, 9, 9. the Spire, as in *Turbo*, *Murex*

10, 10. the Sutures of the Spire or Whorl, as in *Murex*, *Turbo*

Plate

210. Lettered Conchology, Elementary Plate II.

Fig. 11. The part denominated the Pillar or Columella, as in *Murex*
12, 12, 12. the Aperture, as in *Murex*, *Helix*, *Nerita*
13, 13, 13. the Lip, as in *Voluta*
14. the Beak, as in *Murex*
15. the Canal, as in *Murex*
16, 16. the Umbilicus, as in *Trochus*, *Nerita*

211. Lettered Conchology, Elementary Plate III.

Fig. 17, 17. The part denominated the Operculum, as in *Trochus*, *Murex*
18. the Involuted Spire, as in *Nautilus*
19, 19, 19. the Chambers, as in *Nautilus*, the Chambered Patella, and the Ammonite, (found foſſil)
20. the Siphunculus, as in *Nautilus*
21. the Epidermis, as in *Turbo*

Bivalves.

Fig. 22. The part denominated the Baſe of a Bivalve Shell, as in *Venus*
23. the Summit, as in *Patella*
24, 24. the Beak, as in *Chama*, (Cor.) *Mytilus*
25. the Sides, as in *Venus*

212. Lettered Conchology, Elementary Plate IV.

Fig. 26. The part denominated the Margin, or Limb, as in *Tellina*, (cornea)
27, 27. the Diſk, as in *Venus*, *Tellina*
29, 29. the Poſterior Slope, as in *Mactra*, *Tellina*, *Venus*
30. the Lunule, as in *Venus*, *Tellina*, (a. & b.)
31, 31. the Cartilage, or Hinge, as in *Tellina*, *Venus*
32, 32. the Ears, as in *Pecten*, (*Oſtrea*, Linn.)
33, 33. the Ligament Perforation, (Aperture in the upper valve of the Shell through which the ligament of the animal paſſes, by which it adheres to extraneous ſubſtances, as in *Anomia*)

213. Lettered Conchology, Elementary Plate V.

Fig. 34, 34. The Length and Breadth of a Bivalve Shell, as in *Solen*, *Mytilus*
35. the Inſide of a Bivalve Shell, as in *Mytilus*, (*rugoſus*)
36. the Hinge, Suture, and Proceſs. Denticlated ſuture, as in *Arca*. Spoon-ſhaped proceſs, as in *Mya*, (*Prætenius*, *Donov. Brit. Shells*)

Plate

213. Fig. 37. The part denominated the Cicatrix, Impreſſion of the Spaces to which the animal-inhabitant of the Shell adheres
38, 38. the Byſſus, or Beard, as in *Mytilus*

Multivalves.

Fig. 39, 39. The part denominated the Baſe of a Multivalve Shell, as in *Lepas*
40, 40. the Ligament, as in *Lepas*, (*anatifera*)
41, 41. the Operculum, as in *Lepas*, (*Balanus vulgaris*)

⁂ *Vide article* Conchology, *which theſe Elementary Plates are intended to illuſtrate.*

Order 4. Zoophytes.

Genus Tubipora.

214. Lettered Zoophytes, Genus Tubipora, Plate I.

Fig. 1. *Tubipora muſica*

Genus Madrepora.

* *Conſiſting of one Star.*

Fig. 2. *Madrepora fungites*
3. *Madrepora pileus*
4. *Madrepora Agathus*
5. *Madrepora foliaceus*

*** *With numerous united Stars.*

215. Lettered Zoophytes, Plate II.

Fig. 1. *Madrepora labyrinthica*
2. *Madrepora phrygia*
3. *Madrepora gyroſa*
4. *Madrepora areolata*

**** *Aggregated diſtinct Stars and porulous tuberculated prominent Undulations.*

Fig. 5. *Madrepora ananas*

***** *Ramoſe, with diſtinct Stars, and tuberculated porulous Undulations.*

Fig. 6. *Madrepora porites*

Genus Isis.

216. Lettered Zoophytes, Genus Iſis, Plate I.

Fig. 1. *Iſis Hippuris*
2. *Iſis coccinea*

Genus Antipathes.

Fig. 3. *Antipathes ſubpinnata*
4. *Antipathes Myriophylla*

Genus Gorgonia.

217. Lettered Zoophytes, Genus Gorgonia, Plate II.

Fig. 1. *Gorgonia lepadifera*
2. *Gorgonia ceratophyta*
3. *Gorgonia americana*
4. *Gorgonia exſerta*

PLATE

218. Lettered ZOOPHYTES, Genus Gorgonia, Plate I.
Fig. 1. *Gorgonia nobilis*, Red Coral, or Noble Coral
2. Part of the branch of Gorgonia Nobilis magnified, and exhibiting the animals
3. *Gorgonia umbraculum*
4. Portion of a branch magnified
5. *Gorgonia reticulata*
6. Portion of a branch magnified

GENUS ALCYONIUM.

219. Lettered ZOOPHYTES, Genus Alcyonium, Plate III.
Fig. 1. *Alcyonium gorgonoides*

GENUS SPONGIA.

Fig. 2. *Spongia tubuloſa*
3. *Spongia palmata*
4. *Spongia protifera*
5. *Spongia coronata*

GENUS FLUSTRA.

220. Lettered VERMES, Order Zoophytes, Genus Fluſtra, Plate VIII.
Fig. 1. *Fluſtra foliacea*
2. *Fluſtra bombycina*
2.* A portion of a branch magnified to ſhew the cells
3. *Fluſtra carbaſea*
3.* Magnified to ſhew the cells
4. *Fluſtra verticillata*
4.* Magnified to ſhew the cells

GENUS TUBULARIA.

221. Lettered VERMES, Order Zoophytes, Genus Tubularia, Plate I.
Fig. 1. *Tubularia magnifica*, Magnificent Tubularia, or Animal Flower
The figures in this Plate diſplay the animal in its young and full-grown ſtate, and exhibit likewiſe the full expanſion of the tentacula

GENUS CORALLINA.

222. Lettered ZOOPHYTES, Genus Corallina, Plate VI. & VII.
Fig. 1. *Corallina officinalis*
2. One of the branches magnified
3. *Corallina ſquamata*
4. A branch magnified
5. *Corallina incraſſata*
6. *Corallina opuntia*
7. *Corallina corniculata*
8. A branch magnified

GENUS SERTULARIA.

223. Lettered VERMES, Order Zoophytes, Genus Sertularia, Plate VIII.
Fig. 1. *Sertularia fruteſcens*
1.*A branch magnified

PLATE

223. Fig. 2. *Sertularia quadridentata*
2.*A branch magnified
3. *Sertularia pinaſter*
3.*A branch magnified
4. *Sertularia filicula*
4.*A branch magnified

GENUS HYDRA.

224. Lettered VERMES, Order Zoophytes, Genus Hydra, Plate V.
Fig. 1. *Hydra viridis*, Green Polype
2. *Hydra griſea*, Grey Polype
3. *Hydra fuſca*, Brown Polype
4, 5, 6. Cluſters of the different ſpecies, as they live at the roots of aquatic plants immerſed in water
* *Thoſe marked with a ſtar are magnified.*

ORDER V.

INFUSORIA.

GENUS BRACHIONUS.

225. Lettered ANIMALCULES, Claſs Vermes, Plate I.
Fig. 1—6. *Brachionus urceolaris*, in various ſtates of expanſion and retraction
7. *Brachionus ſtriatus*
8. *Brachionus tripus*
9. *Brachionus uncinnatus*
10. *Brachionus quadridentatus*

GENUS VORTICELLA.

Fig. 11. *Vorticella polypina*
12. *Vorticella polypina*, a cluſter magnified
13. *Vorticella anaſtatica*, the group ſhewing the manner in which they aggregate in cluſters; and alſo figures of the ſingle-headed, double-headed, and quadruple-headed, ſeparate
14. *Vorticella pyraria*, a cluſter
15. *Vorticella opercularia*, a group, ſhewing the ſtelliform animal expanded
16. *Vorticella umbellaria*
17. *Vorticella digitalis*
18. *Vorticella nebulifera*

GENUS TRICHODA.

226. Lettered VERMES INFUSORIA, Plate II.
Fig. 1, 1. *Trichoda ſol*, under two appearances
2, 2, 2. *Trichoda cometa*, three appearances
3, 3. *Trichoda bomba*, two appearances
4. *Trichoda trigona*
5. *Trichoda anas*
6. *Trichoda urnula*
7. *Trichoda proteus*

GENUS CERCARIA.

Fig. 8, 8, 8. *Cercaria Lemna*, in the entirely expanded poſition it aſſumes when moving, and two others
9, 9. *Cercaria inquieta*, extended and ſubretracted

PLATE
226. Fig. 10. *Cercaria lupus*
11. *Cercaria podura*

Genus Kolpoda.

Fig. 12. *Kolpoda pyrum*

Genus Paramecium.

Fig. 13. *Paramecium oviferum*
14. *Paramecium chryſolis*
15. *Paramecium marginatus*

Genus Vibrio.

Fig. 16. *Vibrio anguillula*
17. *Vibrio glutinis*, the ſmaller figures denote the natural ſize
18, 18. *Vibrio anſer*, in two poſitions
19. *Vibrio olor*
20. *Vibrio lunula*
21, 21. *Vibrio paxilifer*, variouſly connected

Genus Leucophra.

Fig. 22. *Leucophra cornuta*

Genus Enchelis.

Fig. 23. *Enchelis punctifera*
24, 24. *Enchelis retrograda*, two figures
25. *Enchelis truncus*
26. *Enchelis caudata*

Genus Volvox.

Fig. 27. *Volvox globator*
Obſ. All the Vermes infuſoria are microſcopic objects

Addenda to the Zoology.

227. Lettered Light, Luminous Animals
Luminous Animals, *vide* article Light
Fig. 1. *Nereis noctiluca*, diſcovered by Vianelli, (nat. ſize)
2. The ſame, greatly magnified
3. A luminous inſect, diſcovered by Riville
4. *Cancer fulgens*, diſcovered by Sir Joſeph Banks, (natural ſize)
5. *Limulus noctilucus*, diſcovered by Captain Horſburgh, greatly magnified
6. *Meduſa pullucens*, diſcovered by Sir Joſeph Banks, ſhewn leſs than the natural ſize
7. *Pyroſoma atlanticum*, lately diſcovered by Peron
8. *Meduſa lucida*, of Dr. Macartney, the largeſt he met with
9. *Beroe fulgens*, of Dr. Macartney, the uſual ſize
10. *Meduſa ſcintillans*, of Dr. Macartney, natural ſize
11. The ſame, highly magnified
12. A luminous Animalcule, diſcovered by Mr. Forſter
13. The ſame, highly magnified
14. An enlarged view of the inferior ſurface of the abdomen in the *Lampyris lucida*, after the integuments had been removed

PLATE
227. Fig. 14. *a.a.a.* The three maſſes of luminous ſubſtance, which are applied to the three laſt rings of the abdomen
b.b.b. The arrangement of the cellular or interſtitial ſubſtance on the other abdominal rings, which give the pale colour to the whole belly of the inſect
15. Diſſection of the common Glow-Worm, expoſing the ſacs of luminous matter *in ſitu*, on the laſt ring of the belly. *a.* The ſac on one ſide
16. One of the ſacs of the Glow-Worm taken out and very highly magnified. *a.* The external part of the ſac, compoſed of an interweaving of a ſpiral fibre. *b.* The luminous ſubſtance ſeen at one end
17. *Elater noctilucus*, with a portion of the ſhell of the thorax removed to uncover one of the organs of light, of which there are two, one being ſituated on each ſide, at the poſterior part of the thorax. *a.* The yellow tranſparent ſpot of the thorax. *b.* The oval maſs of luminous ſubſtance ſurrounded by an irradiation of the interſtitial ſubſtance. *c.* The ends of the muſcles which are on the inſide of the thorax
18. The luminous apparatus of the *elater noctilucus*, conſiderably magnified. *a.* The radiated appearance of the interſtitial ſubſtance around the oval maſs of luminous ſubſtance. *b.* The arrangement of that ſubſtance when it paſſes down between the muſcles. *c.* The ends of the muſcles of the back. *d.* The ſhell of the thorax
19. *Elator ignitus*. *a.* The yellow part of the thorax. *b.* The ſmall maſs of luminous ſubſtance, ſeen on removal of the ſhell of the thorax

Obſ. The preceding objects were thoſe appointed by Dr. Macartney for the explanation of his article on Luminous Animals, which will be found placed under the leading article, Light.

In addition to thoſe, we have, ourſelves, conceived the propriety of introducing another figure of the Nereis genus, that of Vianelli being, confeſſedly, very doubtful. This animal is, therefore, not merely introduced by us as a ſpecies highly phoſphoreſcent, under certain circumſtances, in common with moſt others of its tribe, but in order likewiſe to convey a more accurate idea of the Nereis genus, than the figure copied from Vianelli will afford. The ſpecies we have introduced, is the Nereis cærulea of ſome authors, ſanguinea of others; and is, beyond any doubt, a genuine Nereis of the Linnæan Syſtem.

The figure by Vianelli, is contained in a ſmall tract written in the Italian language, entitled "*Nuove ſcoperte intorno le luci notturne dell' acqua marina;*" and which, beſides being moſt evidently depicted from a very mutilated object, is entirely different from that included in the third volume of *Amœnitates Academicæ*, which Linnæus himſelf gave very ſhortly afterwards as the ſame animal: and even this latter, like that of Vianelli, if we miſtake not, muſt have been delineated likewiſe from an imperfect animal. We have, indeed, a ſtrong ſuſpicion, that the animal repreſented by Vianelli, cannot be of the Nereis genus.

In concluſion of this note, it may not be amiſs to add, that no animal has been more indefinitely deſcribed than the Nereis noctiluca. The only ſpecific character aſſigned to it in the laſt edition of *Syſtema Naturæ* cura a Gmelin, is *Corpore vix conſpicuo*, which being applicable to every minor ſpecies, can be no criterion of the individual kind that author had intended; and the ſame vague character occurs again in *Mull. Zool. Prodr.* n. 2623. In the twelfth edition of *Linn. Syſt. Nat.* the body of Nereis noctiluca is deſcribed as conſiſting of twenty-three joints, which is the number repreſented in the Plate inſerted in *Amoen. Acad. t.* 3. but this diſtinction is totally at variance with the ſubject of Vianelli's tract; for in that figure there are no more than about eleven joints in the body, inſtead of the twenty-three which Linnæus has deſcribed.

BOTANY.

Illuſtration of the Twenty-four Linnæan Claſſes, according to the Number of the Stamina.

228. Lettered BOTANY, Plate II.

Fig. 1. Claſs 1. *Monandria*, one ſtamen, as in *Salicornia*, *Callitriche*, &c.

2. 2. *Diandria*, two ſtamens, as in *Veronica*, &c.

3. 3. *Triandria*, three ſtamens, as in *Hordeum*, *Agroſtis*, &c.

4. 4. *Tetrandria*, four ſtamens, as in *Ilex*, &c.

5. 5. *Pentandria*, five ſtamens, as in *Borago*, *Primula*, &c.

6. 6. *Hexandria*, ſix ſtamens, as in *Allium*, *Erioſpermum*, *Ornithogalum*, &c.

7. 7. *Heptandria*, ſeven ſtamens. *Trientalis*, *Diſandra*, *Æſculus*, *Petrocarya*, *Pancovia*, and *Joneſia* are of this claſs

8. 8. *Octandria*, eight ſtamens, as in *Epilobium*, *Œnothera*, &c.

9. 9. *Enneandria*, nine ſtamens, as in *Butomus*

10. 10. *Decandria*, ten ſtamens, as in *Sedum*

11. 11. *Dodecandria*, twelve ſtamens, as in *Sempervivum*; above twelve, and leſs than twenty ſtamens, as in ſome other genera

12. 12. *Icoſandria*, twenty or more ſtamens inſerted in the calyx, as in *Meſpilus*, *Pyrus*, and ſome other fruit-bearing plants, including *Fragaria*, *Ribes*, &c.

229. Lettered BOTANY, Plate III.

Fig. 13. Claſs 13. *Polyandria*, many ſtamens, and inſerted into the receptacle or baſe of the flowers, as *Papaver* (poppy), *Trollius* (great butter-cup), *Ranunculus*, &c.

229. Fig. 14. Claſs 14. *Didynamia*, ſtamens two long, two ſhorter, as in *Lamium*, or dead-nettle, &c.

15. 15. *Tetradynamia*, ſtamens four long and two ſhorter, as in *Cheiranthus*, or ſtock gilly-flower, *Sinapis*, *Braſſica*, &c.

16. 16. *Monadelphia*, ſtamens united by their filaments into a kind of tube, as in *Malva*

17. 17. *Diadelphia*, ſtamens united into two diſtinct parcels or ſets, as in *Piſum*, *Lathyrus*, *Ervum*, &c.

18. 18. *Polyadelphia*, ſtamens united into more than two diſtinct parcels or ſets, as in *Hypericum* (St. John's wort)

19. 19. *Syngeneſia*, anthers united into a cylinder, flowers compound, as in *Leontodon* (dandelion), &c.

20. 20. *Gynandria*, ſtamens united with or growing out of the petals, as in *Orchis* (bee-flower)

21. 21. *Monoecia*, ſtamens and piſtils in ſeparate flowers on the ſame plant, as in Zannichellia, *Chara*, &c.

22. 22. *Dioecia*, male and female flowers on diſtinct plants, as in *Salix*, the willow

23. 23. *Polygamia*, male or female flowers, or both, with hermaphrodite flowers on the ſame or on different plants, as in *Valantia*, *Brabeium*, *Parietaria*, &c.

24. 24. *Cryptogamia*, fructification concealed, or not diſtinctly aſcertained

Illuſtration of the Linnæan Orders of Botany, as eſtabliſhed upon the Number of the Piſtils.

230. Lettered BOTANY, Orders, Plate IV.

Fig. 1. *Monogynia*, one ſtyle or ſtigma (with five ſtamens), as in a moſt extenſive number of plants, among which are *Heliotropium*, *Anchuſa*, *Borago*, &c.

2. *Digynia*, two ſtyles (with ten ſtamens), as in *Chryſoſplenium*, *Metella*, *Scleranthus*

3. *Trigynia*, three ſtyles (with ten ſtamens), as in *Silene*, *Stellaria*, &c.

4. *Tetragynia*, four ſtyles, with four ſtamens, as in *Ruppia*, *Potamogeton*, *Sagina*, &c.; with five ſtamens, as *Parnaſſia*, &c.; with ſix ſtamens, as in *Petiveria*

5. *Pentagynia*, five ſtyles (with ten ſtamens), as in *Oxalis*, *Suriana*, *Lychnis*, &c.

6. *Hexagynia*, ſix ſtyles, as in *Butomus*

7. *Heptagynia*, ſeven ſtyles (with ſeven ſtamens), as in *Septas*

8. *Decagynia*, ten ſtyles (with ten ſtamens), as in *Neurada* and *Phytolacca*

9. *Dodecagynia*, twelve ſtyles (with twelve ſtamens), as in *Sempervivum*

10. *Polygamia*, many ſtyles, as in the 1ſt. 2d. 3d. and 4th. order of Claſs Syngeneſia

11. *Gymnoſpermia*, naked ſeeds, as in *Ajuga*, *Teucrium*, *Satureja*, &c.

PLATE

230. Fig. 12. *Angioſpermia*, ſeeds incloſed in a pericarpium or ſeed-veſſel, as in many genera, *Anterrhinum*, *Cybaria*, &c.

231. Lettered BOTANY, Orders, Plate V.

Fig. 13. *Siliculoſa*, pericarpium a ſilicula, as in *Thalaſpi* (ſhepherd's purſe), *Draba*, &c.

14. *Siliquoſa*, pericarpium a ſiliqua, as in *Raphanus*, *Sinapis*, *Braſſica*, &c.

15. *Polygamia Æqualis*, flowers compound, all the florets hermaphrodite, as in *Leontodon*, *Hieracium*, &c.

16. *Polygamia Superflua*, florets of the diſk hermaphrodite, thoſe of the radius female, as in *Bellis* (garden daiſy), *Tuſſilago*, *Senecio*, &c.

17. *Polygamia Neceſſaria*, flowers or florets of the diſk male, thoſe of the radius female, as in *Calendula*, *Chryſogonum*

18. *Polygamia Fruſtranea*, florets of the diſk hermaphrodite, thoſe of the radius neuter, as in *Centaurea*, *Sclerocarpus*, *Rudbeckia*

19. *Polygamia Segregata*, many partial cups contained in the common calyx, which ſeparate and ſurround the floſcula, as in *Echinops*, *Gundelia*, *Sphæranthus*, &c.

20. *Trioecia*, have the polygamy or parts of fructification on three different plants, as in *Ficus*, and alſo *Ceratonia*

21. *Felices*, fructification dorſiferous (on the back of the leaf), as in *Aſplenium*, *Adianthum*, *Trichomanes*, &c.

22. *Muſci*, anthers without filaments; female flowers diſtinct and without piſtillum: ſeeds a naked corculum without cotyledon or tunic. With or without a calyptra or veil, as in *Bryum*, *Hypnum*, *Buxbaumia*, &c.

Obſ. To the order Muſei, Gmelin and other botaniſts add the following (*Hepaticæ*), comprehending *Marchantia*, as the laſt genus of Muſci after Jungermania. Linnæus had left it with Algæ

23. *Hepaticæ*, herbage frondoſe in general, the fructification originating from what is at the ſame time both ſtem and leaf, as in *Marchantia*, *Jungermania*, &c.

24. *Algæ*, root, ſtem, and leaf, in one, as *Fucus*, *Ulva*, *Lichen*, &c.

25. *Fungi*, muſhrooms, as in *Agaricus*, *Boletus*, &c.

CLASS CRYPTOGAMIA.

Addenda to the Muſci, in Illuſtration of the Fringes of Moſſes.

* *Furniſhed with ſingle Fringes.*

232. Lettered BOTANY, Plate Fringes of Moſſes.

Fig. 1. *Tetraphis.* Fringe of four teeth, as in *Mnium pellucidum*. Theſe are erect, acute, firm, poliſhed, and permanent

2. *Octoblepharum.* Fringe of eight teeth, as in *Bryum albidum*. Capſule without an apophyſis

3. *Splachnum.* Fringe of 16 teeth, dilated at the baſe, approaching each other in pairs. Capſule cylindrical, ſtanding on a fleſhy baſe or apophyſis

PLATE

232. Fig. 4. *Encalypta.* Fringe of 16 linear upright teeth. Veil ample and bell-ſhaped

5. *Pterogonium.* Fringe of 16 linear upright teeth. Capſule from a lateral ſheath

6. *Grimmia.* Fringe of 16 equi-diſtant teeth, dilated at the baſe. Veil cylindrical

7. *Conoſtomum.* Fringe of 16 tapering teeth, approaching each other in pairs, and all cohering at the points, as in *Bryum tetragonum*, Dickſon, *Grimmia conoſtoma*, Smith Engl. Botany

8. *Dicranum.* Fringe of 16 flat, ſomewhat inflected teeth, cloven half-way down

9. *Trichoſtomum.* Fringe of 32 linear ſtraightiſh teeth, approaching each other in pairs, ſometimes joined at the baſe in pairs

10. *Tortula.* Fringe of numerous linear teeth, ſpirally and repeatedly twiſted together

11. *Syntrichium.* In ſome ſpecies of *Tortula* the teeth are united into a cylinder at the baſe, pierced with numerous holes, upon which ſome recent botaniſts have founded this new genus

* * *The following Genera are furniſhed with a double Fringe, ſome few Species of* Orthotrichum *and one of the* Buxbaumiæ *perhaps excepted.*

Fig. 12. *Orthotrichum.* Capſule terminal. Outer fringe of 16 teeth; inner of 8 or 16 linear ones, ſometimes altogether deficient. Veil furrowed

Obſ. The fringe is ſometimes variable. *Orthotrichum pumilum* has but eight teeth in the outer fringe.

13. *Nekera.* Capſule from a lateral ſcaly ſheath. Outer fringe of 16 teeth; inner of 16 capillary ones. Veil naked and even

14. *Funaria.* Capſule obovate. Outer fringe of 16 oblique teeth, cohering at the points; inner, of 16 flat teeth. Veil quadrangular

15. *Buxbaumia.* Capſule oblique, gibbous on one ſide. Outer fringe of 16 very ſhort teeth; inner, membranous and plaited

Obſ. In *Buxbaumia folioſa* the outer fringe is ſcarcely perceptible; it is repreſented at fig. 16.

17. *Bartramia.* Capſule ſpherical, furrowed. Outer fringe of 16 awl-ſhaped teeth; inner, membranous, laciniated. Lip depreſſed

18. *Mnium.* Capſule terminal, cylindrical, furrowed. Outer fringe of 16 awl-ſhaped teeth; inner, membranous, laciniated

19. *Bryum.* Capſule ovate-oblong, ſmooth. Outer fringe of 16 teeth, dilated at the baſe; inner, membranous, toothed. Flowers terminal

20. *Hypnum.* Capſule ovate-oblong, from a lateral ſcaly ſheath. Outer fringe of 16 teeth, dilated at the baſe; inner, membranous, variouſly toothed. Veil ſmooth

21. *Fontinalis.* Capſule enveloped in a lateral ſcaly ſheath. Outer fringe of 16 teeth, dilated at the baſe; inner reticulated

22. *Polytrichum.* Outer fringe of 32 or 64 flat inflexed teeth; inner, a tranſverſe orbicu-

PLATE

lar membrane, affixed to the teeth of the outer. Veil moſtly double; the outer hairy

Vide article FRINGE *of* MOSSES, by *Sir J. E. Smith.*

CLASS CRYPTOGAMIA.

Addenda in Illuſtration of the Genera of Fungi.

233. Lettered BOTANY, Fungi, Plate I.
Fig. 1. Genus *Agaricus*

234. Lettered BOTANY, Fungi, Plate II.
Fig. 1. Genus *Merulius* (*eburneus*)

233. Lettered BOTANY, Fungi, Plate I.
Fig. 2. Genus *Boletus*
3. *Hydnum*
4. *Clavaria*
5. *Phallus*
6. *Clathrus*
7. *Helvella*
8. *Peziza*

234. Lettered BOTANY, Fungi, Plate II.
Fig. 2. Genus *Cyathus*

233. Lettered BOTANY, Fungi, Plate I.
Fig. 9. Genus *Lycoperdon*

234 Lettered BOTANY, Fungi, Plate II.
Fig. 3. Genus *Sphæria* (*digitata* and *bombardica*)
4. *Tuber*
5. *Rhizomorpha* (*phoſphorea*)

233. Lettered BOTANY, Fungi, Plate I.
Fig. 10. Genus *Mucor*

* The preceding are Linnæan genera in the Gmelinian *Syſtema Naturæ*, including the *Fungi* genera of the 12th edit. Linn., with others ſelected by Gmelin from Perſoon, Willdenow, Tode, and other writers on this tribe of Cryptogamia. To theſe the contributor of the article FUNGI for this Cyclopædia has added the following genera:

234. Lettered BOTANY, Fungi, Plate II.
Auricularia (*reflexa*)
Nidularia (*campanulatus*)
Trichia (*denudata* and *nuda*)
Uredo (*ſegetum*), known in agriculture by the name of *ſmut*
Æcidium (*anemones*)

BOTANICAL ARRANGEMENT OF TOURNEFORT.

* *Section, Herbaceous Plants and Under-ſhrubs.*

† *Petalled.*

A. ‡ *Flowers Simple, Monopetalous, Regular.*

235. Lettered Tournefort's Syſt. Botany, Plate I.
No. 1. Claſs 1. *Bell-ſhaped*, as in *Belladona*, *Campanula*, and *Convolvulus*. Letter *a* denotes the flower, *b* thefr uit, *c* the ſeeds, in the diſſections of the different plants intended to illuſtrate theſe claſſes

235 & 236. Lettered Tournefort's Syſt. Botany, Plate II.
No. 2. Claſs 2. *Funnel-ſhaped*, as in *Borago* (*officinalis*) *Solanum dulcamara*, &c.:
a the flower, *b* the fruit, *c* the ſeeds

‡ ‡ *Simple, Monopetalous, Irregular.*

236. No. 3. Claſs 3. *Perſonate*, as in *Arum*
a the flower, *b* the fruit, *c* the ſeeds

236. No. 4. Claſs 4. *Labiate*, as in *Salvia*, *Lamium*, *Thymus*
a the flower, *b* the fruit, *c* the ſeeds

‡ ‡ ‡ *Simple, Polypetalous, Regular.*

237. Lettered Tournefort's Syſt. Botany, Plate III.
No. 5. Claſs 5. *Cruciform*, as in *Raphanus* (*Raphaniſtrum*)
Thlaſpi (*Burſa Paſtoris*) *Chelidonium* and *Potamogeton*
a the flower, *b* the fruit, *c* the ſeeds

237. No. 6. Claſs 6. *Roſaceous*, as in *Roſa*, *Nymphæa*, *Hypericum*
a the flower, *b* the fruit, *c* the ſeeds

238. Lettered Tournefort's Syſt. Botany, Plate IV.
No. 7. Claſs 7. *Umbellate*, as in *Phellandrium*, *Foeniculum*
a the flower, *b* the fruit, *c* the ſeeds
8. 8. *Caryophyllous*, as in *Caryophyllus*
a the flower, *b* the fruit, *c* the ſeeds
9. 9. *Liliaceous*, as in *Crocus*, *Narciſſus*
a the flower, *b* the fruit, *c* the ſeeds

‡ ‡ ‡ ‡ *Simple, Polypetalous, Irregular.*

239. Lettered Tournefort's Syſt. Botany, Plate V.
No. 10. Claſs 10. *Papilionaceous*, as in *Piſum*, *Ervum*, &c.
a the flower, *b* the fruit, *c* the ſeeds
11. 11. *Anomalous*, as in *Aquilegia*
a the flower, *b* the firſt, *c* the ſeeds

B. ‡ *Flowers Compound, Polypetalous, Irregular.*

239. No. 12. Claſs 12. *Floſculous*, as in *Echinopus*
a the flower, *b* the fruit, *c* the ſeeds
13. 13. *Semi-floſculous*, as in *Leontodon*

240. Lettered Tournefort's Syſt. Botany, Plate VI.
No. 14. Claſs 14. *Radiate*, as in *Helianthus*, *Aſter*
a the flower, *b* the fruit, *c* the ſeeds

† *Apetalous* (*without petals*).

15. 15. *Apetalous Staminiferous*, as in *Avena*
a the apetalous flower, ſtamen-bearing calyx, or ſtaminiferous organ, *b* the fruit, *c* the ſeed

PLATE

241. Lettered Tournefort's Syſt. Botany, Plate VII.
No. 16. Claſs 16. *Apetalous ſeminiferous*, as in *Felix*, *Lichen*, &c.
a the ſeminiferous organs, (theſe having, according to Tournefort, no flowers,) *b* the fruit, *c* the ſeed
17. 17. *Apetalous, without apparent fruit*, as in *Fungi*, *Muſci*, &c.

* * *Section Trees and Shrubs.*

† *Apetalous* (*without petals*).

Irregular.

No. 18. Claſs 18. *Apetalous*

242. Lettered Tournefort's Syſt. Botany, Plate VIII.
No. 19. Claſs 19. *Amentaceous*, as in *Quercus*, *Pinus*, &c.

† *Petalled.*

Irregular.

No. 20. Claſs 20. *Monopetalous*, as in *Heydyſarum*

Regular.

243. Lettered Tournefort's Syſt. Botany, Plate IX.
No. 21. Claſs 21. *Roſaceous*, as in *Rubus*.
22. 22. *Papilionaceous*, as in *Piſum*, *Colutea*, &c.

Obſ. The importance of the Syſtem of Tournefort, the outline of whoſe claſſification is here laid down, will be beſt underſtood by thoſe who are aware of the attachment of the French botaniſts, even of the lateſt times, to the method of this early author: a botaniſt, whoſe labours preceded thoſe of Linnæus by nearly half a century.—It has been truly obſerved, that Tournefort is to the French in the ſcience of botany, the foundation-ſtone upon which all their ſyſtems are eſtabliſhed. This predilection in favour of their own ſyſtems, to the excluſion of that the Swediſh naturaliſt founded upon the ſexual organs of plants, may yet have its revolution; but that in the preſent time is more than can be well expected. As the botanical department of this Cyclopædia has been almoſt from the commencement allotted to one of the moſt able profeſſors in the ſcience, it is very far from the intention of the writer of the preſent article to enter into the comparative merits of the prevailing ſyſtems of this time, the Linnæan in Britain, under the auſpices of its many learned advocates, and that of the French, founded on a "natural method" not very diſſimilar from that of Tournefort, and as improved by Juſſieu and Gærtner. We only wiſh to offer ſome apology for the greater number of plates devoted to the ſyſtem of the celebrated corolliſt M. Tournefort than to the ſexual ſyſtem of Linnæus; the latter being a naturaliſt whom from adoption we may almoſt deem our own, and we muſt confeſs with all his imperfections our moſt favourite author.

The great talents of one of our ableſt and moſt experienced botaniſts at this period, we are well aware have been directed to the advancement of a "natural method*;" perhaps even we might be almoſt juſtified in terming him one of the great ſupporters of this method, not in this country alone but throughout Europe: while the labours of Juſſieu, Jaume St. Hilaire, and others, have gone far towards the formation of a method conſtructed upon the natural affinities of plants, and on their fruits and ſeeds eſpecially; characters which, with the corolla, calyx, and other organs of the flower conſidered generally, it will be perceived had formed the baſis of that ſyſtem which was laid down by Tournefort.

After what we have advanced upon this intereſting ſubject, it might have been thought adviſable to appropriate other plates to the elucidation of what is underſtood by a natural method; but that, alas! would be impoſſible. Much remains undone, and it is only by a very long and arduous courſe of reſearch and inveſtigation that any ſyſtem of material extent founded on that method is to be expected. "Hitherto," ſays M. de Candolle, one of its moſt popular promoters, "we have arrived only at the baſis of this ſyſtem, and not at the reſult: it exiſts rather in the converſations of botaniſts than in their books, and remains yet among the number of thoſe opinions which Bacon calls floating." *Vide De Candolle de Taxonomie.*

Under theſe circumſtances, the plates appropriated to the illuſtration of Tournefort's arrangement of Botany will not be thought devoid of intereſt, and may be indeed conſidered of material uſe to the early botaniſt as well as general reader, in uniſon with thoſe intended for the illuſtration of the claſſes and orders of Botany as laid down and eſtabliſhed by the great Linnæus.

VEGETABLE ANATOMY.

244. Lettered VEGETABLE ANATOMY, Plate I.
Fig. 1—8. Diſſections of the cortex or bark of various plants, of the natural ſize and magnified, deſigned to ſhew the ſtructure of the layers of which they are compoſed, &c.

245. Lettered VEGETABLE ANATOMY, Plate II.
Diſſections explanatory of the diſpoſition of the layers which appear internally in the ſtems or branches: fig. 1, 2, 3. horizontal ſections; fig. 4, 5. perpendicular ſections; fig. 6, 7, 8. ſhew the longitudinal diſpoſition of the veſſels upon ſtripping off the outer bark or cortex
Fig. 9—13. Various appearances and diſſections of the buds of plants. Fig. 14—17. of the flower, &c.
19. A bulbous root, ſhewing the exterior imbrications
18. A horizontal ſection of a bulbous root, ſhew-

---

* Robert Brown, Eſq. who, without rejecting the ſexual organs as uſeful auxiliaries, regards more particularly the germination of plants, with the number and form of the Cotyledons, as eſſentially characteriſtic in a ſyſtem founded on a natural claſſification.

Plate

245. ing the concentric layers of which it is compoſed

Fig. 20. Perpendicular ſection of a bulbous root

MINERALOGY.

246. Inſcribed Natural History, Plate I.

View of Mount Ætna, from Spallanzani's Work.

This is a general view of Mount Ætna, the adjacent country and the ſea; and is intended to ſhew the effects occaſioned by the eruption of the volcanic matter at different times. A points out the loftieſt ſummit of the Mount. H is Nicoloſi, and marks the Mount Roſſo or Red Mountain, formerly a plain, but in 1699, a new vertex opened in it, and diſcharged the dreadful torrents of lava which overflowed the land, till reaching the ſea, it formed the promontory of lava in the ſea extending as far as letter Y. G, near this new opening of Ætna, is the mountain Montpelieri or Montpileri

Various other intereſting ſpots are marked in the plate, for which conſult the article Ætna, *Mount.*

246. Inſcribed Natural History, Plate II.

A View of the Crater of Mount Ætna.

A A A One edge of the lava of 1787, which iſſued from the upper crater. B B the circumference of the crater, with its cleft C C through which the internal part is diſcernible. D the flat bottom of the crater. E the aperture in the bottom through which the larger column of ſmoke F F aroſe. G G is that part of the edge of the crater from which its internal part is beſt ſeen. H H is the ſmaller column of ſmoke to the north-eaſt. *Vide* article *Mount* Ætna for further explanation

247. Inſcribed Natural History, Plate V.

View of Mount Veſuvius, as ſeen from the Bay of Naples. From an original ſketch made in the year 1797, by R. Duppa, Eſq.

248. Inſcribed Natural History, Plate IV.

View of the Crater of Mount Veſuvius. Drawn by the ſame hand, and at the ſame time as the preceding.

249. Mineralogy, Plate II.

Baſalt. The Mountain of Aiſa, called La Coupe, or the Col d'Aiſa, near the village Entrague, in the Viverrais, above the torrent of Volant

This plate affords an example of the formation of baſaltic columns, and illuſtrates the hypotheſis of the Huttonian ſyſtem, according to which the baſaltic matter has been originally of volcanic origin, and while in a ſtate of fuſion caſt out of the crater of the mountain. In its progreſs this lava has formed a wavy channel down the mountain ſide. According to St. Fond, this is the moſt remarkable and beſt characterized crater in all the Viverrais. The ends of the columns may be diſtinctly ſeen before the baſalt reaches the river.

GEOLOGY.

250. Geology, Plate I.

Fig. 1. The upper figure in this Plate exhibits the

Plate

dip, dyke, fault, ſlip, trouble, &c. deſcribed and referred to in the article Coal

251. Geology, Plate II.

Fig. 1—10. Sections of various *Strata*

252. Geology, Plate III.

Fig. 1. *Strata:* being a ſketch of the arrangement of the ſtrata through England, by Mr. R. Bakewell. Lat. 54° 35′ to 54° 45′.

2. Section of the ſtrata through part of Dorſetſhire and Devonſhire, by Mr. R. Bakewell

3. Perpendicular ſtrata

4. Horizontal ſtrata

5. Inclined ſtrata, conſiſting of greywacke, clay-ſlate, compact felſpar, porphyry, ſienite, trap, clink-ſtone and granite, valley of Long Sleddale, Weſtmoreland

6. Undulate ſtrata: ſhewing the wavy ſtructure of the beds of ſlate, called ſhillet, in Devonſhire

253. Geology, Plate IV.

Fig. 1, 1. Metallic veins exemplified, with a "rider," &c.; and alſo the interſection (or "cutting-off") of metallic veins

2. Columnar and amorphous baſalt, interſected by baſaltic dykes

4. Lime-ſtone broken and incloſed in baſalt, ſeen in a baſaltic rock on the coaſt of Antrim Whinſtone dykes, or baſaltic veins, paſſing through chalk, and changing it into marble—under figure 4.

(*See article* Geology. *Suppl.* Vol. XXXIX.)

Addenda to the Geological Illuſtrations.

254. Plate Ichthyolite, or Ichthylogical Remains.

Mineralized remains, or impreſſions of fiſhes, on black ſhiſtoſe ſlate, found at Iſleben, in Germany

255. Fossils, Extraneous, Plate I.

Fig. 1. Mineralized remains of an encrinus, Encrinus liliiformis, or "ſtone lily," in relievo, on a ſlab of ſtone

2. Tranſverſe ſection of the lily-head

3. The lily-head half broken through tranſverſely

4. Bottom of the lily-head, ſhewing the peduncle by which it is connected to the main ſtem of the encrinus

CRYSTALLOGRAPHY.

256. Lettered Crystallography, Plate I.

Fig. 1—7. Various forms of the cryſtals of adamantine ſpar

8—16. Ditto of felſpar

262. Lettered Crystallization, Plate VII.

Fig. 27. The *Octohedron*, regularly formed

13. The *Tetrahedron*, regularly formed

PLATE

262. Fig. 5. The *Hexahedral priſm*, or equiangular ſix-ſided priſm

12. The *Rhomboidal dodecahedron*

14. The *Pyramidal dodecahedron*, or double ſix-ſided pyramid

257. CRYSTALLOGRAPHY, Plate II.

Fig. 17—21. Mechanical diſſection of an *hexahedral cryſtal of calcareous ſpar*, and extraction of the primitive cryſtal, or nucleus

Obſ. *Lettered fig.* 17—21. *Plate* II. *Cryſtallography. Deſcribed in article* CRYSTAL, Vol. X. Part II. *but erroneouſly referred to as fig* 1—5. *Plate* I.

22, 23. Mechanical diviſion of the *dog's-tooth ſpar*, erroneouſly fig. 6, 7. Plate I.

Fig. 24. *Rhomboids of calcareous ſpar*, a ſecondary cryſtal, with the primitive nucleus

260. CRYSTALLOGRAPHY, Plate V.

Fig. 56. The baſe of the *ſix-ſided priſm*, divided by ſections parallel to each of its ſides, and producing the *triangular priſm*, the ultimate form obtained by mechanical diviſion

259. CRYSTALLOGRAPHY, Plate IV.

Fig. 48, 49. The *cube* divided by ſections parallel to the ſides, and producing a ſeries of ſmaller cubes, conſidered as the form of the integrant molecule

257. CYSTALLOGRAPHY, Plate II.

Fig. 26. The *primitive rhomboid* of the tourmaline, with its diſſection. This cryſtal is diviſible both in the direction of the ſix faces, and in that of the ſhort diagonals; by which latter ſections the rhomboid is reduced to ſix tetrahedrons, ſurrounding the nucleus, as here repreſented

Decrements of the Edges of the Cryſtals.

257. & 258. CRYSTALLOGRAPHY, Plates II. & III.

Fig. 27, 28. The *rhomboidal dodecahedron*, which figure may be formed from a cubic nucleus, by the ſuperpoſition of decreaſing laminæ

258. CRYSTALLOGRAPHY, Plate III.

Fig. 29. Congeries of cubes, conſiſting of integrant molecules, forming the cubic nucleus, with the pyramids raiſed on three of the faces

257. CRYSTALLOGRAPHY, Plate II.

Fig. 27. The form of the cryſtal, produced by the combination of theſe integrant molecules, when complete

Decrement in Breadth and Height.

258. CRYSTALLOGRAPHY, Plate III.

Fig. 30. A cryſtal of *iron pyrites, with twelve pentagonal faces*, in which the two kinds of decrement are combined

Fig. 31. The cubic nucleus of this variety is ſhewn

32. The formation of the cryſtal by decrements

33. Decrement of the dog's-tooth ſpar, (the metaſtatic cryſtal of Haüy,) repreſented complete in Plate 257. fig. 22. The preſent figure ſuppoſes the hypotheſis of a decrement by two ranges in breadth. It repreſents the upper pyramid of this cryſtal placed on the upper planes of the primitive nucleus, which being partly viſible, diſcloſes more clearly the progreſſive effects of the decrement by two ranges

34. A ſecondary cryſtal, which is a rhomboid much more obtuſe than the nucleus, is repreſented as ſurrounding the nucleus in the variety of calcareous ſpar, called by Haüy, equiaxe

The nucleus (preſumed to be the primitive rhomb of carbonate of lime) progreſſively diſſected to explain its ſtructure

The face at letter A, fig. 35, ſhews the ſame face of the rhomb as is repreſented in fig. 34, but ſymmetrically divided, and the ſuite ſhews the gradual diviſion of the rhomb, by mechanical ſeparation down to letter I *d*

258. CRYSTALLOGRAPHY, Plate III.

Fig. 36. *Decrements on the angles of a cryſtal*, ſhewn in the regular *octohedron* formed on a cube

259. CRYSTALLOGRAPHY, Plate IV.

Fig. 37. The arrangement of the integrant molecules on one of the triangular faces of the octohedron

259. CRYSTALLOGRAPHY, Plate IV.

Fig. 38. Rhomboid cryſtal

39. Another example of the decrements on the angles, exemplified in the diſſection of the *rhomboid*, fig. 38., which differs ſomewhat from that of the cube, producing a very obtuſe rhomboid, encircling the nucleus; found among the ſecondary cryſtals of oligiſte iron ore

Further illuſtration of the different variations, of which the decrements of the *rhomboid*, both of the ſuperior and inferior angles, are ſuſceptible. The rhomboid is ſhewn at fig. 45.; the diſſections at fig. 46, 47.

Intermediate Decrements.

Fig. 48. A parallelopiped undergoing a decrement, by two ranges on the angle of its baſe

49. A cryſtal, in which all the three decrements round the ſame ſolid angle are intermediate

50. Another example of intermediate decrement in one of the faces of a cubic nucleus, taking place on the angles, by the ſubtraction of double molecules

51. The cubic nucleus, marking the decrements parallel to the lines *k m*, &c. by ſubtrac-

PLATE

259. tion of double molecules, in ſuch a manner as that three ranges be taken away in the breadth, and one in height; ſo that the decrements will be both intermediate and mixed

52. A polyhedral cryſtal of thirty faces, produced by the ceſſation of decrementation, before the formation of the pyramid round each face of the nucleus

53. Example of intermediate decrements on the two lateral angles of a rhomboid, (as at fig. 47.), the decrements taking place by ranges of double molecules, producing in the complete reſult a ſolid of twelve faces, diſpoſed ſix and ſix towards each ſummit, as in one variety of calcareous ſpar, or double-pointed dog's-tooth ſpar

Compound ſecondary Forms of Cryſtals.

Fig. 54. A ſecondary cryſtal, an *icoſahedron* bounded by eight equilateral triangles, and twelve iſoſceles triangles. Occurs in iron pyrites

55. A calcareous ſpar (*Analogique* of Haüy), compoſed of twenty-four trapezoidal faces, ſix of which are vertical, and twelve others diſpoſed ſix and ſix. The different trapezoidal faces are ſhewn in the figure

260. CRYSTALLOGRAPHY, Plate V.

Fig. 56. The end of the regular ſix-ſided priſm, which, for its molecule, preſents us with the triangular, or three-ſided priſm

57. A cubic nucleus divided into its cubic molecules

59. Superior face of the ſecond lamina, A
Ditto, further mechanical diviſion of the integrant molecules, B
Ditto, ditto, C

58. Explanation of vacuities on the edges of a cryſtal, given by Haüy

60. An oblique priſm with rhomboidal baſes, ſo ſituated that the faces A D, *a d*, and C D, *c d*, are vertical; and B D are the acute angles of the baſe, and that the latter proceed in an aſcending direction from A to C

Interſect this priſm into halves, by means of a plane paſſing by the diagonals, drawn from B to D, and from *b* to *d*, ſo that the half ſituated on the left remaining fixed, the other is reverſed without being ſeparated, and the figure preſented will be as ſhewn at fig. 61.

62. Another example of grouping, in which cryſtals are inſerted into each other, is extremely common. This combination is illuſtrated by a cube, and M N *r*, an equilateral triangular facet, produced by a decrement of one range round the angle A

63. A ſecond cube modified in the ſame manner, and affixed to the other by its correſpondent facet, will afford the double cryſtal repreſented

PLATE

To illuſtrate the Notation of Cryſtals.

Fig. 64. Repreſents an oblique parallelopiped, the faces of which have angles of different meaſures

65. The effect of decrement ſhewn

66. An oblique parallelopiped

67. Primitive molecules

68. Bibinary felſpar of Haüy

69. Primitive form of a rectangular priſm, which has oblique-angled parallelograms for its baſes, one of which is longer

70. The oblique priſm, with rhomboidal baſes

71. The rectangular priſm, with rectangular baſes

72. The rectangular priſm, with rhomboidal baſes

73. The rectangular priſm, with ſquare baſes

74. The cube

75. The moſt common variety of chryſoberyl, or cymophane, the nucleus of which is a regular parallelopiped, as repreſented at fig. 71.

76. The priſm

261. CRYSTALLOGRAPHY, Plate VI.

Fig. 77—84, &c. Several figures inſerted to illuſtrate the manner in which the ſymbols employed in the definition of the various modifications of cryſtals, by Haüy, and other cryſtallographers are expreſſed

80. Octohedron, with ſcalene triangles

81. Octohedron, another variety

82. The regular octohedron

83, 84. The primitive octohedron, compoſed of eight iſoſceles triangles ſimilar, four and four each

85. The tetrahedron when become a primitive form

86. The regular ſix-ſided priſm

87. The ſame, in which three ſolid angles, taken alternately, are replaced by faces, whilſt the intermediate angles remain untouched

88. Rhomboidal dodecahedron, in which each ſolid angle is compoſed of three planes, and may be aſſimilated to a ſummit of the obtuſe rhomboid

89. Primitive form of the tourmaline

90. One variety of the tourmaline

Supplemental Plate, lettered CRYSTALLIZATION, Plate VII.

262. CRYSTALLIZATION. See MINERALOGY, *Appendix*.

Fig. 1. Cube

2. Rhomb

3—5. 29. Varieties of the Priſm

6. Pyramid

7, 8. Table

9. Icoſahedron

10. Pentagonal Dodecahedron

11. Lens

12. Rhomboidal Dodecahedron

13. Tetrahedron

14. Double ſix-ſided Pyramid

PLATE

262. Fig. 27. Regular Octohedron
16. *Truncation* on the angles
17. on the edges
18. *Bevelment* on all the edges
19. 30. on all the lateral edges
28. on the angles
Acumination, the acuminating planes
20. at each angle ſet on the lateral planes
21. 26. on the lateral edges
22. 24. on the lateral planes
23. on the lateral angles
25. on the alternating lateral planes
29. double eight-ſided pyramid, four planes at each extremity ſet on the alternate lateral edges
31. double ſix-ſided pyramid, with the planes joined obliquely, or metaſtatic cryſtal

The primitive Forms of Cryſtals are,

Fig. 1. The Cube
2. Rhomb
7, 8. Rectangular Table
27. Octohedron
13. Tetrahedron
5. Hexagonal Priſm
12. Rhomboidal Dodecahedron
14. Dodecahedron with triangular faces

The integrant Molecules are,

Fig. 13. The Tetrahedron
29. Trihedron
1. Cube

Inſtruments employed in the Study of Cryſtallography and Mineralogy.

261. Fig. 91. Nicholſon's inſtrument for determining the weight or ſpecific gravity of ſolid bodies
92. B. An inſtrument for determining the electricity of minerals
92. A. An inſtrument for determining the electricity of the tourmaline
93. Goniometer for meaſuring the angles of cryſtals
(*Vide* MINERALOGY, *Appendix*, Vol. XXXIX. —*Vide alſo article* CRYSTAL, Vol. X.; *and* CRYSTALLIZATION, *Supplemental Vol.*)

Appendix to Geology, Mineralogy, Mining, &c.

263. Plate MINERALOGY, MINING.
Fig. 1—10. Mining—conſtruction of the ſhaft or paſſage leading to mines, mode of deſcent, manner of cloſing or ſtopping them up, &c.

253. Repreſented on Plate IV. GEOLOGY.
Fig. 6. Plan of a Coal Mine, and mode of ventilating

250. Mining Lamps, Plate I. GEOLOGY.
Fig. 5, 6. Sir Humphrey Davy's Wire Gauze Safety Lamp, as made by Mr. Newman, Liſle Street, Leiceſter Square (*See* WIRE GAUZE)
250. Fig. 2, 3. Dr. Clanny's Safety Lamps
4. Steam Safety Lamp

⁂ By attending to the above claſſification, the whole of thoſe Plates of Natural Hiſtory, which the proprietors have allotted to this Cyclopædia, may be readily reduced to numerical order, and be by that means, it is preſumed, more eaſily diſtinguiſhed when required for reference than by the original plan, in which the plates of each ſection were lettered ſeparately from the reſt. They now follow each other, not only in numerical order throughout their whole extent, but alſo in the order of the Linnæan Syſtem, as nearly as the number of plates appropriated to the reſpective Sciences would conveniently allow. The miſcellaneous nature of ſome few plates, which it has been lately thought deſirable by the proprietors to introduce, renders it impoſſible to place them ſtrictly in the order of ſyſtem.

ERRATA

ON THE

PLATES OF NATURAL HISTORY.

Some few errors having been committed by the writing engravers in lettering the names upon the plates of Natural Hiſtory, which it will be very deſirable to correct, the reader is requeſted to obſerve, that wherever the names upon the plates are found at variance with thoſe inſerted in this printed index, the preference is to be invariably given to the latter; and that the names upon the plates may be corrected by a reference to this index.

The following errors occur to us in paſſing over the plates for the purpoſe of compoſing the preſent claſſification.

QUADRUPEDS.

19. *For* Braſiliar Weeſel, *read* Braſilian Weeſel
26. Taguan Squirrel, *r.* Taquan S.
29. Moſpymæus, *r.* Mos pygmæus
31. Antilope Grimmea, *r.* Ant. Grimmia

BIRDS.

46. *For* Ramphaſtos Aracani, *read* R. Aracari
G. Crotophagi, *r.* G. Crotophaga
52. Merops Novæ Zelandiæ, *r.* Novæ Selandiæ
53. Certhia coccina, *r.* C. coccinea
Certhia cærulia. *r.* C. cærulea
54. Anas Olot, *r.* A. Olor
56. Anas Creca, *r.* A. Crecca
Manderine Drake, *r.* Mandarine Dr.
57. Genus Aptenodytes, *r.* G. Aptenodyta
58. Gen. Diomedia, *r.* Diomedea
D. Chiororynchos, *r.* Chlororhynchos

NATURAL HISTORY.

Plate
61. *For* Gen. Laurus, *read* Gen. Larus
62. G. Phenicopterus, *r.* Phœnicopterus
67. Charad. africarius, *r.* C. apricarius
68. Fulica porphyris, *r.* F. porphyrio
71. Genus Dodo (*Latin name*), *r.* G. Didus
73. Meleagris gallipavo, *r.* M. Gallopavo
78. Tetrao ferruginous, *r.* T. ferrugineus
79. Columba Crythroptera, *r.* C. erythroptera
81. Turdus perſpicalatus, *r.* T. perſpicillatus
82. Ampelis Pompodora, *r.* A. Pompadora
88. R. headed Swallow, *r.* Rufous-headed Swallow
Acculeated Swallow, *r.* Aculeated Swallow

Reptiles.

101. *For* Anguis Coraline, *read* A. Corallinus
A. Jamacienſis, *r.* A. Jamaicenſis
102. Amphiſbæna fulginoſa, *r.* A. fuliginoſa
103. Snowted Langaya, *r.* Snouted L.

Fishes.

105. *For* Genus Stromateus, *read* Gen. Stomateus
Sternoptyx diaphæna, *r.* Sternoptyx diaphana
Genus Anarhicas, *r.* Gen. Anarhichas
112. Sparus Surinaminſis, *r.* Sparus Surinamenſis
Sparus faſiatus, *r.* Sparus faſciatus
116. G. Scomber Mackerel, *r.* G. S. Mackarel
117. Ditto *r.* Ditto
119. Platyſtachus anguilaris, *r.* Platyſtachus anguillaris
120. Salmo bimaculotus, *r.* S. bimaculatus
S. Gaſtropelecus, *r.* S. Gaſteropelecus
121. Fiſtularia tobaccaria, *r.* F. tabacaria
122. Genus Atherine (*Latin name*), *r.* G. Atherina
123. Clupea Triſſa, *r.* C. Thriſſa
C. Phoxinus Minnew, *r.* C. P. Minnow

Plate
124. *For* Headlines for Order Branchyoſtegi, *read* Order Branchioſtegi
126. Pegaſus draco, *r.* P. draconis
129. Headlines for Order Chondrophrygii, *r.* O. Chondropterygii

Insects.

136. *For* Boſtrichus pubiſcens, *read* B. pubeſcens
Ptinus ſcotias, *r.* Ptinus ſcotius
P. aſſelatus, *r.* P. teſſellatus
P. faccinicornis, *r.* P. pectinicornis
137. Anthrenus ſchrophulariæ, *r.* A. ſcrophulariæ
138. Caſſida graſſa, *r.* C. groſſa
141. Pauſus fichteli, *r.* P. Fichtelii
160. S. gigas, *r.* Sirex gigas
S. juveneus, *r.* Sirex juvencus
S. lobata, *r.* Sphex lobata
163. No. 13. Tipula ichneumonea, *r.* Diopſis ichneumonea
164. Rhagis ſcolopacea, *r.* Rhagio ſcolopacea
168. Headlines G. Frombidium, *r.* G. Trombidium
12 F. aquaticum, *r.* 12 Trombidium aquaticum
13 F. abſtargens, *r.* 13 Trombidium abſtergens

Worms.

178. *For* Headlines for Vermes, Order Inteſtata, *read* Order Inteſtina

Shells.

192. *For* Tellina fabulata, *read* Tellina fabula
Tellina bimaculatu, *r.* Tellina bimaculata
202. Headlines for Conchology, Order Volutæ, *r.* Conchology, Genus Buccimum — Genus Strombus
226. Paramœcium, *r.* Paramecium
Rolipoda pyrum, *r.* Kolpoda pyrum

PLATES. VOL. VI.

ANCIENT AND MODERN ATLAS.

Plate

I. Ancient Geography—Imperium Car. Mag. ad finem ſæculi poſt Chriſt. VIII.

A few copies, only, of this Map were publiſhed with the parts of the Cyclopædia. The proprietors having afterwards determined to engrave the maps on a larger ſcale, it was cancelled, and a Map of the World, as known to the ancients, ſubſtituted in its ſtead as the firſt of the Ancient Atlas.

GEOGRAPHIA ANTIQUA.

Tabula

I. Orbis Veteribus Cognitus
II. Populi, Urbes, &c. in Græcia, Thraſia, et Aſia, quorum meminit Homerus
III. Britannia Romana, cum Hibernia et inſulis adjacentibus
IV. Peloponneſus, quæ antea Apia, Pelaſgia, et Argos, antequam Romanæ ditionis fuit, &c.
V. Hellas, ſive Græcia Propria, Theſſalia et Epirus, antequam Romanæ ditionis fuerunt
VI. Macedonia et Thracia, antequam Romanæ ditionis fuerunt
VII. Aſia Peninſularis, cum Inſulis adjacentibus
VIII. Ægyptus, provincia Romana Imperialis
IX. Lybiæ, vel Africæ, ora borealis
X. Italiæ Regio Alpina, quæ vulgo dicitur Gallia Ciſalpina
XI. Italia Media, vel Italiæ propriæ pars borealis, ante diviſionem ab Auguſto factam
XII. Italia Ulterior, cujus pars Auſtralis Magna Græcia, ob Græcorum colonias, dicta, ante diviſionem ab Auguſto factam
XIII. Sicilia, provincia Romanorum, cum Inſulis adjacentibus
XIV. Italia in regiones undecim ab Auguſto deſcripta, cum Inſulis Corſica et Sardinia
XV. } XVI. } Imperium Romanum
XVII. Hiſpania Romana
XVIII. Galliæ, ſicut ab Auguſto diviſæ, pars meridionalis
XIX. Galliæ, ſicut ab Auguſto diviſæ, pars ſeptentrionalis. Additur, Gallia qualis fuit ineunte ſeculo quinto Æræ Chriſtianæ in 17 provincias diſpertita
XX. Rhætia et Noricum, provincæ Romanorum

Tabula

XXI. Germania Magna, quæ nunquam Romanis paruit
XXII. Terra Filiorum Iſraelis, antequam in duo Regna diſpertita fuit, cum Terra Philiſtæorum, parte Phœnices, &c. Etiam, Judæa et Regiones finitimæ circiter initium Æræ Chriſtianæ.

MODERN ATLAS.

The World, Eaſtern and Weſtern Hemiſpheres
The World on Mercator's Projection
Europe
Britiſh Iſles
England and Wales
Scotland
Canals, Navigations, and Railways of Great Britain
Ireland
Sweden, Denmark, and Norway
Ruſſian Empire
North part of Ruſſia in Europe
South part of Ruſſia in Europe
The Seven United Provinces
France
Spain and Portugal
Portugal
Switzerland
Alpine Country, North Italy
South Italy
Pruſſia
Germany, Eaſt
Germany, Weſt
Hungary
Environs of Conſtantinople
Asia
Arabia
Perſia
Hindooſtan
China
Empire of Japan
Chart of the Eaſt India Iſlands
Chart of the Pacific Ocean
Africa
Ægypt
Cape of Good Hope
North America
South America
Britiſh Poſſeſſions in North America
United States
Weſt Indies

INDEX

INDEX OF THE PLATES.

Containing a List of all the Subjects represented on the Plates, arranged in alphabetical order, and classed under the several Sciences or Departments to which they pertain; together with References to the particular Plate and Figure where each Subject is delineated.

The Roman Numerals denote the *Plate;* the Arabic Numerals, the *Figure.*

AGRICULTURE.

- Barn, Common, i. 1.
  - Double, i. 2.
  - Dutch moveable, i. 5.
  - Improved, i. 3.
  - Open, i. 4.
  - and Threſhing Machines, ii. 1—6.
  - with moveable floor, and racks for feeding cattle, ii. 7.
- Berne Machine, xxxvii. 1.
- Beverſtone Plough, xxxi. 1.
- Blaſting Stones, implements for, iii. 1.
- Borers, Draining, xxxvii. 2.
- Breaſt Plough, or Paring Spade, xxxii. 3.
- Calf Pens, iv. 1, 2.
- Carts, iii. 3—9.
- Cattle Sheds, iv. 3—6. v. 1—8.
- Chaff-cutter, by M'Dougal, vii. 3.
  - Salmon's, as made by Rowntree, vii. 1, 2.
- Charles's, Mr., Machine for levelling Land, xxvi. 1, 2.
- Cheeſe Preſs, viii. 1, 2.
- Cheſhire Paring Plough, xxxii. 1.
- Churns, by Hartland, viii. 3. 4.
  - by Rowntree, viii. 5—7.
- Coppinger's, Mr., Malt Kiln, xxxvi. 8.
- Corn and Mixed Farm Buildings. See *Farm.*
- Cottage Bed Room, ix. 5.
  - Fire-place, ix. 1, 2.
  - Staircaſe, ix. 3, 4.
- Cottages, Farm, vi. 1—14.
  - Ornamental, vii. 1—9.
- Couch Graſs Drag, Amos's, ix. 7, 8.
  - Rake, by the ſame, ix. 9, 10.
- Cultivators, x. 1—5.
- Curd-cutter, iv. 7.
- Cyder Mill, x. 1, 2. 5.
  - Preſs, x. 3, 4.
- Dairy Houſes, xii. 1—7.
  - at Woburn, xi. 6, 7. xiii. 1, 2.
- Dairy Farm Buildings. See *Farm.*
- Drill Machine, by Salmon, xxv.
- Ducket's Skim Coulter, xxx. 5.
- Embankments, x. xi.
- Earth Buildings. See *Piſé.*
- Fan Machine, xxxvii. 3.
- Farm Buildings, Graſs and Dairy Farms, xiii. 1—5.
  - Corn and Mixed Farms, xiv. 1—5.
- Farm Cottages. See *Cottages.*
  - Houſes, xv. 1—6.
  - Yards, Angular and Circular, Plans of, xvii. 1, 2.
    - Square, Plans of, xvi. 1, 2.

AGRICULTURE.

- Feeding Houſes for Cattle, iv. 3—6. v. 1—3.
- Fences, xviii.—xxii.
- Flax, Implements for dreſſing, &c. xxiii.
- Gates, hangings and faſtenings, xxxiv. 1—36.
- Granary, xxiv. 1—5.
- Graſs Farm-Buildings. See *Farm.*
  - Harrow, xxvii. 6.
  - Sod Cutting Plough, xxvii. 7.
- Graſſes, xxxv.
- Grazing. See *Graſs.*
- Harrows, xxvii. 1—6.
  - Potatoe, xxxix. 2, 3.
- Hampſhire Patent Iron Plough, xxxi. 2.
- Halter caſt, Spring Staple for haltering, xxxvii. 4.
- Hay Crib, xxvii. 8.
  - Sweep, xxxvii. 5.
- Kentiſh turn-wriſt Plough, xxxi. 4.
- Kiln, xxxvi. 1.
  - Coppinger's, for Malt, xxxvi. 8.
  - Pepper's, for ditto, xxxvi. 4—7.
  - Mr. Rawſon's, xxxvi. 2.
  - Count Rumford's, for Lime, xxxvi. 1.
  - for general uſe, xxxvi. 3.
- Lactometer, xxxvii. 6.
- Levelling Land, Mr. Charles's Machine for, xxvi. 1, 2.
- Lime Kiln, xxxvi. 1.
  - Stone Pounding Machine, xxxvii. 7.
- Malt Kiln, xxxvi. 4—8.
- Mines, draining, xxxviii.
- Mole catching, xxviii. xxix.
  - Ploughs, xxix. 1—3.
- Norfolk Plough, xxxi. 3.
- Ox-ſhoeing Machine, xxxvii. 8.
- Paring Ploughs and Tools, xxxii. 1—9.
- Pepper's, Mr., Malt Kiln, xxxvi. 4—7.
- Pig or Swine Caſe, xxxix. 7, 8.
- Piggery at Woburn, xl.
- Piſé, or rammed earth buildings, implements for, xxxiii. 1—17.
- Pits, draining, xxxviii.
- Plough for Graſs Sod cutting, xxvii. 7.
- Ploughs, Mole, xxix. 1, 2.
  - Paring, xxxii. 1—4.
  - Swing, xxx. 1—6.
  - Wheel, xxxi. 1—5.
- Ponds, Conſtruction of, xxxix. 1.
  - Machine for taking off the Surplus Water, xxxix. 6.
- Potatoe Harrow, xxxix. 2, 3.
  - Scoops, xxxix. 4, 5.

INDEX OF THE PLATES.

AGRICULTURE.

Quarries, Draining, xxxviii. 1—5.
Quendon Barrow, for carrying water, xxxviii. 6, 7.
Rawſon's, Mr., Kiln, xxxvi. 2.
Rogers's, Mr., Bean Cultivator, x. 3.
Rotherham Plough, xxx. 1.
Rumford's, Count, Lime Kiln, xxxvi. 1.
Slark's Potatoe Set Scoop, xxxix. 5.
Small's Chain Plough, xxx. 2.
Somerville's, Lord, Plough, xxx. 3.
    Double Furrow ditto, xxx. 6.
Stone Lifting Machine, xxvi. 4.
Stones, Implements for Blaſting, iii. 1.
Suffolk Iron Plough, xxx. 4.
Threſhing Machines. See *Barns*.
Water, Machine for raiſing, xxvi. 5.
  by Sargeant, xxvi. 6.
Weſtern's, Mr. C., Double Cultivator, x. 4.

ALGEBRA.

Arithmetic, Palpable
Writing, Ditto.
Neper's Bones, MISCELLANY, i. 6.

ANALYSIS.

Circle of Circles, Magic, xi. 7.
Ciſſoid, i. 1.
Conchoid, i. 2—7.
Conſtruction, i. 8—20. GEOMETRY, ix. 2.
Coteſian Theorem, ii. 21, 22.
Crown, ii. 23.
Cuneus, Parabolic, xiii. 3.
Curve, ii. 18. 24—26. iv. 1—16.
  Harmonic, ix. 4. No. 2—8.
  Logiſtic, xi. 4.
  Cauſtic, ii. 24.
  Diacauſtic, ii. 25.
Curvature, iii. 1—13.
Cycloid, v. 1—8. See alſo Plate CYCLOID.
Cylinder, ii. 3, 4.
Epicycloid, v. 9—11.
Evolute, vi. 1—10.
Fluxion, vii. 1—4.
Function, Analytic, vii. 5—8. GEOMETRY, ix. 3.
Geometry, Analytic, viii. 1—10.
Gyration, ix. 1—4. No. 1.
Harmonic Curve, ix. 4. No. 2—8.
Helicoid, x. i.
Inflection, x. 2—7.
Iſoperimetry, ix. 1—17.
Lemniſcate, xi. 1.
Logarithmic, Atmoſpherical, xi. 2.
    Curve, xi. 3.
Logiſtic Curve, xi. 4.
  Spiral, xi. 5.
Magic Circle of Circles, xi. 7.
  Square of Squares, xi. 6.
Locus, xii. 1—23.
Maxima and Minima, xiii. 1, 2.
Parabolic Cuneus, xiii. 3.
Parallelogram, Analytic, xiii. 4.
Progreſſion, xiii. 5.
Quadratic Equation, xiii. 6.

ANALYSIS.

Quadratrix, xiii. 7—9.
Quadrature, xiii. 10—20.
Ratio, xiii. 21.
Rectification, xiv. 1—5.
Sections, following, xiv. 6.
Solidity, xiv. 7—10.
Square of Squares, Magic, xi. 6.
Subtangent, xiv. 11.
Superficies, xiv. 12—15.
Tangent, xiv. 16—21.
Tangent, GEOMETRY, ix. 14—19.
Variation, NAVIGATION, i. ii. 8, 9.

ANATOMY.

Cranium, xix. xx.
Ear, Anatomy of, v.—vii.
Eye, Anatomy of, i.—iv.
Myology, viii.—xvi.
Oſteology, xvii.—xix.
Skeleton, xvii. xviii.
Viſcera, xxi.—xxiv.

ANATOMY, COMPARATIVE.

Birds, i.—iii.
Horſe, i—iv.

ARCHITECTURE.

Abacus, xxi.
Amphitheatre, ii.—v.
Annulet, xxi.
Arch, vi. 1—7.
  Oblique, xxxix.
  of Adrian, ix. 1.
    Conſtantine, x. 1.
    Severus, ix. 2.
    Titus, x. 2, 3.
Aſtragal, xxi.
Attic Baſe, i. 1, 2.
Baſe, Attic, i. 1, 2.
  Doric, i. 3.
  Ionic, i. 4.
Baſilic, xi.
Baſilica, Roman, from Vitruvius, ii.
  of St. Peter's, ancient and modern, xxv.
Baths of Caracalla, xxxvi. xxxvii.
  Titus, painting from, xxv.
Bead, xxi.
Bridge, Wooden, at Walton, xxxiv.
Bridges, xxxii.—xxxiv. xxxviii. xxxix. lxv.—lxviii.
Cantaliver, xxi.
Capital, Doric, i. 5, 6.
  Egyptian, xxvi.
  Ionic, i. 7.
Capitals, Corinthian and Compoſite, xxvii.
Caracalla, Baths of, xxxvi. xxxvii.
  Circus of, xii.
Carpentry, xlii.—xlvii. lviii.—lxviii.
  Geometrical principles of, lxix.—lxxviii.
Carrara, weſt door of the Cathedral of, xl.
Cavetto, xxi.
Centres, lxvi.—lxviii.

INDEX OF THE PLATES.

ARCHITECTURE.

Chimney, viii. & xli.
Circus of Caracalla, xii.
Compoſite Capitals, xxvii.
Corinthian Ditto, xxvii.
Order from the Temple of Jupiter Stator, in Rome, xxix.
Corona, xxi.
Cyma, xxi.
Cymatium, xxi.
Dome, vii. viii. & xli.
Doors, xxiii. xxiv.
Doric Baſe, i. 3.
Capital, i. 5, 6.
Order, xviii. a.
from the Agora, at Athens, xviii. 5.
Parthenon, xiii.
a Temple at Selinus, xv. 5.
a Temple at Delos, xv. i.
Ægeſta, xv. 3.
the Temple of Philip, at Delos, xv. 2.
Jupiter, at Selinus, xv. 4.
according to Sir W. Chambers, xvi.
from the Temple of Jupiter Panellenius, in Ægina, xvii. 4.
from the Temple of Concord, at Agrigentum, xvii. 3.
from the Temple of Minerva, at Athens, xvii. 5.
from the Temple of Theſeus, at Athens, xvii. 2.
from a Pſeudo-dipteral Temple, at Pæſtum, xvii. 1.
from the Temple of Marcellus, at Rome, xviii. 1.
from an Hexaſtyle Temple, at Pæſtum, xviii. 2.
from the Temple of Jupiter Nemæus, near Argos, xviii. 3.
from the Temple of Juno Lucina, at Agrigentum, xviii. 4.
Echinus, xxi.
Egyptian Capitals, xxvi.
Faſcia, xxi.
Fillet, xxi.
Hindoo Temple in Bahar, xx.
Hollow, xxi.
Joinery, xxii.—xxiv.
Ionic Baſe, i. 4.
Capital, i. 7.
Order, from the Temple of Minerva Polias, at Priene, xxviii.
Latopolis, Portico at, xxx.
Liſtel, xxi.
Modillion, xxi.
Mouldings, xxi.
Ogee, xxi.
Pandroſus, Temple of, at Athens, xix.
Pannel, xxi.
Portico at Latopolis, xxx.
Eaſtern, of the Parthenon, at Athens, xxxi.
Roofs, xlii.—xlvii. lviii. lix.
Scotia, xxi.
Soffit, xxi.
Talon, xxi.
Titus, Baths of, xxv.

ARCHITECTURE.

Torus, xxi.
Trochilos, xxi.
Tuſcan Order from the Church in Covent-Garden, xiv.

ARMOUR.

Bronzes, Ancient, i.—iii.
Carthaginian Armour, iii. 11—14. 16. 18, 19.
Croupiere, or Buttock Armour, v. 2.
Daniſh Armour, iv. 3, 4.
Egyptian Armour, ii. 1, 2.
Greek Armour, ii. 3—10. 14. 18.
Henry the Eighth's Armour, v. i.
Norman Armour, iv. 5.
Plate Armour of Sir Thomas Beauchamp, iv. 6.
Roman Armour, iii. 12. 15. 20.
Saxon Armour iv. i, 2.
Sword, Braſs, in the Britiſh Muſeum, iii. 11. 19.
Tilting Armour of Robert Dudley, Earl of Leiceſter, [illegible] 3.
Half Habit of Prince Henry, v. 4.

ARTILLERY.

Aries, or Battering Ram, i.
Catapulta, ii.
Carriages, i.—v.

ASTRONOMY.

Aberration, i. 1, 2.
Altitude, i. 5, 6.
Parallax of, i. 8.
Refraction of, i. 7.
Anomaly, i. 9.* 10.*
Arc, i. 11.*
Area, i. 12.
Argument, i. 13.
Armillary Sphere, iii. 14.
Aſcending Nodes, xxi. 4.
Aſcenſion, iii. 15—17.
Axis, iii. 18, 19.
Azimuth, iii. 20, 21.
Chronology, iii. 22.
Comet, iv. 23—36.
Comets, Parabolic Orbits of 72, xxii.
Commutation, v. 37.
Configuration, xx. 4.
Copernican Sphere, xx. 7.
Syſtem, xx. 15.
Crepuſculum, v. 38—42.
Culmination, i. 3, 4. v. 43.
Day, v. 43.
Declination, v. 44, 45.
Degree, vi.—viii.
Demicroſs, v. 46.
Denſity, ix. 60.
Depreſſion, ix. 61, 62.
Deviation, ix. 63.
Diameter, ix. 64—66.
Dichotomy, ix. 67.*
Double Star, ix. 67.
Earth, ix. 68—70. x. 71.
Eclipſareon, Ferguſon's, x. 74.
Eclipſe, x. 75—77. xi. 78—89. xi. No. 2. 90—98
Hindoo Computation, xii. 99.

INDEX OF THE PLATES.

ASTRONOMY.

- Eclipſe, Mr. Pond's Machine for, xii. 100.
- Ecliptic, xii. 101—103.*
- Egyptian Syſtem, xx. 16.
- Elevation, xii. 102.
- Elliptic, xii. 103.
- Elongation, xii. 104.
- Epicycle, xii. 105.
- Equal Altitude, xii. 106.
- Equation of the Center, xii. 107.*
  - Time, xii. 108, 109.**
- Equator, xii. 109.*
- Equinox, xii. 110.
- Evection, xii. 107—109. (*one figure*)
- Excentric, xiii. 110—113.
- Galaxy, xiii. 114, 115.
- Geocentric, xiii. 116.
- Globe, xiv. 117—121.
  - Ferguſon's Celeſtial, xv. 122.
    - Planetary, xv. 123.
- Gravitation, xv. 124—138.
- Heat, xvi. 138.
- Heliocentric Latitude, xvi. 139.
- Hemiſphere, Horizon, Tropics, xvi. 140.
  - Northern, i.
  - Southern, ii.
- Horizon, xvi. 140, 141.
- Horodictical Quadrant, xix. 8.
- Hour, xvi. 142.
- Jupiter, xvi. 143—146.
  - Satellites of, xxi. 3.
- Latitude, xvi. 147.
  - Heliocentric, xvi. 139.
  - Reduction, xvi. 148. xix. 10.
- Longitude, xvii. 1.
- Magnitudes, proportional, of the primary Planets, ii. 10.
  - of the Sun, as ſeen from ditto, ii. 11.
- Mars, xvii. 2.
- Meridian Line, xvii. 3, 4.
- Moon, xvii. 5—15.
- Moon's Parallax, xviii. 8—14.
- Nodes, xviii. 2.
- Orion, Conſtellation of, i.
- Paracentric, xviii. 3.
- Parallax, xviii. 4—7.
  - of Altitude, i. 8.
  - of the Moon, xviii. 8—14.
  - of Venus, xviii. 15.
- Particula Exſors, xix. 1.
- Penumbra, xix. 2, 3.
- Planet, xix. 3.*—6.
- Preceſſion of the Equinoxes, xix. 7.
- Proſthaphæreſis, xix. 7.*
- Ptolemaic Armillary Sphere, xx. 6.
  - Syſtem, xx. 14.
- Pythagorean Syſtem, xx. 15.
- Quadrant of Altitude, xiv. 120. xix. 9.
- Quadrant, Horodictical, xix. 8.
- Reduction, Latitude, xvi. 148. xix. 10.
- Refraction, xix. 11.
  - of Altitude, i. 7.
- Retrogradation of Planets, xix. 12.
  - the Sun, xix. 13.
- Saturn's Ring, xix. 14—16.
- Solar Syſtem, ii.
- Sphere, Armillary, iii. 14.

ASTRONOMY.

- Sphere, Copernican, xx. 7.
  - Ptolemaic Armillary, xx. 6.
- Stars, xx. 9—13.
- Syſtem, Copernican, xx. 15.
  - Egyptian, xx. 16.
  - Ptolemaic, xx. 14.
  - Pythagorean, xx. 15.
  - Solar, ii. & xxi. 1—4.
  - Tychonic, xx. 17.
- Times of the Planets, xxi. 2.
- Trigon, xxi. 5—7.
- Tropics, xvi. 140.
- Tychonic Syſtem, xx. 17.
- Velocities of the Planets, xxi. 4.
- Venus, xxi. 8—11.
  - Parallax of, xviii. 15.
- Urſa, Major and Minor, CONSTELLATION ii.
- Whirling Table, xxi. 13—22.
- Year, xxi. 12.

ASTRONOMICAL INSTRUMENTS.

- Aſtrolabe, i. 1.
- Back Staff, i. 2.
- Bird's Quadrant, Graduation of, xviii. 2.
- Biſection of an Arc, xxi. 5.
- Borda's Circle, ii. 4—9.
  - Repeating Circle, without reflection, vi.
- Brewſter's, Dr., Patent Teleſcope, xxx. 4.
- Cavendiſh's, Mr., method of graduating Circles, xviii. 4.
  - Quinqueſections, xviii. 5.
- Chaulné's, Duc de, method of graduating Circles, xviii. 3.
- Circle, Borda's, ii. 4—9.
    - Repeating, without reflection, vi.
  - Graduated, with 2 and 3 verniers, iv. 1—4.
  - Mayer's, ii. 1—3.
  - Mendoza's, iv. 5.
  - Ramſden's, v.
  - Troughton's Engliſh Reflecting, iii. 1, 2.
    - Mural, x.
    - Portable, ix.
    - Repeating, without reflection, vii.
  - Wollaſton's, viii.
- Clavius's method of graduating a Circle, xxi. 1, 2.
- Cole's Quadrant, xxiii. 2.
  - Mr., Equal Altitude, xvii. 3.
- Croſs Staff, i. 3.
- Davis's Quadrant, i. 2.
- Dial, Star, i. 6.
- Dollond's Portable Equatorial, xi. 3.
  - Object Glaſs Micrometer, xii. 4.
  - Refraction Apparatus, xii. 4.
- Dynameters, xxix.
- Elton's Quadrant, i. 8.
- Equal Altitude Inſtrument, Cotes's, xvii. 3.
  - Earl of Ilay's, xvii. 4, 5.
- Equatorial Inſtruments, portable, Dollond's, xi. 3.
  - Fayrer's, xi. 4.
  - Nairne's, xii. 1.
  - Ramſden's, xi. 2.
  - Made by ditto for Sir G. Shuckburgh, xv.
  - Short's, xi. 1.
- Equatorial, Univerſal, by Troughton, xiv.
- Equatorial Inſtrument, Troughton's, at Armagh, xvi.

INDEX OF THE PLATES.

ASTRONOMICAL INSTRUMENTS.

- Equatorial Sector, Graham's, xiii. 1.
  - Siſſon's, xvii. 1, 2.
- Equatorial Stand of a Teleſcope, by Smeaton, xiii. 5.
- Fayrer's Equatorial Inſtrument, xi. 4.
- Fore Staff, i. 3.
- Graduation of Circles, xviii.—xxi.
  - Bird's Method, xviii. 2.
  - Cavendiſh's Method, xviii. 4.
  - Duc de Chaulné's Method, xviii. 3.
  - by Clavius, xxi. 1, 2.
  - Graham's Method, xviii. 1.
  - by Maſcheroni, xxi. 3—5.
  - Troughton's Method, xix. xx.
- Graham's Equatorial Sector, xiii. 1.
  - Quadrant, Graduation of, xviii. 1.
  - Mural Quadrant, xxiii. 4.
  - Zenith Sector, xxxiii. 1.
- Gunter's Quadrant, xxiii. 3.
- Hadley's Octant, xxiii. 1.
- Herſchel's, Dr., 40-feet Reflecting Teleſcope, xxxi.
- Ilay's, Earl of, Equal Altitude Inſtrument, xvii. 4.
- Maſcheroni's Method of graduating a Circle, xxi. 3—5.
- Mayer's Circle, ii. 1—3.
- Mendoza's Circle, iv. 5.
- Micrometer, Object Glaſs, Dollond's, xii. 4.
- Microſcope, Compound, Theory of, xxiv. xxv.
- Nairne's Portable Equatorial, xii. 1.
- Newton's Quadrant, i. 7.
- Nocturnal, i. 6.
- Object Glaſs Micrometer, Dollond's, xii. 4.
- Octant, Hadley's, xxiii. 1.
- Pearſon's, Rev. Dr., Rotative Roof for an Obſervatory, xxii. 5, 6.
- Quadrant, i. 4.
  - Cole's, xxiii. 2.
  - Davis's, i. 2.
  - Elton's, i. 8.
  - Graham's Mural, i. 4.
  - Gunter's, i. 3.
  - Newton's, i. 7.
  - Ramſden's, i. 5.
  - Troughton's, i. 6.
  - Bird's, Graduation of, xviii. 2.
  - Graham's, Graduation of, xviii. 1.
- Ramſden's Aſtronomical Circle, v.
  - Portable Equatorial, xi. 2.
  - Equatorial Inſtrument, made by, for Sir Geo. Shuckburgh, xv.
  - Quadrant, xxiii. 5.
  - Refraction Apparatus, xii. 2.
  - Zenith Sector, xxxiii. 2.
- Rotative Roof, Pearſon's, xxii. 5, 6.
  - Smeaton's, xxii. 1—4.
- Short's Portable Equatorial, xi. 1.
- Siſſon's Equatorial Sector, xvii. 1, 2.
- Smeaton's Equatorial Stand of a Teleſcope, xiii. 5.
  - Micrometer, xiii. 3.
  - Mr., Rotative Roof for an Obſervatory, xxii. 1—4.
  - Support for a Teleſcope, xxx. 8.
- Star Dial, i. 6.
- Teleſcope, Theory of the, with reſpect to Aberrations, &c. xxvi.
- Teleſcope, Achromatic, principles of, xxviii. xxix.
  - Dr. Brewſter's patent, xxx. 4.

ASTRONOMICAL INSTRUMENTS.

- Teleſcope, Dr. Herſchel's 40-feet Reflecting, xxxi.
- Teleſcopes, Reflecting, Theory of, xxvii.
  - chiefly Reflecting, xxx.
  - Refracting, Theory of, xxiv. xxv.
- Troughton's Engliſh Reflecting Circle, iii. 1, 2.
  - Mural, x.
  - Portable Circle, ix.
  - Repeating Circle, without reflection, vii. 1, 2.
  - Method of graduating a Circle, xix. xx.
  - Univerſal Equatorial Inſtrument, xiv.
  - Equatorial Inſtrument at Armagh, xvi.
  - Quadrant, xxiii. 6.
- Tranſit Inſtruments, xxxii.
- Wollaſton's Circle, viii.
- Zenith Micrometer, Dollond's, xxxiii. 3—6.
  - Sector, Graham's, xxxiii. 1.
    - Ramſden's, xxxiii. 2.

BASSO RELIEVO.

- Altars, Pagan, iv. No. 1—5.
- Carrara, Baſſo Relievo on a Capital in the Cathedral of, iv. 1.
- Hercules and Apollo contending for the Tripod, ii. 1.
- Hindû Baſſo Relievo, i. 2.
- Minerva ſubduing Hercules, ii. 2.
- Sphinx, Egyptian Hieroglyphical, i. 1.
- Xanthippus, Tombſtone of, iii.
- Zethus, Antiope and Amphion, Baſſo Relievo of, iv. 2.

BLEACHING.

- Boiling Pan, &c. iv. 1—7.
- Bucking, i. 1—3.
- Drying, iii. 1—4.
- Oxi-muriatic acid, i. 4.
- Waſhing and Clearing, ii. 1—7.

BLOCK MACHINERY.

- Boring Machine, iv. 1—4
- Coaking Engine, ii. 4—9.
- Cornering Saw, iv. 5—9.
- Crown Saw, ii. 1—3.
- Dead Eyes, machine for making, vii. 6, 7.
- Lathe, Face Turning, iii. 3—7.
- Mortiſing Machine, v. 1—6.
- Rivetting Hammer, iii. 1, 2.
- Sawing Machine, i. 1—4.
- Scoring Machine, vii. 1—5.
- Shaping Engine, vi. 1—5.

BOATS. See SHIPS.

CAMP.

- Caſtrametation, v.—xii.
- Circumvallation, lines of, iv.
- Encampment of a Park of Artillery, iii.
- Roman Conſular Camp, according to Polybius, i.
- Roman Camp for Three Legions, and according to the Hyginian ſyſtem, ii.

CANALS.

- Aqueduct Bridge at Kelvin, ii. 19—21.

INDEX OF THE PLATES.

CANALS.

Aqueduct, Caſt Iron, Fulton's, iii. 23, 24.
  Mr. Telford's, on the Shrewſbury Canal, iii. 22.
Barrow, vii. 48.
Bridges, vi. vii.
Deep Cutting, i. 6.
Embanking, i. 4, 5.
Embankment, iv. 25.
Grafting Tool, vii. 50.
Level Cutting, i. 1—3.
Lining, i. 15.
Locks, v. 36—39.
Navigator's Tools, vii. 48—52.
Pile Planks, iv. 30.
Puddling, i. 14.
Rail Ways, Iron, iv. 31—35.
Reſervoirs, i. 16—18.
Safety Gate, iv. 26.
Scoop, vii. 52.
Shovel, vii. 51.
Swing Bridge, vii. 43—47.
Weirs, iv. 27—29.

CANDLE MAKING.

Apparatus for dipping Candles, 1.
  Mould Candles, 4.
Candleſticks, 7—12.
Mould, 6.
  Frame, 5.
Wick Broach, 2.
  Cutter, 3.

CANNON.

Boring Cannon, Machinery for, ii. iii.
Cannon, whole length, i. 1.
Caſcable, i. 2.
Howitzer, i. 7, 10.
Mortar, 1. 4, 11.
  Land, i. 8.
  Sea, i. 5, 6, 9.
  Stone, i. 12.
Muzzle, i. 3.

CANTEENS.

Boring Machine, i. 7.
Bung Stave, i. 6.
Canteen, i. 1.
Center Bit, i. 8.
Croſs Cutting Saw, i. 2, 3.
Punching the Hoops, ii. 18.
Rounding the ends of the Hoops, ii. 19.
Screw Hoop, ii. 11.
Shears, ii. 16, 17.
Slider, i. 9.
Tenanting or Rebating Saw, i. 4, 5.
Truſs Hoop, ii. 12.
Turning the Chime, ii. 14.
  Head, ii. 15.

CASTING.

Apparatus for Caſting.
Cog Wheel, method of caſting, 7—10.
Lifting Screw, 5.
Loom Caſting, moulds for, 11—13.

CASTING.

Open Sand Caſting, 1, 2.
Ramming Tool, 4.
Sand Caſting between flaſks, 6.
Trowel, 3.

CHEMISTRY.

See alſo Furnace *and* Iron Manufacture.

Acid Holder, xvi. 3.
Adopter, xvi. 7.
Air Vault, xv. 1, 2.
  Holder, xiv. 2.
Alcohol, iii. 10.
Alembic, iii. 10.*—13.
Aludel, iii. 14.
Analyſis of Organic Subſtances, Berzelius's Apparatus for, xxi. 4.
Antimony, iv. 15—26.
  Furnaces for the reduction of, iv. 15—26.
Bell, xiv. 3.
Bended Tube, xvi. 6.
Berzelius's Apparatus for the Analyſis of Organic Subſtances, xxi. 4.
Blaſt Furnace, i. vii.—x.
  Works, xi. xiv.
Blowpipe, xi. 1—7.
  double, xiv. 7.
Characters, Ancient Chemical, xi.
Crucible, xvi. 29, 30.
  Stands, xvi. 31, 32.
Cupola Furnace, i. 1, 2.
Cupel, xvi. 33.
Dam Plate, xiii. 3.
  Stone, xiii. 2.
Diſtillation, vii. 1—4.
Evaporating Veſſel, xvi. 23.
Eudiometer, Hope's, xxi. 1.
  Pepys's improvement of Volta's, xxi. 2.
  Volta's, xvi. 22.
  Tubes, xvi. 18.
Furnace, Cupola, i. 1, 2.
  for the reduction of Antimony, iv. 15—26.
  Iron Smelting, ii. 6—9.
  Blaſt, vii.—x.
    Works, xi.—xiv.
Gas Bottle, xvi. 27.
  Holder, xiv. 4.
Gaſes, Apparatus for the Abſorption of, xvii. 9.
Gaſometer, xiv. 1—4.
  Simplified, xvii. 13, 14.
  Pepys's, xvii. 15.
Glaſs Blower's Lamp, xiv. 5, 6.
  Jar, xvi. 20.
Hamilton's Apparatus, xvi. 11.
Hope's Eudiometer, xxi. 1.
Hydraulic Bellows, xvi. 1.
Iron Retort, xvi. 35.
Iron Smelting Furnace, ii. 6—9.
Laboratory, xvi. xvii.
Luſſac and Thenard's Apparatus, xxi. 3.
Mattraſs, xvi. 24.
Mercurial Trough, xvi. 19.
Muffel, xvi. 28.
Nooth's Apparatus, xvi. 10, 12.
Pepys's Improvement of Volta's Eudiometer, xi. 2.
Pneumatic Trough, xvi. 16.

INDEX OF THE PLATES.

CHEMISTRY.

Precipitating Glaſs, xvi. 26.
Proof Glaſs, xvi. 25.
Pyroligneous Acid, Apparatus for the Diſtillation of, xx.
Receiver, xvi. 4, 5, 8.
Retort, xvi. 2.
Separatory Funnels, xvi. 34.
Shoe Lamp, xiv. 6.
Still, i. 1—5.
Supporter, xvi. 17.
  Iron ring, xvi. 21.
Tymp Plate, xiii. xiv. 4.
Volta's Eudiometer, xvi. 22.
Water Regulator of a Blaſt Furnace, xiii. xiv. 2.
Wollaſton's Scale of Chemical Equivalents, xxi. 5, 6.
Woulfe's Apparatus, v. vi.

CLOUDS.

Cirro Cumulus, i. 4.
Cirro Stratus, i. 2. ii. 1, 2. 4.
Cirrus, i. 1, 3.
  Cirro Cumulus, ii. 3.
Cumulo Stratus } i. 6. ii. 4.
Cumulus } i. 6. ii. 4.
Nimbus, i. 5.

CONICS.

Ambigenal, i. 1.
Abſciſſe, i. 2.
Aſymptote, i. 2, 3. Geometry, ix. 4.
Axis. Geometry, ix. 5, 6.
Cone, i. 4—10.
Conic Sections, ii.—vi.
Harmonic Diviſion of a Line, ii. 1.
Ellipſe, vii. & viii. viii. & ix.
Hyperbola, x. xi.
Parabola, xii.

COTTON MANUFACTURE.

Batting Machine, ii. 1—5.
Calico Printing, i. 1—6.
Carding, iv. 1—4.
Deviling, iii. 1—5.
Drawing Frame, v. 1—4.
Doubling Machine, xiii. 1, 2.
Mule Spinning, xi. 1—5.
Reeling, xii. 1, 2.
Roving Can Frame, vi.
  Frame, (double Speeder) vii. viii.
Spinning Frame, Throſtle, x. 1—3.
  Water, ix. 1—6.
Strutt's, Meſſrs., Cotton Mills at Belper, xiv.
Twiſting Machine, xiii. 3, 4.
Winding ſewing Cotton into Balls, Machine for, xii.

CUTLERY.

Grinding Mill, Troughs of, 1.
Preſſing Vice, 3.
Spring Drill, 3.
Tongs for preſſing Knife-handles.

CYCLOID.

Fig. 1—8.

See alſo Analysis, v. 1—8.

DIALLING.

Declinator, i. 1—3.
Dial, Cylindrical, iii. 27, 28.
  Eaſt, ii. 16.
  Equinoctial, i. 4.
    Univerſal, i. 5.
  Horizontal, i. 8—12.
  Inclined. ii. 23.
  Moon, iv. 25, 26.
  Polar, ii. 17.
  Portable, iii. 29, 30.
  South, ii. 15.
  Vertical Declining, ii. 21, 22.
    North, ii. 14.
    South, i. 13.
  Univerſal, i. 6.
    on a Croſs, iii. 31—33.
    Mechanical, ii. 24.
  on three Planes, ii. 19.
  Primary, ii. 20.
  Ring, iv. 34—37.
  Tide, Miscellany, xxv. 10.
Dialling Cylinder, iv. 38—41.
  Lines, iv. 42.
Dials conſtructed by a Globe, iv. 36, 37.
Scales, Dialling, iv. 42.

DOCKS.

Eaſt India
Liverpool
London
Weſt-India

DRAWING.

Claud Lorraine, Engraving from an original Drawing by, x.
Hatching's ſpecimens of, i.—iii. 3—6.
Head, proportions of, i.—iii. 1, 2. 4. 5.
Landſcape, viii.—x.
Outlines of the Human Face, i.—iii. 1, 2. 4. 5.
Pouſſin, G., Engravings from original Drawings by, viii. ix.
Shadows, i.—iii. 3, 6.
Tinted Drawing, x.
Waſhed Ditto, x.

DRAWING INSTRUMENTS.

Camera Lucida, by Wollaſton, i. 6.
Compaſſes, i. 1—3.
  Beam, i. 3.
  Compound proportional, i. 8, 9.
  Elliptic, Plate Turning, fig. 20.
  Hair, i. 6.
  Pocket, i. 7.
  Triangular, i. 1, 2.
    method of adapting a quick and ſlow motion to, i. 10, 11.
Delineator, Miſs Edgeworth's, i. *Delineators*, 2, 3.
  Peacock's, i. 1.
Elliptograph, by Farey, ii. 3.
Optigraph, Ramſden's, improved by Jones, i. *Delineators*, 4.
Oval, Inſtrument for Drawing, ii. 1, 2.
Protractor, reflecting, by Sir H. Douglas, i. 7.

INDEX OF THE PLATES.

ELECTRICITY.

Battery, Prieſtley's, i.
Teyler's, i.*
Conſtruction of the inſide connecting Frame, xv. 7.
Bruſh, xv. 6.
Condenſers, ii. 4—9.
Configurations, vi.
Diſchargers, iii. 10—20.
Doubler, Cavallo's, iii. 21—25.
Electricity, Medical, x. 13, 14. xv. 1.
Electrometer, xii. xiii.
Electrophorus, vii. & xiv. (xiv.) 1, 2.
Experiments, Electrical, iv. v. vii. & xiv.
Flyers, Electrical, vii. 51.
Inflammable Air Lamp, Volta's, vii. 55.
Piſtol, vii. 53, 54.
Machine, Electrical
Beccaria's, ix. 10.
Common, ix. 11.
Cuthbertſon's, i.* xi. (*Numbered* x.)
Hawkſbee's, vii. 1, 2.
Nairne's, ix. 12.
Nollet's, vii. 3.
Van Marum's, ix. 18.
Dr. Watſon's, vii. 4.
Wilſon's, vii. 5.
Machines, various, viii.
Thunder-houſe, xv. 2, 3.
Tooth, Apparatus for electrifying, xv. 1.
Torpedo, xv. 4, 5.

ENGINE.

Cutters, Engine for ſharpening, by Rehe, vi. 1—6.
Cutting Engine, by Hindley, ii. 1—3. iii. 1—5.
Rehe, iv.
Dividing Engine, by Ramſden, vii.—xi.
for ſtraight Lines, xii.
Roſe Engine, or figure Lathe, by Holtzapffell and Deyerlien, iii. 6—12.
Screw of Ramſden's circular dividing Engine, for cutting, x.
Screw of Ramſden's ſtraight Line dividing Engine, for cutting, xi.
Weighing Engine, by Salmon, i. (*Numbered Plate* II.)

ENGRAVINGS—*Early Britiſh.*

Alfred's Jewel, Engraving from
Anſelm's Seal, Engraving from
Fulbourn, William de, Engraved Braſs on the Tomb of

FARRIERY.

Horſe Shoes, various

FORTIFICATION.

Angle at the Center, i. 1. C
Baſtion i. 1. v. o, p v.* A, B
Battery, ii. 1, 2. v. No. 3. v.* M.
en Barbe, ii. 3
Belidor's firſt Method, viii. 15.
Bonnet, v. m
Breaſtwork. (See *Battery.*)

FORTIFICATION.

Bridges, v. s. v.* Q
Cavalier, i. 2, 3.
Conſtruction, v.—vii.
Covert-way, v. b
Counterſcarp, v. c
Counterguard, v. n
Crown-Work, v. l vi. 2.
Curtain, i. 1. v. q
Eçhellon, iii. 1—4.
Enfilade, iii. 5.
Expenſe Magazine. (*The figures are omitted*)
Field Fortification, iii. 6—14.
Flank of an Army. (*The figures are omitted*)
Fort, iv. 4—10. v. No. 4.
Fortified Place, v. 4.
Gabion, v.* 8.
Gallery, v.* 7.
Glacis, v. a v.* N, 6.
Gorge, i. 1.
Half Moon, v. k
Horn Work, v. f vi. 1.
Irregular Fortification, v. 1.
Line, vi. 3—5.
Lines of Circumvallation, v. 2. v.* D
Lunette, vi. 6—8.
Mantelet, vi. 9.
Mine, v. 6. vi. 10—15.
Moat, v. h v.* P
Parallel of Arms, v.* E. F. G
Places of Arms, v. g v.* I, O
Polygon, i. 1.
Profile of a Fortification, v. 3.
Rampart, v. r
Ravelin, v. i. v.* C vii. 4.
Redoubts, Square, v.* K vii. 5.
Regular Fortification beſieged, v.* 5.
Sap, v. No. 5.
Tenaille, v. d, e vii. 6—8.
Tenaillon, vii. 9.
Traverſes, v.* L
Trenches of Approach, v. No. 1.

FURNACE.

(*See alſo* CHEMISTRY *and* IRON MANUFACTURE.)

Air Furnace, i. 1—3.
Common, ii. 2.
Black's, Dr., Furnace, ii. 1.
Portable Ditto, ii. 6—11.
Bone's, Mr., Enamelling Furnace, v. 10, 11.
Enamelling Watch Dial Plates, Furnace for, v. 1—9.
Knight's, Mr., Furnace, ii. 3.
Portable Ditto, ii. 5.
Muſhet's, Mr., Furnace, ii. 4.
uſed by, for Experiments on Iron and Steel, iii. 1—3.
Tobacco-pipe maker's Furnace, iii. 4, 5.

GARDENING.

Bark Beds and Pits, i. 1—4.
Conſervatory and Green Houſe, ii. 1—6.
Hothouſe, iii. 1—3.
Loudon's for Pines, iii. 3—5.

INDEX OF THE PLATES.

GEOGRAPHY.

Diſtance, i. 1.
Horizon, i. 2, 3.
Map, i. 4—8.
Meridian, Navigation, i. & ii. 1.
Pole, Ditto, i. & ii. 1.
Tide, Ditto, i. & ii. 4—8.

GEOMETRY.

(*See alſo* Analysis.)

Alternate Angles, i. 1.
Altitude, i. 2—13.
  and Diſtance, i. 14.
Analyſis, ix. 1.
Angle, ii. 1—26.
  of Contact, ix. 9.
Antiparallel, ii. 27.
Application, ii. 28—34.
Arch, iii. 42—44. 44.* 45.*
Aſymptote, ix. 4.
Axis of the Ellipſe and Hyperbola, ix. 6.
Baſe, iii. 46.*
  of a Cylinder, ix. 7.
Bevel, iii. 35—39.
Cardioide, iii. 48.*
Catenaria, iii. 49.*
Chord, iii. 45—48.
Circle, iv. v.
Complement of a Parallelogram, ix. 8.
Conſtruction, ix. 2.
Contact, Angle of, ix. 9.
Cube, ix. 10. xii.
Cyclograph, ix. 11.
Cylinder, Baſe of a, ix. 7.
Decagon, vi. 74. 83.
Diagonal, vi. 75—77.
Diameter, vi. 78, 79.
Diophantine, vi. 84.
Dirigent, vi. 80.
Diſtance, vi. 85, 86.
Diviſibility, vi. 81.
Diviſion, vi. 82.
Dodecagon. See *Hexagon.*
Dodecahedron, xii.
Extreme and mean Proportion, vii. 87.
Fruſtum, vii. 88—95.
Function, Analytic, ix. 3.
Gnomon, viii. 96.
Hexagon, viii. 97.
Honeycomb, viii. 98, 99.
Hyperbolic Logarithms, ix. 3.
Hypotheneuſe, viii. 100.
Icoſahedron, xii.
Inclination of Planes, viii. 101.
Indiviſibles, viii. 102.
Internal Angle, viii. 103, 104.
Iſoſceles Triangle, viii. 105.
Line, x. 1, 2.
Lunes, x. 2. 5.
Multiplication, x. 6, 7.
Octagon, x. 8.
Octahedron, xii.
Parallel, x. 10.
  Ruler, x. 11, 12.
Parallelepiped, x. 13.
Parallelogram, x. 14, 15.

GEOMETRY.

Pelecoides, x. 16. (*On Plate* x. xi.)
Pentagon, x. 17, 18. (*On Plate* x. xi.)
Perpendicular, xi. 4, 5.
Polygon, xi. 6.
Polygonometry, xi. 7—11.
Poriſm, xi. 12, 13.
Poſition, Geometry of, xi. 14.
Priſm, xi. 15.
Proportional, xi. 16, 17.
Pyramid, ix. 12, 13.
Quality, xii. 1.
Reciprocal Figures, xii. 2.
Rectangle, xii. 3, 4.
Reduction, xii. 5—8.
Regular Body, xii. 9.
Rhomboides, xii. 10.
Rhombus, xii. 11.
Ring, xii. 12.
Scale, xiii. 1—3.
Secant, xiii. 4.
Sector, xii. 12. xiii. 5—12.
Segment, xiii. 13.
Similar Curves, xii. 13.
Solid Angle, xiv. 1.
Solidity, xiv. 2.
Sphere, xiv. 3.
Spheroid, xiv. 4.
Spiral, xiv. 5—9.
Square, xiv. 10, 11.
Staff, xiv. 12, 13.
Stereographic Projection, xiv. 14—16.
Sub-contrary, xv. 1.
Sub-normal, xv. 2.
Tangent, ix. 14—19. xv. 3.
Tetrahedron, xii. xv. 4.
Triangle, Equilateral, xv. 5.
  Iſoſceles, xv. 13.
  Menſuration of, xv. 10.
  Obtuſangular, xv. 8.
  Properties of, xv. 11, 12.
  Rectangular, xv. 7.
  Scalene, xv. 6.
Triangles, Similar, xv. 9.
Vertex, xv. 18.
Ungula, xv. 19.
Volute, Goldman's, xv. 20, 21.

GUNNERY. (*See alſo* Cannon.)

Bomb, 6.
Caliber Compaſs, 7.
Nock's Improved Breech, 2.
Petard, 4.
Pointing of a Gun, 1.
Quadrant, 5.

HERALDRY.

Abatements, i.—vi.
Achievements borne at the interment of the Earl of Chatham, xi.
Achievements, Funeral, xii.
Badge of Baronets of England and Ireland, xiv.
  Nova Scotia, xiv.

INDEX OF THE PLATES.

HERALDRY.

Badge borne by the Duke of York, as Biſhop of Oſnaburgh, xiv.
Badge of a Civil Knight Grand Croſs of the Order of the Bath, ix.
Badge of a Companion of the Order of the Bath, viii.
Badge of a Military Knight Grand Croſs of the Order of the Bath, viii.
Badge of a Knight Commander of the Order of the Bath, viii.
Badge of a Civil Commander of the Royal Hanoverian Guelphic Order, ix.
Badge of a Civil Knight of the Royal Hanoverian Guelphic Order, ix.
Badge of a Civil Knight Grand Croſs of the Royal Hanoverian Guelphic Order, ix.
Badge of a Military Knight Grand Croſs of the Royal Hanoverian Guelphic Order, viii.
Badge of a Military Commander of the Royal Hanoverian Guelphic Order, viii.
Badge of a Military Knight of the Royal Hanoverian Guelphic Order, viii.
Badge of the Order of the Garter, viii.
    St. Patrick, viii.
    the Thiſtle, viii.
Cap, ancient Baron's, xiii.
  of Maintenance, xiii.
  Lord Mayor's, x. B.
Cardinal's Hat, x. B.
Celeſtial Heraldic Crown, xiii.
Chaplet, xiii.
Civic Wreath, xiii.
Collar of a Civil Knight Grand Croſs of the Order of the Bath, ix.
Collar of a Military Knight Grand Croſs of the Order of the Bath, viii.
Collar of the Order of the Garter, viii.
Collar of a Civil Knight Grand Croſs of the Royal Hanoverian Guelphic Order, ix.
Collar of a Military Knight Grand Croſs of the Royal Hanoverian Guelphic Order, viii.
Collar of the Order of St. Patrick, viii.
    the Thiſtle, viii.
Coronets, x.
  Nephew of the King
  Niece of the King
  Prince of Wales
  Younger Sons of the King
  Daughters of the King
  Grand-Daughters of the King
  Prince Leopold of Saxe Cobourg
  Duke
  Marqueſs
  Earl
  Viſcount
  Baron
  Count of Hanover
  Baron of Hanover
  Baron of Auſtria
  Count of the Empire
  Prince of the Empire
  Dauphin of France
  French Prince of the Blood
  Duke of France
  Marquis of France
  Comte of France, x. B.

HERALDRY.

Coronets,
  Viſcomte of France, x. B.
  Duke of Spain x. B.
Crowns, x.
Crowns, Heraldic, xiii.
Crown, x.
  of England
    Scotland
    Hanover
    Hungary
    Auſtria
    Bohemia
    Ruſſia
    France
    Charlemagne
Crown x. B. Pruſſia
    Spain
    Sweden
    Sicily
    Portugal
    Netherlands
    Denmark
    Wurtemburg
    Bavaria
    Grand Signior
    Perſia
    Papal (*tiara*)
    Saxony
    Sardinia
    Hayti
    Grand Duke of Heſſe
    Poland,
    Grand Duke of Saxe Weimar
    Landgrave of Heſſe
    Imperial, of Napoleon Bonaparte
    Italy
    Doge of Venice
    Grand Duke of Tuſcany
Diſtinctions, Royal, xiv.
  of Houſes, xiv.
Ducal Heraldic Coronet, xiii.
Eaſtern Heraldic Crown, xiii.
Eſcutcheons, i.
  Diaper
  Gutté
  Impaled
  Maſoned
  Points
  Quartered
  Semé
Flags, Standards, &c. vii.
  Admiralty
  Blue Enſign
  Board of Ordnance
  Camp Colours
  Cuſtom-houſe
  Eaſt India Company
  Guidon of the Royal Horſeguards, Blue
  Navy Office
  Red Enſign
  Regimental Colour
  Royal Standard
  Standard of the Royal Horſeguards, Blue
  Trinity Houſe
  Victualling Office

INDEX OF THE PLATES.

HERALDRY.

- Flags, Standards, &c. vii.
  - Union, or King's Colour
  - Union Jack
  - White Enſign
- Furs, i.
  - Ermine
  - Ermines
  - Erminois
  - Pean
  - Potent, Counter Potent
  - Vair, Counter Vair
- Hat, Cardinal, x. B.
- Hatchments, xii.
- Helmets, Heraldic, xiii.
  - Baron and Knight
  - Eſquire
  - Nobility
  - Creſt, &c. of the Britiſh Sovereign, xiii.
- King of Arms, Heraldic Crown of, xiii.
- Laureate, xiii.
- Lord Mayor's Cap, x. B.
- Metals and Colours, i.
  - Argent
  - Azure
  - Gules
  - Or
  - Purpure
  - Sable
  - Vert
- Mitre, x.
  - Archbiſhop
  - Biſhop
- Mural Crown, xiii.
- Naval Crown, xiii.
- Obſidional, xiii.
- Olive, xiii.
- Orders of Knighthood, viii. ix.
- Paliſado, xiii.
- Partition Lines, i.
- Roundles, i.
  - Bezant
  - Fountain
  - Golpe
  - Guze
  - Hurt
  - Orange
  - Pellet
  - Plate
  - Pomme
  - Torteaux
- Star of a Civil Knight Grand Croſs of the Order of the Bath, ix.
- Star of a Knight Commander of the Order of the Bath, ix.
- Star of a Military Knight Grand Croſs of the Order of the Bath, viii.
- Star of the Order of the Garter, viii.
- Star of a Civil Commander of the Royal Hanoverian Guelphic Order, ix.
- Star of a Civil Knight Grand Croſs of the Royal Hanoverian Guelphic Order, ix.
- Star of a Military Commander of the Royal Hanoverian Guelphic Order, ix.
- Star of a Military Knight Grand Croſs of the Royal Hanoverian Guelphic Order, viii.
- Star of the Order of St. Patrick, viii.

HERALDRY.

- Star of the Order of the Thiſtle, viii.
- Trigonal, xiii.
- Vallarie, xiii.
- Wreath, xiii.

HOROLOGY.

- Amant's Eſcapement, xxxiii. 4.
- Anchor Eſcapement, xxxii. 3.
- Arnold's Chronometer, xiv.
- Atwood's Theory of the Balance, xxxi. 1—5.
- Balance, Theory of, xxxi.
- Balances, Compenſation, xxix. xxx.
- Bennet's Eſcapement, xxxii. 7.
- Berrollas' Infallible Repeater, xlvii. 6—8.
- Berthoud's Compenſation Balance, xxx.
  - Compenſating Pendulum, xl. 3.
  - Eſcapement, xxxiii. 1. xxxiv. 4—8. xxxvi. 1.
- Bethune's Eſcapement, xxxiii. 3.
- Breguet's Remontoir Eſcapement, xli. 5, 6.
- Brockbank's Aſtronomical Clock, xxiii.
  - Chronometer, xv.
- Chronometer, Arnold's, xiv.
  - Brockbank's, xv.
  - Earnſhaw's, xiv.
- Callipering, x.
- Clepſydræ, Ancient, i.
  - Modern, ii.
- Chime-work at St. Margaret's Weſtminſter, v. vi.
- Chimes, vii.
- Clock-movement, iii. iv.
- Clock-work, xxv.
  - Striking part by Maſſey, xxvi.
    - Prior, xxvi.
- Clock, Aſtronomical, by Reid, xxii.
  - Brockbanks, xxiii.
  - Equation, by Enderlin, xxiv.
  - by Ferguſon, xviii.
  - by Franklin, xviii.
  - Ancient, by De Wick, viii.
  - with Chimes, xvi. xvii.
  - Thirty Hour, with Alarum, &c. ix.
  - Portable Eight Day, xi.
    - Striking part of, xii.
  - Tools, xix.—xxi.
- Compenſating Pendulums, xxxix. xl.
- Compenſation Balances, xxix. xxx.
  - Curbs, xxviii. xxx.
- Crown Wheel, xxxi. 6.
- Cumming's Compenſation Curb, xxx.
  - Eſcapement, xxxiii. 6.
- Curbs, Compenſation, xxviii. xxx.
- De Lafon's Remontoir Eſcapement, xlii. 1, 2.
- Deparcieux's Compenſating Pendulum, xxxix. 6. 7.
- De Wick, ancient clock by, viii.
- Dial-work, xxxiii.
  - of a clock, ſhewing the moon's age, &c. xxxi.
  - new, of a ſmall ſpring clock, ſhewing the phenomena of the moon, xxxii.
- Doughty's Compenſating Pendulum, xl. 8.
- Earnſhaw's Chronometer, xiv.
- Ellicott's Compenſating Pendulum, xl. 1.
- Elliot's Repeating Watch, xlvii. 1—5.
- Enderlin's Equation Clock, xxiv.

INDEX OF THE PLATES.

HOROLOGY.

Eſcapement, xxxi.—xxxvi.
    Remontoir, xli.
    Amant's, xxxiii. 4.
    Anchor, xxxii. 3.
    Bennet's dead beat, xxxii. 7.
    Berthoud's, xxxiii. 1.
        for Chronometers, xxxiv. 4—8.
        xxxvi. 1.
    Bethune's, xxxiii. 3.
    Cumming's, xxxiii. 6.
    Duplex, xxxv. 5.
    Goodriche's, xxxvi. 3.
    Graham's dead beat, xxxii. 4, 5.
        Horizontal, xxxii. 2.
    Grignon's dead beat, xxxii. 6.
    Harriſon's, xxxiii. 5.
    Hooke's, xxxi. 8.
    Huygens's, xxxi. 7.
    Le Roy's, xxxiii. 8.
        Improved, xxxiv. 1—3.
    Margett's, xxxv. 3.
    Maſſey's, xxxvi. 5.
    Mudge's, xxxiii. 7.
        for Chronometers, xxxv. 1.
    Nicholſon's, xxxvi. 2.
    Robins's, xxxv. 4.
    Smeaton's, xxxiii. 2.
    Sully's, xxxii. 1.
    Thiout's, xxxii. 8.
    Tompion's, xxxv. 7.
    à Virgule, xxxv. 6.
    free, for a pendulum, xxxv. 8.
Ferguſon, Mr., Clock by, xviii. 2.
Fordyce's Compenſating Pendulum, xl. 5.
Franklin, Dr., Clock by, xviii. 1.
Fuſee, Theory of, xxxvi. 6, 7.
    Engine, xxxvii. 1—8. xxxviii. 1, 2.
    Frame, xxxviii. 3.
Goodriche's Eſcapement, xxxvi. 3, 4.
Graham's Compenſating Pendulum, xxxix. 4.
    Eſcapement, dead beat, xxxii. 4, 5.
        horizontal, xxxii. 2.
Grignon's Eſcapement, xxxii. 6.
Haley's Remontoir Eſcapement, xli. 1—4.
Hardy's Remontoir Eſcapement, xli. 7.
    Compenſation Balance, xxx. 3—5.
    Iſochronal Compenſation, xxx. 7, 8.
Harriſon's Eſcapement, xxxiii. 5.
Hooke's Eſcapement, xxxi. 8.
Huygens's Eſcapement, xxxi. 7.
Le Roy's Compenſating Pendulum, xxxix. 8.
    Eſcapement, xxxiii. 8. xxxiv. 1—3.
Margett's Eſcapement, xxxv. 3.
Maſſey's Eſcapement, xxxvi. 5.
    Remontoir Eſcapement, xlii. 3.
    Striking part of Clock-work, xxvi. 1.
Mendham's Remontoir Eſcapement, xlii. 4—6.
Mudge's Eſcapement, xxxiii. 7.
    Time-keeper, xiii.
Nicholſon's Compenſating Pendulum, xl. 10.
    Eſcapement, xxxvi. 2.
Pendulum, Troughton's, xxvii.
Pendulums, Compenſating, xxxix. xl.
Prior's Remontoir Eſcapement, xlii. 7, 8.

HOROLOGY.

Prior's Striking part of Clock-work, xxvi. 2, 3.
Recordon's Renovator, xliii. 1, 2.
Regnauld's Compenſating Pendulum, xl. 5.
Reid, Aſtronomical Clock by, xxii.
Reid's Compenſating Pendulum, xl. 7.
Remontoir Eſcapements, xli. xlii.
Ritchie's Compenſating Pendulum, xl. 9.
Robins's Eſcapement, xxxv. 4.
Smeaton's Eſcapement, xxxiii. 2.
Sully's Eſcapement, xxxii. 1.
Thiout's Eſcapement, xxxii. 8.
Time Keeper, Mudge's, xiii.
Tompion's Eſcapement, xxxv. 7.
Troughton's Pendulum, xxvii.
    Compenſating Pendulum, Mercurial, xl. 4.
        Rhomboidal, xl. 2.
Ward's Compenſating Pendulum, xl. 6.
Watch, with Alarum, xliv. 9—14. xlvi.
    Common, xliv. 1—8.
    with Muſic, xliii. 4—9.
    Repeating, xlv. 1—6. xlvi. xlvii.
    Rolling, xliv. 15—18.

HYDRAULICS.

Archimedes' Screw, xiv. 11—13.
Contracted Vein, i. 1—4.
Counterpreſſure, i. 5.
Diſcharge of Fluids, i. 6—17.
Diving Bell, Dr. Halley's, ii. 18.
    Spalding's, ii. 20.
    Triewald's, ii. 19.
    Machine, Klingert's, ii. 21—27.
Dredging Machine uſed on the Thames, iii. 1, 2.
Eddy, iii.* 3.
Fire Engine, iii. 4.
    Newſham's, iii.* 5—11.
    Rowntree's, iv. 1—6.
Floating, viii. 1, 2.
Fluids, i. v. vi.
    Diſcharge of, i. 6—17.
Fountain, vi. vii.
Hiero's Crown, viii. 5.
Hydromancy, viii. 3, 4.
Hydrometer, ix. 1.
    Clark's, ix. 2, 3.
    Deſagulier's, ix. 4.
    De Luc's, ix. 5.
    Nicholſon's, ix. 6.
Hydroſtatic Balance, x. 7, 8.
    Deſagulier's, x. 9.
    Martin's, x. 10.
Hydroſtatic Bellows, x. 11.
    by Ferguſon, x. 12—14.
Hydroſtatical Paradox, x. 15, 16.
    Inſtrument, Bradford's, xii. 14.
Hygrometer, xii. xiii.
    Anderſon's, xii. 8.
    Ferguſon's, xii. 12.
    Forſter's, xiii. 11.
    Hale's, xii. 11.
    Hooke's, xii. 9, 10.
    Kater's, xiii. 12.
    De Luc's, xiii. 5, 6. 8, 9.

INDEX OF THE PLATES.

HYDRAULICS.

Hygrometer, Sauſſure's, xiii. 7.
  Smeaton's, xiii. 1—4.
Hungarian Machine, xiii. 10.
Jet d'Eau, xiv. 1.
Moiſture, xiv. 2.
Perſian Wheel, xiv. 3.
Pump, Chain, xiv. 8, 9.
  Cteſebe's, xiv. 7.
  Forcing, xiv. 5.
  Lifting, xiv. 6.
  Rope, xiv. 9, 10.
  Sucking, xiv. 4.
  Captain Jekyl's improved, for Ships, xv. 1—8.
  Martin's Ditto, xv. 9.
Sipho Wirtembergicus, xv. 6.
Siphon, xv. 1—5.
  Papin's, xv. 6.
Springs, xv. 7.
Syringe, xv. 8—10.
Tantalus's Cup, xiv. 10.
Water Screw, xiv. 14, 15.
Wave, xv. 11—14.

HYDROSTATICS.

Capillary Tubes, &c. 1—17.

IRON MANUFACTURE.

(*See alſo* Chemistry & Furnace.)

Crucibles, Mould for making, vii. 4—7.
Finery, ii. 1, 2.
Forge, i. 1, 2.
  Hammer, Smeaton's Machinery for, iv. 1, 2.
Fork, Iron, ii. 6.
Furnace, Balling, ii. 10, 11. iii. 1. 5—7.
  Reverberatory, iii. & iv. 1.
Hammer for drawing out Bars, ii. 9.
Ladle, Iron, ii. 7.
Rollers for making Bar Iron, v. 1—4.
  Plate, v. 5, 6.
Rolling and Slitting Mill, vi. 1—3.
Stamping Iron, ii. 8.
Steel-converting Furnace, vii. 1—3.
  Mill for Tilting, viii. 1, 2.
Tongs, ii. 5.
Tuyere Iron, ii. 4.

LAMPS.

Argand's, i. 1—3.
Barton's, ii. 5.
Kier's, i. 5, 6.
King's Hydro-pneumatic, ii. 1—4.
Lamp Cotton, i. 4.
Porter's Automaton Lamp, ii. 6—8.
Rolling Lamp, i. 7.

LATHE.

By H. Maudſlay, 1—10.

LIGHT.

Luminous Animals. (*See the Plates of* Natural History.)

LIGHT-HOUSE.

Eddyſtone, 1—8.

MAGNETISM.

Compaſs, i. 1—12. ii. 13—16.
  Variation, iii. 17—22.
Dipping, iv. 22—29.
  Needle, by Dr. Lorimer, iv. 30.
    by Nairne, on Mr. Mitchel's plan, v.
Magnet, vi. vii.

MASONRY.

Arch, Cylindric, ii. 1. No. 2.
  Cylindro-Cylindric, ii. 2.
    Cylindroic, ii. 2. No. 2.
  Plano Cylindroic, ii. 1.
Maſonry, Greek, i. 6.
  Incertain, i. 2.
  Iſodomum, i. 3.
  Pſeudiſodomum, i. 4.
  Reticulated, i. 1.
  Roman Emplection, i. 5.

MECHANICS.

Acceleration, i. 1, 2.
Angle of Elevation, i. 3, 4.
Angular Motion, ii. 1.
Axis in Peritrochio, i. 5—7.
Balance, ii. 8—11.
  Aſſay, ii. 13.
  Bent Lever, ii. 12.
Ballaſt, ii. 14.
Boring Cylinders, Dixon's Machine for, xxiii. 1, 2.
  Water Pipes, ii. 2—4.
Crab, ii. 5.
Cylinder, Double, ii. 6, 7.
Jack, for raiſing Weights, ii. 8, 9.
  Smoke, ii. 10.
Lever, ii. 11—13.
Projectiles, ii. 14—17.
Capſtan, iii. 15—21.
Center of Friction, iv. 21.
  Gravity, iv. 22—29. v. 30—40. vi. 41—51.
  Gyration, vii. 52—54.
  Motion, vii. 55.
  Oſcillation, vii. 56—60. viii. 61—66.
  Percuſſion, viii. 67—69.
  Poſition, ix. 70—73.
  Preſſure, ix. 74, 75.
  Rotation, ix. 76—80.
Central Forces, x.
Centrifugal Forces, x.
  Machine, xi. 93.
Centripetal Forces, x.
Centrobaryc Method, xi. 94—99.
Chains, xii. 1—9.
Clay Mill, xii. 10, 11.
Coach, xiii.
Coal Meaſuring, xiv.
Cocks, Water, xiv.
Colliſion, xv. 1—24.
Colour Mill, xxxv. 1—6.
Comb Making, xv. 1—7.
Compoſition of Motion, xvi. 1, 2.
Condenſer of Forces, Prony's, xvi. 10, 11.
Cone, Double, xvi. 7.

INDEX OF THE PLATES.

MECHANICS.

Cork Screw, xvii. 1—4.
Corking Machine, xvii. 5.
Coupling Box, xv. 6—8.
Crane-necked Carriage, xiii. 1.
Cranes, various, xxi.
  by Braithwaite, xx. 3, 4.
    Dixon, xx. 5.
    Ferguſon, xviii. 2, 3.
    Smeaton, xix. 2, 3.
    White, xx. 1, 2.
Cylinders, Dixon's Machine for boring, xxiii. 1, 2.
Direction, Line of, xxii. 4—6.
  of Motion, xxii. 3.
Bolts, Ships', Hill's Machine for drawing, xxiii. 1, 2.
Drilling Machines, xxiv. 10, 11.
Drills, xxiv. 1—9.
Dynamics, xxv. 1—7.
Dynamometer, M'Dougal's, xxvi.* 1.
  Salmon's, xxvi.* 2.
Expanding Riggers, Mr. Farey's, xxvi. 8—11.
  Mr. A. Flint's, xxvi. 5—7.
Flour Mill, Dr. Barker's, xxxiii. 3.
  Common Breaſt Mill, xxxiii. 1.
  Portative or Hand Mill, xxxiii. 4.
  deſigned by Smeaton, xxxiv.
Fly Preſs, xxvii. 1—9.
Force, xxviii. 1—20.
Friction, xxix. 1—3.
Fulling Mill, xxix. 4—6.
Jacob's Contrivance for the Fore-wheel of a Coach, xiii. 2.
Inclined Plane, xxxiv. 16—21.
Lead Pipes, Machine for caſting and drawing, xl.
Logwood Mill, xxxi. 1—5.
Mechanical Powers, xxx. & xxxvi. 16, 17. xxxii. 1—17.
Motion, xxxiv. 1—11.
  Diagonal, xxxiv. 2—5.
  Perpetual, xxxiv. 11.
Percuſſion, xxxiv. 12—15.
Pile-driving Machine, xxxv. 1—7.
  Engine, Valoue's, xxxv. 8, 9.
Piles, Bramah's Machine for drawing, out of the Ground, xxxv. 10.
Pulley, xxx. & xxxvi. 11—13.
Refraction, xxx. & xxxvi. 14.
Rotation, xxxvii. 1—10.
Screw, xxxviii. 1—4.
  Machine for trying, xxxviii. 5.
Solid of the leaſt reſiſtance, xxx. & xxxvi. 15.
Spring, xxxviii. 6—10.
Steelyard, xxxviii. 11.
Strength of Materials, xxxix. 1—13.
Threſhing Mill, Salmon's portable, xxvii.
Wedge, xxx. 1—5.
Weight, xxx. 6, 7.
Wheel, xxx. 8—13.

MILITARY MANŒUVRES.

Manœuvre, firſt to the fourth, i.
  fifth to the ninth, ii.
  tenth to the thirteenth, iii.
  fourteenth to the ſixteenth, iv.
  ſeventeenth to the nineteenth, v.
Inſpection, or Review, vi.

MILL WORK.

Bevilled Wheels, i. 5, 6.
Cog Wheels, i. 1—3.
Conical Wheels, i. 7.
Shafts, &c. ii. iii.

MISCELLANY.

Æolus Harp, xxv. i.
Altar of Burnt-offering, i. 4.
  Incenſe, i. 3.
Altitude of the Sea, i. 1, 2.
Arithmetical Characters, Ancient, i. 7.
Ark of the Covenant, i. 5.
Bee-hive, Thorley's, xx. 1.
  White's, xx. 2—4.
Button-making, ii.
Chimney, by Dr. Franklin, xiv. 1—7.
Chimney cleanſing Machine, Smart's, ii. 1—6.
Ching, Muſical Inſtrument, i. 8.
Claviole, Hawkins's, xiv. 1—6.
Coinage, iii. 1—3.
Copying Machines, iii. 1—3.
Crowth, xxv. 2.
Cryſtallography, ii. 21. 23.
Damaſk, iv. 11.
Diagonal Motion, v.
  Automaton, vii.
  dividing and cutting Engine, vi. 18—20.
Diaper, xii. 8.
Diaper Loom, viii. 1, 2.
Dimity, iv. 10. xii. 5. 7.
Diſcharging Preſs, viii. 3, 4.
Diſſimilar Spots, weaving, xii. 10.
Dornock, iv. 9. xii. 6.
Dramatic Machinery, ix. & x. x. & xi.
Drapery, xx. 8, 9.
Draught and Cording Looms, xii.
Draw Loom, viii. 3.
Drowned, Perſons apparently, Apparatus for reſtoring, xv. 1—5.
Eaſel, Painter's, xii. 1.
Eſcutcheon, ſecret, for a key-hole, Marſhal's, xii. 1—8.
Extinguiſhers, ſelf-acting, xii. 9.
  Hawkins's, xii. 10.
File-cutting, xiii. 1—7.
Filters, xiii. 8—10.
Filtration, xxv. 3.
Fire Eſcape, Maſere's, ſimplified by Forſter, xii. 12.
  original Suſpenſion, xii. 13.
Fire-places, by Dr. Franklin, xiv. 1—7.
Flood-gate, by Smeaton, xv. 5, 6.
  ſelf-acting, by Farey, xv. 7.
Foundry of Bells, xv. 1.
  Types, xv. 2, 3.
Fountain Pen, xv. 4.
Gage, Hale's Aqueo-mercurial, xvi. 2.
  Hooke's Sea, xvi. 1.
  Rain, xvi. 10.
    of the Royal Society, xvi. 11.
  Sea, i. 1, 2.
Gas Lights, Clegg's Apparatus for, xvii. 1—3.
  Cooke's Apparatus for, xvii. 5.
  Dr. Stancliffe's Apparatus for, xvii. 4.
Gem Engraving, Apparatus for, xviii. 1—18.

INDEX OF THE PLATES.

MISCELLANY.

Glanders, Inſtruments for operating for, xix. 1.
Glazing Cloth, Machine for, ii.
Goniometer, by Dr. Wollaſton, xix. 2, 3.
Gun Flints, Tools for cutting, ii.
Horſe, xx. 7.
Ice-houſe, xx. 5.
Indigo Mills, xii. 1—3.
King, Muſical Inſtrument, i. 7.
Lock, Bramah's Patent, xxi. 1—4.
Rowntree's Patent, xxi. 5. 8.
Marble Mill, xxiii. 1, 2.
Marquetry, xvi. 3. xxiii. 3.
Mortar Mill, by Supple, xx. 6.
Neper's Bones, i. 8.
Parabolic Conoid, xxiii. 10, 11.
Fruſtum, xxiii. 9.
Pediment. Plate Basalic, Architecture, xi.
Pentagraph, xxiii. 5, 6.
Perch of a Coach, xxiii. 7, 8.
Perſpective Machines, xxiv. 1—5.
Polygraph, Hawkins's Patent, iii.* 1, 2.
Potaſh, xxiv. 6.
Potaſſium, xxiv. 7.
Pyrometer, Ellicott's, xvi. 4.
Ferguſon's, xvi. 7, 8.
De Luc's, xvi. 9.
Smeaton's, xvi. 5, 6.
Similar Spots, weaving, iv. 7. xii. 9.
Sluice, Bramah's Hydroſtatic, xv. 8—11.
Tide Dial, xxv. 10.
Trumpet, Marine, xxv. 4.
Hearing, xxv. 5, 6.
Speaking, xxv. 7, 8.
Voice, xxv. 9.
Water Spout, xxiv. 8.
Weaving, deſigns for, iv.

MONOGRAMS OF OLD ENGRAVERS.

French Engravers.

Bariere, Dominique
Bernard, Solomon
Boivin, René
Brebiette, Pierre
Cheveau, François
Couvay, Jean
Daret, Pierre
David, Jerome
Duvert, Jean
Garner, Antoine
Garnier, Noel
Gualtier, Leonard
Larmiſſin, Nicolas de
Laſne, Michael
Lombart, Pierre
Perac, Stephan du
Periſin, Jacques
Perrier, François
Reich, Wendel
Stella, Jacques
Vouillemont, Sebaſtien
Woeiriot, Pierre

German Engravers.

Aldegrever, Henry, i.
Altdorfer, Albert, i.

MONOGRAMS.

Amman, J. ii.
Baldung, i.
Baur, J. W. iii.
Beham, Bartholomew, i.
Beham, Hans Sebald, i.
Bink, Jacob, ii.
Breſang, i.
Brie, Theodore de, ii.
Broſamer, Hans, i.
Burgkmair, i.
Cranach, Lucas, i.
Cruger, Matt. ii.
Theod. ii.
Cuſtos, Domenic, ii.
Durer, Albert, i.
Glockenton, Albert, i.
Greuter, J. F. ii.
Matt. ii.
Hirſchfogel, Auguſtin, i.
Holbein, Hans, i.
Sigiſmond, i.
Hollar, Wenceſlaus, iii.
Hopfer, D. ii.
Jerome, ii.
Jamnitzer, Chriſtopher, ii
Jegher, Chriſtopher, iii.
Kilian, Wolfgang, ii.
Kraus, J. Ulric, iii.
Kruger, Lucas, i.
Laireſſe, Geraud, iii.
Lautenſack, Hans Seb. ii.
Henry, ii.
Lorich, Melchior, ii.
Maurer, Chriſtopher, ii.
Mercian, Matth. iii.
Meyer, Andrea, iii.
Direck, iii.
Rodolph, iii.
Oſtade, Adrian Van, iii.
Penz, Gregory, i.
Sandrart, i.
Schoen, Bart. i.
Martin, i.
Schaufflien, H. Sen. i.
H. Jun. i.
Solis, Virgil, ii.
Stimmer, Chriſtopher, ii.
Tob. ii.
Thourneyſon, J. James, iii.
Zagel, Martin, i.

Italian Engravers.

Agoſtino of Venice, i.
Alberti Cherubino, ii.
Algardi, Alexander, iii.
Andreani, Andrea, ii.
Antonio, Marc, i.
Baldili, Alexander, iii.
Barbiere, Dominic, i.
Bateſtra Antonio, iii.
Beatrice, Nicolas, of Lorraine, i.
Beccafumi, Dominico, i.
Bella, Stefano della, iii.
Boldrini, ii.
Bonaſone, Julio, i.

INDEX OF THE PLATES.

MONOGRAMS.

Bonavera, D. M. iii.
Borgiani, Horace, iii.
Breſſe, J. Ant. de, i.
Callot, Jaques, iii.
Cantagalina, Remigio, iii.
Caracci, Annibal, ii.
Caraglio, J. J. ii.
Caſtiglione, Benedetto, iii.
Cavaleris, J. B. ii.
Ciamberlanus, Lucas, iii.
Civoli, Louis, ii.
Daris, Leo, i.
Fantuzzi, Antonio, ii.
Fialetti, Odoard, ii.
Franceſchini, ii.
Galeſtrucci, G. B. iii.
Gaſpar ab Avibus, ii.
Ghiſi, Adam, i.
  George, of Mantua, i.
  Jean Baptiſti, i.
Kartaro, Mario, ii.
Lucini, A. F. iii.
Mantegna, Andrea, i.
Metelli, Gioſeſſe Marie, iii.
Mocetto, Jerome, i.
Modena, Nicolas da, i.
Pagi, J. B. ii.
Palma, Jaques, ii.
Penni, Lucas, i.
Ravenna, Marc of, i.
Reni, Guido, ii.
Ribera, Joſeph (l'Eſpagnolet), iii.
Roſa, Salvator, iii.
Rota, Martin, ii.
Salamanca, Antonio, ii.
Sciaminoſi, Raphael, iii.
Tempeſta, Antonio, ii.
Teſta, Pietro, iii.
Valeſio, J. L. ii.
Venenti, Julio Ceſario, iii.
Villamena, Franciſco, ii.
Zanetti, A. M. iii.

ENGRAVERS OF THE LOW COUNTRIES.

Aſſen, Walter Van, i.
Audenaerde, Robert Van, iv.
Babylone, Francis, i.
Bargas, A. F. iv.
Berghem, Nicholas, iii.
Biſchop, John de, iv.
Blecker, Cornelius, iii.
Bleeck, Peter Van, iv.
Bloemart, Abraham, ii.
Bol, Hanſer John, ii.
Bolſwert, Adam, iii.
Bolſwert, Sheltius à, iii.
Borcht, Henry Vander, iii.
  Peter Vander, iii.
Bos, Cornelius, i.
  Jerome. i.
Boſius, Jacob, i.
Breembergh, Barthol. iv.
Breughel, Peter, i.
Broeck, Criſpin Vander, i.

MONOGRAMS.

Bruggen, John Vanden, iv.
Bruyn, Abraham de, ii.
  Nicholas de, ii.
Butenweg, William, iv.
Cleef, Henry Van, i.
Cleeve, Martin Van, i.
Cock, Jerome, i.
Collaert, Adrian, i.
  John, i.
Coornhaert, Dirk Volkart, i.
Cort, Cornelius, ii.
Cruyl, Lewin, iv.
Dolendo, Barth. ii.
  Zachary, ii.
Flamen, Albert, iii.
Galle, Philip, ii.
Genoels, Abraham, iv.
Ghein, James de, Sen. ii.
Goltzius, Henry, i.
Hayden, James Vanden, iv.
Hemſkerck, Martin, i.
Hondius, Henry, ii.
  Joſt, iii.
  William, iii.
Hugtenbourg, John Van, iv.
Jacobs, Lucas, i.
Keſſel, Theodore Van, iv.
Leeuw, William de, iv.
Londerſeil, John Von, iv.
Londerſel, Aſſuerus, ii.
Matham, James, ii.
Metenſis, Cornelius, i.
Molyn, Peter, iii.
Moreelſe, Paul, ii.
Moyart, Chriſtian Louis, iii.
Muller, Herman, iv.
Natalis, Michael, iii.
Nolpe, Peter, iii.
Paſſe, Criſpin de, i.
  Magdalen de, i.
  Simon, ii.
  William de, i.
Quaſt, Peter, iii.
Sadeler, John, ii.
Saenredam, J. or Hans, ii.
  William, ii.
Serwouters, Peter, iv.
Sichem, Chriſtopher Van, ii.
  Karl Van, ii.
Somer, John Van, iv.
Starven, Dietrich Van, i.
Swanevelt, Herman Van, iv.
Teniers, David, iii.
Vandervelde, Eſaias, iii.
Viſcher, Nicholas, iii.
Vliet, John George Van, iii.
Vorſterman, Lucas, iii.
Waterloo, Antonio, iii.
Wierix, Jerome, ii.

MUSIC.

Acciaccature, xxv.
Arpeggio, i.

INDEX OF THE PLATES.

MUSIC.

- Baſſoon, Scale of, xxxii.
- Chords uſed in Thorough Baſe, Synopſis of, xxx.
- Canon in Ogni Modo, xlviii.
- Counterpoint, vi.—xx.
  - Double, xvii.
- Expreſſion, Marks of, ii.*
- Euclidis Sectio Canonis, xlvii.
- Fingering on Keyed Inſtruments, xxvii.—xxx.
- Graces and Marks of Expreſſion, ii.*
- Keys, arrangement of a Set of, on Keyed Inſtruments, i.
- Modulation, xxi.—xxiv.
  - Kirnberger's examples of, xxiii.
  - Rouſſeau's regular, in C major, xxiii.
- Muſical Characters, ancient, i.
- Oſſian, Hymn of, in Temora, xlv.
- Pathetic Genus, examples of, xxv.
- Romance, Air de Trois Notes, xxxiii.
- Shakes, xxx.
- Thorough Baſe, ii.—v.
- Time Table, i.*

MUSICAL INSTRUMENTS.

(See alſo Miscellany.)

- Æolian Harp, Miscellany, xxv. 1.
- Barbiton, Greek, ii. 1.
- Batalaika, Guitar with two ſtrings, ix.
- Been, an Indian Muſical Inſtrument, v. 2.
- Bow, Violin, xiv. 2.
- Bow, Origin of the, viii. 1—5.
- Bugle, xii. 5.
- Ching, Chineſe Inſtrument. Miscellany, i. 8.
- Cithariſtria, i. 2.
- Crowth. Miscellany, xxv. 2.
- Fifes, xi. 6, 7.
- Flageolet, Engliſh, xi. 8.
- Flute, Common Engliſh, xi. 1.
  - German, xi. 2.
    - Improved, xi. 3.
- Flutes, Double, of the Ancients, ix.
- Gelaika, ix.
- Gong, xi. 9.
- Goudoc Rebec, with three ſtrings, ix.
- Guitar, Spaniſh, xv. 3.
- Harp, Æolian. Miscellany, xxv. 1.
  - Bell, x. 4.
  - of Brian Boromh, x. 1, 2.
  - Greek, ii. 1.
  - Silver Prize, x. 3.
  - Single, vii.
  - Ancient Triple, vii.
  - Modern Triple, vii.
  - Welſh, vii.
- Hautboy, xi. 4, 5.
- Horn, Hunting, xii. 1, 2.
  - French, xii. 4.
  - Hunting, of Siberia, ix.
- Indian Muſical Inſtruments, v. 1, 2.
- King, Chineſe Inſtrument, Miscellany, i. 9.
- Kit, xiv. 5.
- Lituus, Double, i. 3.
  - Ancient Metalline, i. 8.
- Lute, xv. 4.
  - Arch, xiii. 1.
- Lyre, Ancient, ii. 5, 6. iv. 8. 10.
- Lyre, Egyptian, iii. 6—10.
  - Etruſcan, with 7 ſtrings, iv. 7.
  - held by Terpſichore, iv. 3.
- Mandola, xiii. 3.
- Mandoline, xiii. 2.
- Mandore, xv. 2.
- Maſk of Hercules, ii. 2.
  - Thais, ii. 3.
- Maſques, Antique Theatrical, i. 6, 7.
- Muſicians, Group of, performing an Epithalamium, iii. 1—3.
- Pandean Minſtrels, repreſentation of, vi.
- Pſaltery, iv. 4.
- Rojok, ix.
- Rok, Hunting Horn of Siberia, ix.
- Ruſſian Muſical Inſtrument, ix.
- Sacbut, or Trombone, xii. 6.
- Serpent, xii. 3.
- Sordine, or Mute, for a Violin, xiv. 3.
- Syrinx, Pan playing upon, i. 4.
- Syſtrum, Egyptian, iv. 9.
- Tabour and Pipe, xi. 10, 11.
- Teſtudo, Abyſſinian, iv. 6.
  - or Lyre of Amphion, iv. 1, 2.
- Tibiæ Pares, i. 5.
  - Cupid playing upon, iii. 5.
- Timbrel, i. 1.
- Trigonum, or Triangular Harp, iv. 5.
- Trombone, xii. 6.
- Tuba, or long Trumpet of the Jews, iii. 4.
- Viol d'Amour, xv. 1.
- Viol de Gamba, xiv. 6.
- Violin, xiv. 1, 2.
- Violoncello, xiv. 4.
- Violino Piccola, xiv. 5.

NAVAL ARCHITECTURE.

- Bolts, Hill's Machine for drawing, xiv.
- Draught of a 74 Gun Ship, i.
- Eaſt Indiaman, xii.
- Forecaſtle, Plan of, vi.
- Frame of a 74 Gun Ship, ii. iii.
- Frigate of 38 Guns, xi.
- Gun Deck, Plan of, v.
- Orlop, Plan of, v.
- Plans of a 74 Gun Ship, v.—x.
- Profile of a 74 Gun Ship, iv.
- Quarter-deck, Plan of, vi.
- Royal Sovereign Yacht, xiii.
- Upper Deck, Plan of, vi.
- Whole Moulding, xiv.

NAVIGATION.

- Aſtrolabe, Astronomical Instruments, i. 1.
- Backſtaff, Astronomical Instruments, i. 2.
- Foreſtaff, Astronomical Instruments, i. 3.
- Meridian, i. 1.
- Meridional Parts, i. (i. & ii.) 2, 3.
- Nocturnal, Astronomical Instruments, i. 6.
- Quadrant, Hadley's, ii. (i. & ii.) 1—3.
  - Sinical, ii. (i. & ii.) 4.
- Rhumb Line, ii. (i. & ii.) 5, 6.
- Rudder, ii. & iv. 1—4.

INDEX OF THE PLATES.

NAVIGATION.

Sailing, Great Circle, ii. 26—34.
Current, iii. 3—6.
Mercator's, ii. 24, 25.
Parallel, ii. 20—23.
Plain, ii. & iv. 5—18. ii. 19.
Traverſe, iii. 1, 2.
Convoy, NAVAL TACTICS, iii. 1—3.
Tide, i. 4—8.
Trigonometry, (Plate iii.) iii. 1—5.
Variation, ii. (i. & ii.) 7—9.

OIL MILL.

Plan and Elevation, by Smeaton

NAVAL TACTICS.
(*See* NAVIGATION, *Plate* iii.)

NOTATION.

Ancient Arithmetical Characters
(*See* MISCELLANY, i. 7.)

OPTICS.

Aberration, i. 1.
Altitude, iv. 11.
Angle, i. 2—4.
Burrough's Machine, i. 5.
Burning Lens, Parker's, ii. 1—3.
Camera Obſcura, iii. 1—7.
Catoptric Ciſtula, iv. 1, 2.
Dioptrics, iv. 2*—4.
Diſperſion of Light, iv. 5—7.
Eye, v. 2.
Focus, iv. 8.
Virtual, v. 1.
Grinding Machine, v. 3—7.
Helioſtata, vi. 1.
Hones, Bed of, vi. 2.
Horopter, vi. 3.
Incidence, xv. 1.
Inclination, xv. 1.
Lens, vi. 5—11. vii. 1—12. viii. 1—12.
Light, ix. 1—9.
Looking-glaſs, iv. 9.
Magic Lantern, x. 1—5.
Magnitude, Apparent, x. 4.
Micrometer, x. 5—11.
Herſchel's Lamp, xi. 5, 6.
Maſkelyne's, xi. 1.
Troughton's, xi. 2—4.
Microſcope, xii. 1—12.
Adams's Compound, xiv. 1—7.
Culpepper's, xiii. 2.
Marſhall's, xiii. 1.
B. Martin's, xiv. 5—11.
Solar, xiii. 6—8.
Improved, xvi. 1—7.
Mirror, xv. 2—18.
Muſcæ Volitantes, xv. 18.
Object Glaſs, centering, xv. 19, 20.
Opera Glaſs, xv. 21.
Optical Inequality, xv. 22.
Optometer, xvii. 1—8.

OPTICS.

Parhelion, xv. 23, 24.
Pencil of Rays, xvii. 10.
Place, Optic, xvii. 9.
Polemoſcope, xvii. 12.
Polyhedron, xvii. 11, 12.
Polyoptrum, xvii. 13.
Rainbow, xviii. 1—9.
Reflection, xvii. 14.
Reflexibility, xvii. 15.
Refraction, vi. 4.
of Light, xviii. 10—24.
Refrangibility of Light, xix. 1—13.
Shadow, iv. 10—13.
Viſible, iv. 14—16.
Viſion, iv. 17.

ORGAN.

Church Organ, interior Profile of, ii.
Keys, Pipes, &c. i.
Organ, made by Flight and Robſon, iii. iv.

PAINTING.

Apollo Belvidere, i.
Face, Human, diverſities of, ii. iii.
African, iii.
American, iii.
Aſiatic, iii.
European, iii.

PANORAMA.

Plates i. ii.

PAPER-MILL.

Plates i. ii.

PERSPECTIVE.

Anamorphoſis, i. 1—8.
Diſtance of a Vaniſhing Line, i. 9.
Line, Horizontal, i. 11.
Perſpective, Theory of, i—xii.
Point of a Vaniſhing Line, i. 10.

PISÉ BUILDINGS.
(*See* AGRICULTURE, *Plate* XXXIII.)

PLANETARY MACHINES.

Cometarium, i.
by W. Jones, ii. 1—3.
Dial for the Equation of the Sun's Center, ix. 1.
Sun's Declination, ix. 2.
of mean High Tides, ix. 8.
for the Moon's Equation of the Center, ix. 4.
Heliocentric Latitude, ix. 5.
Horizontal Diameter and Parallax, ix. 7.
Parallax, ix. 6.
Reduction of the Ecliptic to the Equator, ix. 3.
Dials, graduated for ſhewing Planetary Phenomena, ix.
Equation Mechaniſm of a Planet's Orbit, by Huygens, iii. 1.

INDEX OF THE PLATES.

PLANETARY MACHINES.

- Equation Mechaniſm of a Planet's Orbit, by Prieſtley, iii. 2.
  - by Pearſon, iii. 3—5. iv. 1—6.
- Jovilabe, by Janviers, xii. 5.
- Orrery for equated Motions, v.
  - mean Motions, vii. viii.
  - Janvier's, vi.
- Planetarium, Common, x. 1.
  - Pearſon's for the Royal Inſtitution, x. 2—5.
    - equated Motions, xi. 1, 2.
- Satellitian, by Pearſon, xii. 2—4.
  - Roemer, xii. 1.
- Satellites of Jupiter, Pearſon's Machine for, xiii. 1—3.

PLANING.

- Bramah's Planing Machine, i. ii.

PLATED MANUFACTURE.

- Die Stamp, 1.
- Furnace, 12.
- Punches, emboſſing, 11.
- Rollers, grooved for Beads, 8—10.
- Swage, Bit, 3.
  - Common, 4.

PNEUMATICS.

- Æolipile, i. 1.
- Æroſtation, i. 2—4. 9—12. ii. 5—8.
- Air Gun, iii. 14—23.
- Air Pump, iv. 24—32. v. 33—44. vii. 48—55. viii. 56,
- Air Pump, Cuthbertſon's, viii. No. 2. 58—66.
  - Nairne's, vi. 46, 47.
  - Smeaton's, vi. 45.
- Anemometer, viii. No. 2. 69.
- Aræometer, viii. No. 2. 70, 71.
- Atmoſphere, viii. No. 2. 72.
- Bacchus, viii. No. 2. 73.
- Barometer, ix.—xii.
  - Caſwell's, x. 88.
  - Chamber, ix. 84.
  - Common, ix. 76.
  - Des Cartes', ix. 77.
  - Diagonal, ix. 81.
  - Hamilton's, xi. 96, 97.
  - Hooke's, ix. 79.
  - Horizontal, ix. 80.
  - Huygens's, ix. 78.
  - Keith's, xi. 91, 92.
  - De Luc's, xi. 94.
  - Marine, x. 86, 87.
  - Pendant, ix. 83.
  - Rowning's, x. 89, 90.
  - Wheel, ix. 82.
  - Machine for enlarging the Scale of, xi, 91.
- Bellows, xiii. 107—117.
- Condenſers, xiv. 1, 2.
- Condenſing Engine, xiv. 3.
- Gage of a Condenſer, xiv. 5—7.
  - Pear, xiv. 4.
  - Bouguer's Wind, xv. 12.
  - Lind's ditto, xv. 9.
  - Martin's ditto, xv. 11.
- Freezing, xiv. 4—7.

PNEUMATICS.

- Freezing Apparatus, xiv. 8.
- Pyrmont Water, Apparatus for making, xv. 1—7.
- Thermometer, Apparatus for adjuſting the fixed Points of, xvi. 6—10.
  - Amonton's, xvi. 4.
  - Bent, xvi. 2.
  - Bernouilli's, xvi. 3.
  - Cavendiſh's, xvi. 11—13.
  - Drebbel's, xvi. 1.
  - Florentine, xvi. 5.
  - Kewley's, xv. 14.
  - Leſlie's, xv. 13.
  - Rutherford's, xvi. 16.
  - Six's, xvi. 14, 15.
- Ventilator, xvii.
- Whiſpering Place, xv. 8.

PORTER BREWERY.

- Building and Machinery.

POTTERY.

- Furnace, &c.

PRESS.

- Bramah's Hydroſtatic Preſs

PRINTING.

- Bacon and Donkin's Printing Machine, iii.
- Bramah's Bank-Note Printing Machine, ii.
- Common Printing Preſs, iv. 1.
- Compoſing Stick, iv. 2.
- Stanhope, or Iron Preſs, i.

PROJECTION.

- Plates i.—x.

PROPORTIONAL COMPASSES.

PYROTECHNY.

RIGGING.

(*See* Ships, *Plates* ii.—v.)

SCENOGRAPHY.

SCULPTURE.

- Apollo Belvidere, iii.
- Cupid of Praxiteles, i.
- Cupid and Pſyche, Statue of, i. ii.
- Dirce, ii.
- Durga ſlaying Mahiſhaſura, iv.
- Hercules of Dædalus, i.
  - Farneſe, ii.
- Jupiter Olympius, i.
- Laocoon, iii.
- Minerva of the Acropolis, i.
  - Dipænus and Scyllis, i.
- Patera, Etruſcan, iv.

INDEX OF THE PLATES.

SCULPTURE.

Perſian Sculptures, iv.
Phocion, ii.
Statue, Chineſe, iv.
  Coloſſal at Thebes, iv.
Venus de Medicis, iii.
  of Praxiteles, i.

SHADOW.

Plate i. ii.

SHIP BUILDING.

(*See* Naval Architecture.)

SHIPS.

Anchors, ix.
Balza, vii.
Barge, Man of War's, vi.
Bends, ii. 25—32.
Bits, i. 5.
Blocks, iii. vii.
Boats, vi. vii.
Buoys, ix.
Bolton's, Captain, Machine for drawing Bolts, i. 1.
Braces, iii.
Coracore, vii.
Fire Brig, vi.
Flat-bottomed Boat, vi.
Gun Veſſel, vi.
Hawſer, ii. 43—49.
Hitches, ii. 16—24.
Knotting, ii. 1—15.
Life Boat, vii.
Long Boat, Man of War's, vi.
Lugger, vi.
Maſt of a 74 Gun Ship, viii.
Man of War, Britiſh, vi.
Meſſenger, application of, i. 5.
Sails, v. 1, 2.
Nippers, i. 6.
Pahie, vii.
Pendants, iii.
Phillips's Tubes for driving Bolts, i. 2, 3.
Rigging, ii.—v.
  Running, iv. 2.
  Standing, iv. 1.
  and bending Sails, v. 1, 2.
Splices, ii. 33—42.
Spring Block, vii.
Stays, iii.

SHORT HAND.

Alphabet, &c. by Byrom.

SILK MANUFACTURE.

Doubling, 4, 5.
Reeling, 1.
Throwſting, 3.
Warping, 6.
Winding, 2.

STEAM ENGINE.

Atmoſpheric Steam Engine, ii.
Blakey's Engine, i. 3.
Boulton and Watt's Ditto, vi.
  Parallel Motions, x. 2.
Cartwright's Engine, v. 8.
Cylinders, vii.
Freemantle's Parallel Motions, x. 6.
High Preſſure Engine, ix.
Hornblower's Engine, v. 1.
Kier's Ditto, i. 4.
Maudſlay's Ditto, viii. 3.
Murray's Ditto, viii. 4.
Newcomen's Ditto, as conſtructed by Smeaton, iii.
Papin's Engine, i. 2.
Parallel Motions, x.
Piſtons, vii.
Savery's Engine, i. 1.
Steam Boat, viii.
Watt's Engine, iii. & iv.
Woolfe's Ditto, v. 3.

STEREOGRAPHY.

Plates, i.—iii.

STEREOTOMY.

Plates, i. ii.

STOCKING FRAME.

STONEHENGE.

SUGAR MILL.

SURGERY.

Amputating Inſtruments, i. ii.
Aneuriſm Needle, ii.
Bandages, iv. v.
Biſtoire Caché, Coſmé's, vii. 8.
Biſtoury, ii.
Bone Nippers, ii.
Bruſh for cleaning the Teeth of the Trephine, viii. No. 2. 11.
Capſule, Cline's Inſtrument for dividing, x. 2.
  La Faye's Cyſtotome for dividing, x. 3.
  Minute Steel Tenaculum, for extracting Bits of, x. 1.
Cataract, Inſtruments for the Extraction of, x. xi.
Catheters, Female, iii. 13, 14.
  Male, iii. 16—19.
Cauſtic Caſe, iii. 7.
Cornea, Sciſſars for enlarging the Wound of, x. 4, 5.
Couching, Inſtruments for, xi.
Director, iii. 10.
Elevator for raiſing depreſſed Portions of a Fractured Scull, viii. 2.
  Common, viii. No. 2. 5.
  Petit's, improved by Louis, viii. 4.
  Tripod, viii. 3.
Eye Probe, iii. 6.
Fiſtula Lacrimalis, Inſtruments for, x.
Forceps for taking up the Mouths of Veſſels, ii.
  Common, iii.

INDEX OF THE PLATES.

SURGERY.

Forceps for Lithotomy, vi. 10—12.
  Spring, for extracting the Circle of Bone, &c. in Trepanning, viii. No. 2. 1.
  Wenzel's, for extracting Bits of Capſule, &c. xi. 18.
Fracture of the Clavicle, iv.
  Leg, v.
Gorget, Abernethy's, vi. 9.
  Blunt, vi. 6.
  Cline's Cutting, vi. 8.
  Hawkins's Ditto, vi. 7.
Hook, Silver, uſed in Couching, xi. 1.
  Pellier's Ditto, Ditto, xi. 2.
Lancet, iii. 5.
  for puncturing the Lachrymal Sac, x. 13.
Lenticular, viii. No. 2. 7.
Knife for Extraction of the Cataract, Richter's, xi. 12.
  Ware's, xi. 14.
  Wenzel's, xi. 13.
  Wathen and Phipps's, xi. 10, 11.
  enlarging the Wound of the Cornea, xi. 15, 16.
  Lithotomy, Blizard's, vii. 7.
  Burn's, vii. 4.
  A. Cooper's, vii. 6.
  Gibſon's, x. 14.
  Hunter's, vii. 5.
Lithotomy, Inſtruments for, vi. vii.
Needles, Aneuriſm, ii.
  for ſewing up Wounds, iii. 1—3.
  for Couching, xi. 3—5. 19.
  Hey's ditto, x. 7—9.
Probe, Common, iii. 9.
  Eye, iii. 6.
Raſpatory, viii. No. 2. 8.
Saw, Hey's, with curved edges, viii. No. 2. 6.
  Large ſtraight, viii. No. 2. 10.
  Small ditto, viii. No. 2. 9.
  Old Conical, viii. 5.
Scalpel, ii.
Scalpel for Trepanning, viii. No. 2. 4.
Sciſſars, iii. 11.
  for enlarging the Wound of the Cornea, x. 4, 5.
Scoop, for Lithotomy, vii. 2.
Screw, for regulating the diſtance to which the blade ſhall move out, in Lithotomy, vii. 9.
Sound, for Lithotomy, vi. 1.
Spatula, iii. 4.
Splints, v.
Staffs, for Lithotomy, vi. 2—5.
  C. Bell's, vii. 3.
  A. Burn's, vii. 4.
Stiles, Ware's, x. 11.
Stone Breaker, Earle's, vii. 1.
Syringe and Pipes, Anel's, x. 7—10.
Tenaculum, ii.
  Pocket, iii. 12.
  Minute Steel, for extracting bits of the Capſule, x. 1.
Tourniquets, i. 1—4.
Trepan, viii. 6.
Trephine, viii. No. 2. 10.
  by Savigny, viii. No. 2. 3.
Trepanning Inſtrument, viii. No. 1, & 2.
  Rodman's, viii. 1.
Truſs, ix. 1—3.
  Eagland's, ix. 9—11.
  Hulme's, ix. 4.
  Marriſon's for Exomphalos, ix. 8.
  Salmon's Patent, ix. 7.
  Whitford's, ix. 5.
Tube for injecting Quickſilver into the Lacrymal Sac, x. 6.
Tubes, Wathen's, x. 12.

SURVEYING.

Angle, how to meaſure with a Protractor, i. 1,
  Semicircle, vii. 3.
  Chain, i. 3.
Broad's Machine for meaſuring Timber, vi. 9—11.
Chain, method of meaſuring an Angle with, i. 3.
  method of Surveying with, i. 4—9.
Circumferentor, ii. 1.
Convergency of Meridians, i. 10.
Croſs, iii. 1.
Dendrometer, vi. 7, 8.
Gauging, iv. 2, 3.
  Rod, iv. 4.
Level, Air, i. & vi. 1.
  with Teleſcopic Sights, i. & vi. 2.
  Huygens's, i. & vi. 3.
  American, i. & vi. 4.
  Artificer's, iv. 5.
  Artillery Foot, iv. 6.
  Deſaguliers's, i. & vi. 7—11.
  Foot, iv. 1.
  Gunner's, iv. 7.
  Mercurial, iv. 8—12.
  Plumb, iv. 13.
  Ramſden's, v. 1—3.
  Troughton's, v. 4.
  Watering, i. & vi. 5, 6.
  Method of adjuſting for the operation of Levelling, vii. 1, 2.
Levelling, the Practice of, vii. 5—9.
  Staves, vii. 10.
Map of an Eſtate in Eaſt Sheen, x.
Plain Table, vi. 1—8.
Perambulator, vi. 10.
Plotting, vi. 11.
  Scale, vi. 12.
Protractor, i. 1.
Quadrant for taking Altitudes, vi. 13.
Rule, Carpenter's, vi. 14.
  Coggeſhall's Sliding, vii. 5.
  Everard's Ditto, vii. 4.
  Dr. Roget's Ditto, vii. 6—9.
Sector, vii. 1, 2.
Semicircle, vii. 3.
Theodolite, Grand, by Ramſden, viii. 1—5.
  Portable, by Troughton, ix. 1—9.

TELEGRAPH.

Machinery, Vocabulary, &c.

TRIGONOMETRY.

Arithmetic of Sines, i. 8, 9.
Coſecants, i. 17.

INDEX OF THE PLATES.

TRIGONOMETRY.

Coſines, i. 12.
Cotangents, i. 15.
Gunter's Scale, i. 1.
Secant, I. 4. 16, 17.
Sector, i. 5—7.
Sines, i. 4. 10, 11. 18—22
Spherical Angle, ii. 2.
  Triangle, ii. 3—8.
Spherics, ii. 9—12.
Tangent, i. 14. ii. 13.
Trigonometry, ii. 14—22.
(*For the figures referred to as on* Trigonometry, *Plate* III. *ſee* Navigation, *Plate* III.)
Verſed Sines, i. 13.

TURNING.

Lathe, &c.

VOLTAISM.

Battery, &c.

WATER PRESSURE Engine, by Smeaton.

WATER WHEELS.

Breaſt Wheel, Improved, i. 7.
  at the Royal Armoury Mills, ii. 4.
  with two Shuttles, ii. 3.
Buchanan's Wheel and Pentrough, i. 4, 5.
Burns's Overſhot Wheel, ii. 5.
Chain of Buckets, i. 6.
Greaſing Machine, i. 8.
Nouaille's Overſhot Wheel, i. 3, 4.
Smeaton's Breaſt Wheel, i. 1.
  Pentrough, i, 2.
Water, Method of laying on, ii. 9.

WATER WORKS.

Boulton's Machine for raiſing Water, i. 2, 3.
Chremnitz Fountain, i. 14.
Greave's Bucket Machine, i. 13.
Hydraulic Ram, i. 4—6.
Machine for raiſing Water by the lateral communication of a Stream, i. 10.
  Smeaton's, for raiſing Water at London Bridge ii. 1, 2.
Momentum Pump, i. 1.
Siphon Machine, i. 8.
  Goodwin's, i. 10.
Spiral Pump, i. 11.
Water Bellows, i. 15.
Whitehurſt's Machine for raiſing Water, i. 7.
Zurich Machine, i. 11.

WEAVING.

Auſtin's Engine Loom, i.
Duff's Draw Boy, &c. ii.

WINDMILL.

Common Vertical Windmill, ii. 1.
Dutch Windmill, ii. 4.
Hooper's Horizontal Windmill, i. 1, 2.
Poſt Windmill, ii. 3.
Smock Mill, i. 3—5. ii. 2.

WINDING ENGINE.

Smeaton's Deſign for a Water Gin for drawing Coals from Pits.

WIRE MILL.

Machinery for Wire-Drawing.

WOOLLEN MANUFACTURE.

Carding Engine, iv.
Gig Mill, v.
Shearing Machine, iii.
Spinning Jenny, ii.
Stubbing Machine, i.

WORSTED MANUFACTURE.

Breaking Frame, i. 5.
Combs, i. 1.
Cartwright's Combing Machine, ii. 1—3.
Gilpin's Combing Machine, i. 4.
Roving Frame, i. 6.
Spinning Frame, i. 7.
Stove, i. 3.

WRITING BY CIPHER.

Characters and Examples, i.—iii.

⁎ As only a few of the Plates relating to Natural Hiſtory are referred to in the articles of the Cyclopædia which they are intended to illuſtrate, it has been deemed unneceſſary to incorporate the ſubjects of them in the Index. The ſyſtematic arrangement and minute analyſis of them in the annexed Catalogue will, it is conceived, be found amply ſufficient for every purpoſe of reference and conſultation.

THE END.

Printed by A. Strahan,
New-Street-Square, London.

DIRECTIONS TO THE BINDER.

In making up the Plates of the Cyclopædia into volumes, the first business of the binder must be to arrange the Plates in their several classes, as Agriculture, Algebra, Analysis, &c., and in the order in which they are numbered. He must, however, observe, that some of the Plates are wrongly numbered: which those are, and to what place in the series they must be transferred, he will easily learn from the Catalogue. In some instances he will find two or three Plates numbered alike; and, in others, Plates on which the number has been omitted: in these cases again, he will readily ascertain, from an inspection of the Catalogue, where, and in what order, they are to be placed. In every case, the Catalogue must be his guide, and to this he must rigidly adhere in the arrangement and disposition of the whole of the engravings.

ERRATUM.

The following Plate has been accidentally omitted, both in the Catalogue and in the Index. The Binder is requeſted to place it immediately after the other Plate of Architecture numbered XV.

Architecture, Plate XV.
Doric Order.
Fig. 1. From the temple of Corinth
2, 3. a Hypæthral Temple at Pæſtum
4. the Temple of Minerva at Sunium
5. at Syracuſe